Crash Reporting System Overview

PlayStation®Vita Programmer Tool Runtime Library Release 3.50

Table of Contents

1 Crash Reporting System

This document provides an overview of the Crash Reporting System for PlayStation®Vita.

Features of the Crash Reporting System

The Crash Reporting System detects crashes of applications running on PlayStation®Vita, sends data of crashes to the server for analysis, and the accumulated data is made available to developers. Previously, there was no direct way for developers to study crashes occurring on PlayStation®Vita. By using the Crash Reporting System, developers can obtain core files (minidumps) of when PlayStation®Vita crashes.

The Crash Reporting System provides the following features.

Crash Detection and Crash Data Uploads

The Crash Reporting System detects crashes of the application, and then uploads the crash data via the network to the server.

Viewing Statistics and Obtaining Crash Data

The Crash Reporting System allows the developer to view statistics of the crash data accumulated on the server and to obtain individual crash data in the core file format.

The Crash Reporting System does not prevent crashes or provide ways to recover from crashes. Nor does it provide data for end user support, such as crash data associated with a particular end user. Note that applications that use the Crash Reporting System are not exempt from any SCE QA tests or requirements, and are not, for example, granted leeway for crashes.

The purpose of the Crash Reporting System is to further improve the quality of applications by providing a method of early detection (and possible resolution) of any problems that may have slipped undetected into the consumer market despite QA testing. A game developer can access crash data of the self-developed application via a web browser and analyze or fix problems based on the collected crash data.

This document first describes the components and behavior of the Crash Reporting System, and the workflow for using the system. Next, the document provides an overview of using the Crash Reporting Server where crash data is accumulated.

Reference Materials

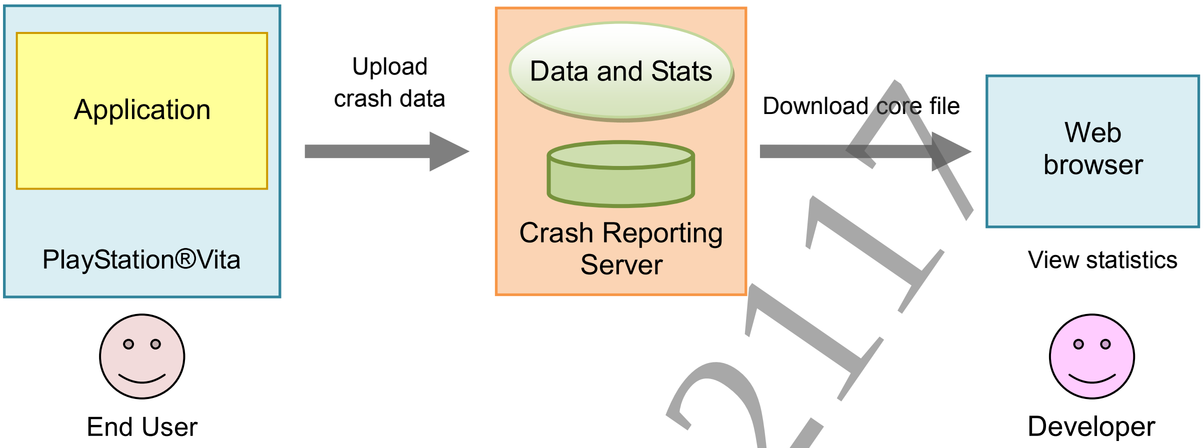
- Core Dump Overview, Coredump Library Overview, Coredump Library Reference
  Core files (minidumps) are sent to the Crash Report System. For core dump and details on the library, refer to the above documents.
- Crash Reporting System web help
  Statistics of crash data can be viewed and crash data can be downloaded via the web services available on the Crash Reporting Server. Information of these web services can be found in this web help.

2 System Overview

Components of the Crash Reporting System

Figure 1 shows the components of the Crash Reporting System.

Figure 1 Crash Reporting System



End Users and Developers

The term "end user" refers to the end user of the application on PlayStation®Vita. The "developer" refers to an application developer who uses the Crash Reporting System.

PlayStation®Vita

It refers to the PlayStation®Vita retail unit available to end users. Note that the term "PlayStation®Vita" does not include the Development Kit and Testing Kit used by developers.

Crash Reporting Server

It is the heart of the Crash Reporting System and comprises a group of servers managed and run by SCE. It has a configuration feature for managing all the titles that use the Crash Reporting System, a data feature for receiving and accumulating crash data sent from PlayStation®Vita, a statistics feature for running analyses of accumulated crash data, and web service features for the developer to view statistics online and to download crash data in the core file format.

System Response to a Crash

Crash Detection and Crash Data Saves

It is possible to detect crashes not only on the Development Kit and Testing Kit but also on PlayStation®Vita. However, only the crashes caused by exceptions can be detected, which means that deadlocks, which are not recognized by the hardware as exceptions, cannot be detected. For more information, refer to the "Core Dump Overview" document ".

When a crash is detected, the system stops the application, collects information regarding the crash, and saves the data to a system-managed directory. The data collected at this time includes information of the exception that occurred, processes, registers and memory, threads and synchronous objects.

Because application processes are stopped by the system when a crash is detected, it will not be possible for the end user to continue the application.

Crash Data Uploads

The system software displays an onscreen message to the end user indicating that a problem occurred during the application runtime and asking whether to report this problem to SCE. Crash data is uploaded to the server only when the end user agrees to send the data. Then, regardless of whether the data is uploaded to the server, the file with the crash data is deleted from the PlayStation®Vita.

Note
In order to avoid overload, the Crash Reporting Server only receives data for up to 100 crash instances per minute per title ID. If this is exceeded, sending will not be performed even if the end user agrees to send the data.

Crash data from the consumer market can thus be accumulated and tabulated on the Crash Reporting Server.

Viewing and Obtaining Crash Data

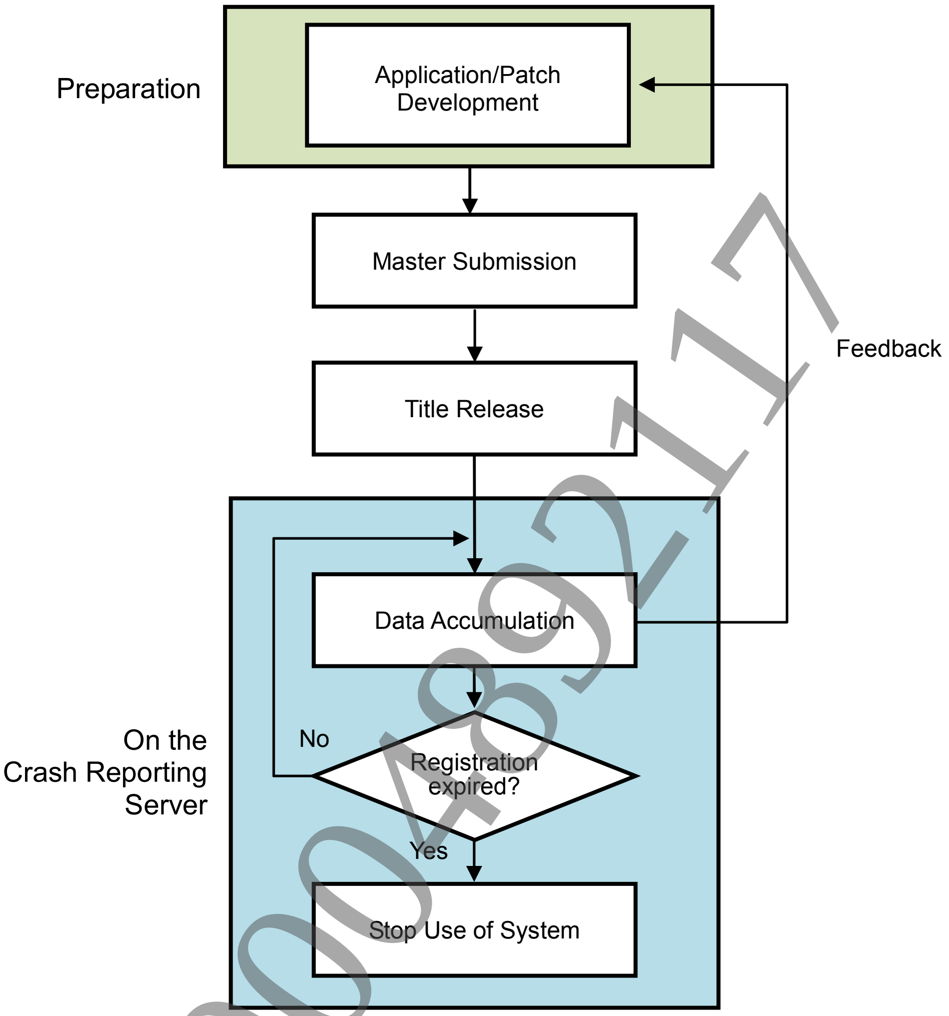
The Crash Reporting Server provides web services that allow the developer to view and obtain crash data. By accessing the Crash Reporting Server from the PlayStation®Vita Developer Network website (https://psvita.scedev.net/), the developer will be able to view statistics of crash data (such as the number of crashes that occurred), and also to download crash data from the server in the form of a core file. In the same manner as the core file that can be obtained during application development, the downloaded core file can be used by the game developer to check contents and to analyze or fix problems.

Access rights to the Crash Reporting Server are managed per title.

Development Workflow

Figure 2 shows the workflow when using the Crash Reporting System.

Figure 2 Development Workflow



Because the Crash Reporting System is enabled by default for all titles, there is no special preparation required for using it.

Follow the standard procedure of submitting the title master for QA testing and subsequent release.

After the title is released, information of crashes that occurred in the consumer market will be accumulated on the Crash Reporting Server. The developer will be able to access the Crash Reporting Server to obtain this information and use it for patch development or potentially in the development of a new application.

For more information regarding the use of the Crash Reporting Server, refer to Chapter 3 "Using the Crash Reporting Server".

Using the Crash Reporting System on Already-existingTitles

The Crash Reporting System can also be used on already-existing titles. As with new titles, there is no preparation necessary.

Validity Period on the Crash Reporting System

The Crash Reporting System can be used for ten years after the first crash data is obtained on the Crash Reporting Server. After this validity period, subsequent crash data will not be collected from the consumer market.

If a patch is released during the validity period, the validity period will be automatically extended for ten years from the date the crash data is first obtained for the version with the patch applied.

Resuming Usage of the Crash Reporting System

It is possible for a title with an expired validity period to resume collecting crash reports. Carry out processing to enable the Crash Reporting System from **Title mgmt/PSN℠ services > My Titles** menu of the PlayStation®Vita Developer Network website. Note that owner privilege for the applicable title is required for this processing.

3 Using the Crash Reporting Server

This chapter describes how to use the Crash Reporting Server.

Access to the Crash Reporting Server

The Crash Reporting Server can be accessed by clicking on the links in the **My Titles** menu under **Title mgmt/PSN℠ services** in the PlayStation®Vita Developer Network website. Access is also possible by clicking on the **View crash reports for these products** button after selecting the product. If you do not have the privilege to view crash data, contact the person with an owner privilege for the applicable title.

Accesses to the Crash Reporting Server require authentication using a PlayStation®Vita Developer Network account. Although it is usually possible to transition directly from the PlayStation®Vita Developer Network website to the link destination, if a log in screen is displayed, Use the PlayStation®Vita Developer Network account name and password to log in.

Scope of Viewable Crash Data

Access rights to the Crash Reporting Server are given to PlayStation®Vita Developer Network accounts associated with a registered title ID. A developer that has access rights to crash data of a certain title only has access to data of that title. Crash data of other titles (even if they are released by the same publisher) will not be visible, unless the developer is on the access lists of those titles.

Note that the Crash Reporting System uses the title ID for identification and thus distinguishes between regular versions, localized versions, and limited editions of the same title.

Crash Data Views

Crash data can be viewed in the following views. For more information regarding operational procedure, refer to the Crash Reporting System web help.

- By Frequency view
- Most Recent view
- Callstack Explorer view
- Crash Instance view

By Frequency view

When the **Crashes** menu > **By Frequency** is selected, it will be possible to sort crash data according to the number of crash instances for a certain address, crash cause, or other specified condition, and it will be possible to view in a ranking format. When the number of crash instances is clicked, it will be possible to display a list of the corresponding crash data.

Most Recent view

When the **Crashes** menu > **Most Recent** is selected, it will be possible to view crash data in order starting with the most recent upload date/time. In this view, the title ID, application version, system software version, crash cause, date/time of upload to the server, instruction pointer, return address, comments, etc. can be referenced for each crash report.

Callstack Explorer view

When the **Crashes** menu > **Callstack Explorer** is selected, it will be possible to view the number of instances displayed for the respective call stack content.

The **By Frequency** view will be displayed at the top of the screen and the crashed items will be displayed. Crash data that has the same call stack will be collected for each item, and when the **+** on the left is clicked, the number of instances will be displayed, and it will be possible to trace the call stack content.

When a crashed item is clicked, crash data for that call stack will be displayed in the order occurred in the **Most Recent** view at the bottom of the screen.

Crash Instance view

When clicking on crash data in the **Most Recent** view or **Callstack Explorer** view, an outline of information on the crash can be viewed.

Note
Crash Instance view cannot be viewed for crash data from system software version 3.15 or earlier.

Symbol Display

By uploading symbol data to the Crash Reporting Server, the instruction address, return address, and call stack can be displayed using symbols upon viewing crash data. This is done by the Crash Reporting Server checking the debug fingerprint included in the crash data and examining the symbol data file with the same debug fingerprint.

Formats of the symbol data file that can be uploaded to the Crash Reporting Server are as follows.

- ELF
- FSELF
- PRX
- One or multiple ELF/FSELF/PRX files compressed as a ZIP file

Symbol data files having the same filename can each be uploaded as long as their debug fingerprints differ. This is to support crash data from multiple versions of the same application.

Symbol Conversion Pre-check

A check can be made to ensure that crash data from the consumer market are correctly converted according to the uploaded symbol data. This procedure entails the following steps.

(1) Upload a symbol data file to the Crash Reporting Server
(2) Obtain core dump from the Development Kit or Testing Kit
(3) Upload the obtained core dump file to the Crash Reporting Server

If the symbol data file corresponding to the core dump file is uploaded to the Crash Reporting Server, the instruction address, return address and call stack will be displayed using symbols.

Obtaining the Core File for Debugging

When marking the checkbox and clicking on the download button in the **By Frequency** view, **Most Recent** view, or **Callstack Explorer** view, or when clicking on the download button in the **Crash Instance** view, the entire crash data available for that crash instance can be downloaded in a core file. Like the core file output by the core dump feature on the Development Kit and Testing Kit, this downloaded core file can be loaded in Visual Studio and used for diagnosing the crash cause.

> **Note**
> It is not possible to obtain core files for crash data from system software version 3.15 or earlier.

Core files are downloaded as zip format files that include the following content. The *<crash ID>* shown here is an ID automatically allocated by the Crash Reporting Server, and *<A>* is the time elapsed (seconds) from the UNIX epoch (00:00:00 UTC, 1 January 1970) to the time of the crash.

Zip Filename

*<crash ID>*_1.zip

Content

```
/<crash ID>_<server reception date and time>_<title ID>/
   <title ID>_<A>.psp2dmp          (core file)
   <title ID>_<A>-comment.txt      (comment file)
```

For more information regarding downloading the core file from the Crash Reporting Server, refer to the Crash Reporting System web help.

For information regarding the use of core files in Visual Studio, refer to the "Debugger User's Guide" document (Debugger-Users_Guide_e.pdf) in the Debugger package.

Data Limits on Saved Crash Data

Up to 1 GByte or 10000 entries of crash data will be saved for a title. If multiple crash data has already been uploaded, and either the disc size limit or limit on the number of entries will be exceeded, data will be deleted starting from the older entries. Crash data for which six months has passed since its upload will also be deleted.

Restrictions

The following restrictions exist for the Crash Reporting Server specifications.

- **Crash Instance** view cannot be viewed for crash information from system software 3.15 or earlier.
- Core file downloading cannot be performed for crash data from system software 3.15 or earlier.