NP Library Overview

PlayStation®Vita Programmer Tool Runtime Library Release 3.50

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1 Library Overview

Purpose and Characteristics

The NP library serves as the base library for applications that use services provided by PSN℠. The NP library provides features required for using other libraries related to PSN℠.

Main Features

The main features provided by the NP library are as follows.

- Feature to register the NP Communication ID
- Feature to manage requests to the server of PSN℠
- Feature to obtain the user's own NP ID
- Feature to obtain/monitor the service state
- Feature to check callback of libraries related to PSN℠

Used Resources

The NP library uses the following system resources.

Resource	Description
Footprint	Approximately 30KB (Total size of Text, Data, RO-Data, BSS of `SCE_SYSMODULE_NP`)
Work memory	(The application is not required to provide memory.)
Thread	(A thread affecting the application will not be created.)
Processor time	Can be ignored

Embedding into a Program

Include np.h in the source program. Various header files will be automatically included as well. In addition, before calling any NP library APIs in the program, load the PRX module with the relevant libsysmodule API, as follows.

```
if ( sceSysmoduleLoadModule(SCE_SYSMODULE_NP) != SCE_OK ) {
    // Error handling
}
```

Moreover, when calling an API of the NP library, it is necessary for each of the libhttp, libssl, and libnet modules to be loaded and initialized. Regarding the loading of each module, refer to the "libhttp Overview", "libssl Overview" and "libnet Overview" documents.

Upon building the program, link libSceNpManager_stub_weak.a and libSceNpCommon_stub_weak.a.

Reference Materials

Refer to the following document for an overview of PSN℠.

- PSN℠ Overview

2 Accounts

Each user on PSN℠ is allocated with an account. Services of PSN℠ can be used while signing in to PSN℠ with this allocated account.

Signup

Signup refers to the creation of a new Sony Entertainment Network account.

For instructions on how to sign up, refer to the "System Software Overview" document.

Note
An account can be created using a PC web browser.

Note
For instructions on how to create an account for development purposes, refer to the "PSN℠ Overview" document.

Master Account and Sub Account

The Sony Entertainment Network account makes a distinction between the master account and the sub account.

A master account refers to an account that is created by users above a certain age (standards for this age level differ by country/region).

A sub account refers to an account that is issued to users who are considered underage. A sub account is issued with the understanding that the user of the master account will supervise the PSN℠ usage of the sub account. Thus, the master account user is able to set usage limitations on several features of the sub account.

Account Information

Basic information regarding an account includes the following.

Account ID

An Account ID is the primary key used in identifying accounts. It is used for management purposes by the system and is not visible to the user. One Account ID will be used for the entire time that an account is valid.

Online ID (SceNpOnlineId)

The Online ID is used to identify accounts, and is chosen by the user upon signup. The Online ID is displayed onscreen by the system software and by applications. It is a 3- to 16-character string composed of alphanumeric characters (A - Z, a-z, 0-9), hyphens, and/or underscores. The Online ID is guaranteed to be unique.

In principle, one Online ID will be used for the entire time that an account is valid, but it can be changed by a request from the system or the user.

NP ID (SceNpId)

The NP ID consists of the Online ID, with option fields and version information that are necessary for server access. Each library related to PSN℠ uses this NP ID to identify a user.

Region (SceNpCountryCode)

Region refers to the country and region of residence selected by the user upon signup. The region cannot be changed after signup. For available countries/regions, refer to the description of `SceNpCountryCode` in the "NP Library Reference" document. Note, however, that it is possible for the description to change at any time and not necessarily in tandem with SDK updates.

Language Used

This is the "Language" selected by the user upon signup.

Age

The user's age is calculated from the birth date input by the user and the customs of the country/region of residence selected upon signup. The birth date cannot be changed after signup.

Parental Control Flag

This flag represents the user's parental control settings for age-based content restriction. The user with the master account (supervisor) can set or make changes to this flag setting for its sub account.

Chat Disabled Flag

This flag represents the user's parental control setting for chat restriction. The user with the master account (supervisor) can set or make changes to this flag setting for its sub account.

Service Suspended Flag

This flag represents the user's account setting for PSN℠ service suspension (whether or not the account is temporarily banned from using PSN℠). The system can set or make changes to this flag setting when suspending PSN℠ services against a specific user for some reason.

> **Note**
> Profile information comprising the user's name, image, avatar, self introduction and language preference, may be confused with account information. Profile information is information that is indicated to other users; it can be changed by the user at any time after it is set upon sign-up.

Libraries Related to Accounts

The client libraries required for using PSN℠ account services from the application are as follows.

For details on their features, refer to the overview and reference documents of each library.

NP Library

This library provides a feature to obtain account information of the user currently using the application including the NP ID (`SceNpId`), online ID, region, and parental control flag.

NP Auth Library

This library provides a feature to obtain tickets of the user currently using the application from the server of PSN℠. A ticket contains account information, such as, the Online ID, region, parental control flag, etc.

In addition, the NP Auth library provides a feature for obtaining the authorization codes that add access rights to application servers (game servers, etc.). By transferring an obtained authorization code to an application server, it will be possible for the application server to access user information managed by servers for PSN℠.

3 Service States

Service States

A service state represents the extent of PSN℠ services that can be used by an application. Three service states are defined: PSN℠ services cannot be used at all in the "signed-out" state, services excluding those carried out in real-time can be used in the "signed-in" state, and services including those carried out in real-time can be used in the "online" state.

Signed-out

Signed-out refers to a state in which no connection can be made to PSN℠ regardless of whether a network connection is available or not. This state is reached when the user has not set a Sony Entertainment Network account (when the user has not signed up, for example), when some fatal error (a password mismatch, for example) is generated or when the user has explicitly prohibited sign-in from the system software menu.

Most of PSN℠ features become unusable in the signed-out state. To switch to the signed-in state, the user must perform either the sign-up or the sign-in operation in Network Check Dialog called by the application or from the system software menu. Therefore, network connection is required to switch to the signed-in state from the signed-out state.

Signed-in

Signed-in refers to a state in which connection to PSN℠ is possible as long as network conditions are satisfied.

This state is reached when the user successfully completes signup, or successfully completes sign-in operation from the system software menu. Even if the network subsequently becomes disconnected, the signed-in state will be maintained. Also, if the main unit is rebooted, the signed-in state will be maintained.

The signed-out state is reached when some fatal error (a password mismatch, for example) is generated or when the user manually performs the sign-out operation.

Of all PSN℠ features, those for using services in real-time cannot be used in this state.

Note
Note that sign-in on PlayStation®Vita differs from sign-in on PlayStation®3 or PSP™ (PlayStation®Portable). Processing included in the latter sign-in is not explicitly carried out in the former for PlayStation®Vita; instead, these processing are performed automatically within the system software upon using each PSN℠ feature. At this time, the system software automatically attempts to establish a network connection, if it is required.

Online

Online refers to a state in which connection is made to PSN℠ and real-time communication is carried out. This state is reached when the PSN℠ online mode is specified using Network Check Dialog.

In addition to the features that can be used in the signed-in state, the online state enables real-time communication between games using the NP Basic library, as well as the viewing of a friend's presence information on the system software. When connection required for real-time communication to the server of PSN℠ can no longer be maintained due to reasons - such as, network error - the online state will transition to the signed-in state.

Service States and Usable Features

The PSN℠ related libraries (or features) that can be used in the respective service states are as follows.

Library (Feature)	State of PlayStation®Vita (Service States/Network Use Enabled/Disabled)				
	Signed-out		Signed-in		Online
	Network Use Disabled	Network Use Enabled	Network Use Disabled	Network Use Enabled	Network Use Enabled
NP	No	No	Yes	Yes	Yes
NP Auth	No	No	No	Yes	Yes
NP Basic (InGame Data Message Sending/Receiving Feature)	No	No	No	No	Yes
NP Basic (Shared Play History-Related Features)	Yes	Yes	Yes	Yes	Yes
NP Lookup	No	No	No	Yes	Yes
NP ScoreRanking	No	No	No	Yes	Yes
NP BandwidthTest	No	No	No	Yes	Yes
NP Matching2	No	No	No	Yes	Yes
NP Activity	No	No	Yes	Yes	Yes
NP IN-GAME Commerce 2	No	No	No	Yes	Yes
NP Message Dialog	No	No	No	Yes *1	Yes
NP Message	No	No	No	Yes *1	Yes
NP Party	No	No	No	No	Yes
NP Title Small Storage (TSS)	No	No	No	Yes	Yes
NP Title User Storage (TUS)	No	No	No	Yes	Yes
NP Trophy	Yes	Yes	Yes	Yes	Yes
NP Friend List	No	No	Yes	Yes	Yes
NP Profile	No	No	No	Yes	Yes
NP WordFilter	No	No	No	Yes	Yes
NP SNS Facebook	No	No	No	Yes	Yes
NP Signaling	No	No	No	No	Yes
NpWebApi	No	No	No	Yes *2	Yes

*1: If the message sender and the message receiver are both online, the message is immediately notified. Therefore, when instant notification is expected, such as in the case of invitation messages, make sure that message transmission and reception are done in the online state.

*2: To receive a Push event from the Web API server, use the NpWebApi library in the online state.

Obtaining/Monitoring Service States

The NP library provides the following features regarding service states.

- Obtaining the current service state
- Receiving notifications regarding changes in service states

4 Using the Library

Pre-processing

(1) Initialize the Network Libraries

Initialize libhttp, libssl, and libnet. For the initialization procedure, refer to library document of each library.

(2) Initialize the NP Library

Set the NP Communication ID, NP communication passphrase, and NP communication signature to the `SceNpCommunicationConfig` structure. These values are issued per application upon submitting a request via the PlayStation®Vita Developer Network (https://psvita.scedev.net/) - make sure to correctly set issued values.

Call `sceNpInit()` with the above `SceNpCommunicationConfig` structure specified as an argument to initialize the NP library. `sceNpInit()` returns 0 upon successful initialization.

Regularly-performed Processing

(1) Poll sceNpCheckCallback()

While using the NP library (and some features of a library related to PSN℠) (more specifically, for the duration from the call of `sceNpInit()` to the call of `sceNpTerm()`), call `sceNpCheckCallback()` regularly. `sceNpCheckCallback()` detects events generated for event handlers registered to each library, and calls the applicable event handler.

Note
Note that some libraries related to PSN℠ have their own function to check for callbacks.

Post-processing

(1) Terminate the NP Library

Call `sceNpTerm()` to terminate the NP library.

(2) Unload the PRX

Call `sceSysmoduleUnloadModule()` with `SCE_SYSMODULE_NP` specified as the module ID to unload the PRX.

5 Operation Flow of Applications

Below is an explanation of the typical operation flow of applications using various kinds of NP libraries.

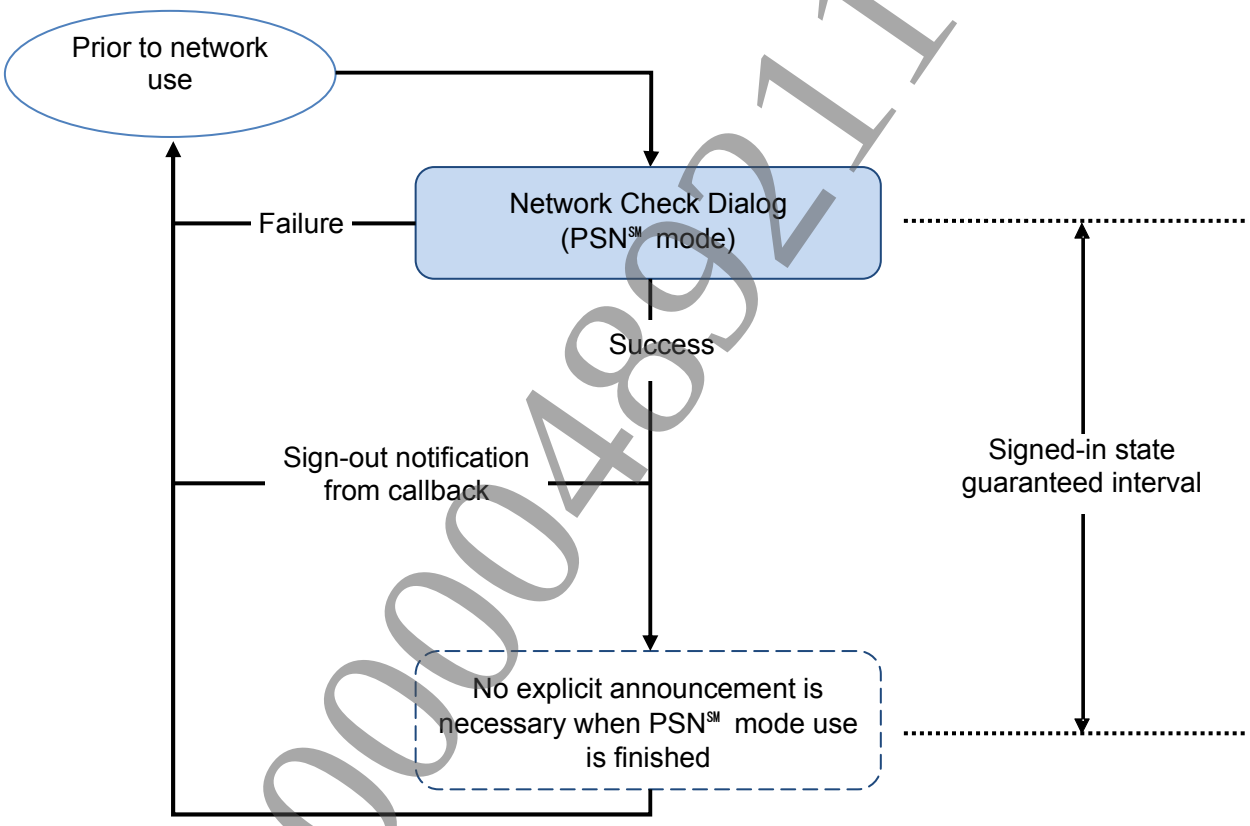
Applications Requiring Signed-in State

The general operational flow of an application using the NP library that requires the signed-in state is indicated below.

Applications must call Network Check Dialog in advance in PSN℠ mode.

Also, it is necessary to register a service state callback and to use the callback to look out for transitions to signed-out state after Network Check Dialog succeeds.

Note that applications can use the NP library that requires signed-in state from the moment in which Network Check Dialog succeeds to the moment in which transition to signed-out state occurs.



Applications do not need to perform explicit processing after finishing use of the NP library that requires signed-in state.

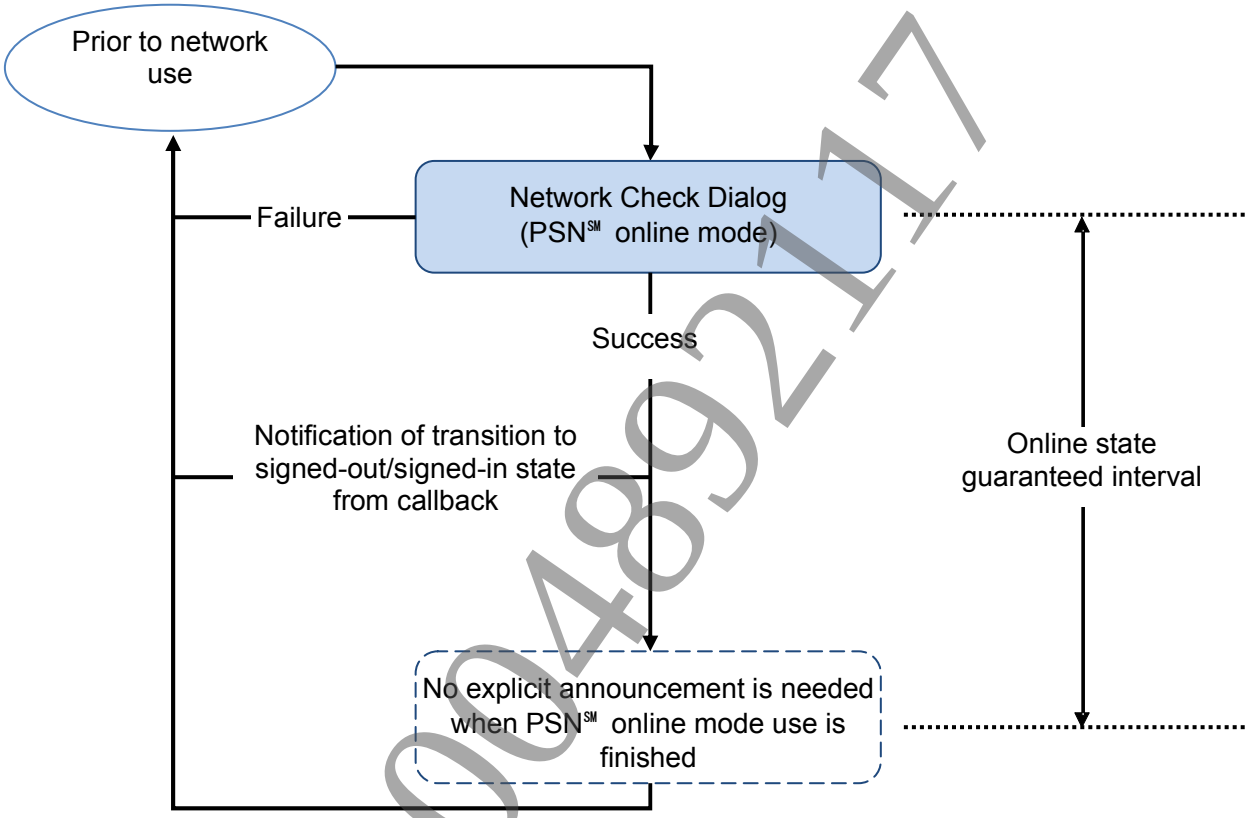
Applications Requiring Online State

Below is a flow diagram of the typical operations of applications that use the NP library that requires online state.

Applications must call Network Check Dialog in advance in PSN℠ online mode.

Also, it is necessary to register a service state callback and to use the callback to look out for transition to signed-out/signed-in state after Network Check Dialog succeeds.

Note that applications can use the NP library that requires online state from the moment in which Network Check Dialog succeeds to the moment in which transition to signed-out/signed-in state occurs.



Applications do not need to perform explicit processing after finishing use of the NP library that requires online state.

6 Other Matters

Effects of Suspending/Resuming Applications

If an application is suspended while in signed-in state, when resumed it will continue in the same signed-in state as before suspension, without the system changing the service state.

If an application is suspended while in online state, it will remain online; however, online status may be left in specific situations; such cases will need to be handled on the game side (for details, refer to the "NP Basic Library Overview" document).

On the other hand, from the point of view of applications, service state transitions may occur due to a variety of causes during suspension, even if the application is suspended while in signed-in state. Therefore, there is no guarantee that the service state will be maintained when the application is resumed.

If a service state transition occurs while the application is suspended, the transition will be notified after resuming, provided that a service state callback function is registered.

Since this does not differ in any respect from the case in which a service state transition occurs while the application is running, there is no need for applications to perform any special processing if suspension/resume occurs.

Causes of Service State Transitions

After an application has transitioned to signed-in state or online state, state transitions may occur due to a variety of causes.

Below are some typical causes of service state transitions.

Transition from Signed-in State/Online State to Signed-out State

- An error has returned from the server when checking server state at intervals of a given duration within the library.
- The settings application has been started up and sign-out has been performed on the UI
- An explicit error has been received from the server during connection in online state (online state only), such as sign-out due to transition to online state while already online.
- The user enters a wrong password or sign-in ID.

Transition from Online State to Signed-in State

- Network disconnection has occurred due to a cause on the PlayStation®Vita side, such as system suspension, and connection with the server has been interrupted.
- Connection with the server has been interrupted due to a cause on the network side.
- The event queue inside the NP Basic library has overflowed.