Debugging Station
Software Setup Guide

Table of Contents

1 About This Document ... 3
Reference Materials ... 3
2 Differences between DECR-1000 and the Debugging Station ... 4
3 Debug Environment ... 5
Overview of the Hardware Configuration ... 5
Overview of the Software Configuration ... 5
4 Network Configuration of the Debugging Station ... 7
5 Debug Environment Setup ... 8
Debugging Station Settings ... 8
Host PC Settings ... 8
6 Application Execution in the Debug Environment ... 9
Target Application Startup ... 9
7 Target Application Processing ... 10
File Access on the Host PC ... 10
Memory ... 10
Network ... 10
8 Remote Execution Environment ... 11
Debugging Station Settings ... 11
Additional Settings of the ProDG Target Manager for PlayStation®3 ... 11
Application Execution in the Remote Execution Environment ... 11
9 Final Test Environment ... 12
Hardware Configuration ... 12
System Software Settings ... 12
Application Execution ... 12
10 FAQ ... 13
When the IP Address for Debugging is Unknown ... 13
When the IP Address Used by the Application is Unknown ... 13
When the Debugging Station Cannot Be Connected to ... 13
When ProDG Target Manager for PlayStation®3 Cannot Connect in Dual Settings ... 13
Displaying the SDK Version of the Debugging Station ... 13
Switching the Debugging Station On from a Remote Device/Machine ... 13
When the Debugging Station Does Not Boot Correctly ... 13
Format of the USB Mass Storage to Be Used for Core Dump ... 13
Using the BD Emulator Function with a USB Mass Storage ... 14

1 About This Document

This document explains the three setup procedures of the Debugging Station that are differentiated according to how the Debugging Station is to be used. By performing the appropriate setup, the Debugging Station can be used in the following three ways.

- As a debug environment (start up the application on the host PC, debug functions on)
- As a remote execution environment (start up the application on the host PC, debug functions off)
- As a final test environment (start up the application on BD-R/RE, debug functions off)

This document first explains the differences between the Reference Tool and the Debugging Station. (The Reference Tool models DECR-1000 and DECR-1000A are collectively referred to as "DECR-1000" in this document.) Following, the setup procedures for the above two usage of the Debugging Station are explained, with emphasis on the setup procedure for using the Debugging Station as a debug environment.

Reference Materials

Reference Tool Software Setup Guide

Refer to this document for details on how to execute the programs. This document also provides an introduction to system software updates. Refer to this document on the various methods available for performing an update, such as, using a storage media, using an HTTP server, or updating from a host PC.

System Software Overview

Refer to this document for settings to be made on the system software screen of the Debugging Station, as well as for an explanation on the relationship between these settings and the operation of the application.

Reference System Supplement

Refer to this document for information on how to use the BD emulator using the USB mass storage.

2 Differences between DECR-1000 and the Debugging Station

The differences between DECR-1000 and the Debugging Station are as follows.

	DECR-1000		Debugging Station	
	Development Mode	Release Mode	Development Mode	Release Mode
Startup procedure	Debugger mode, system software mode, or release mode*1		Debugger mode, system software mode, or release mode*2	
File access on the host PC	Supported	Not supported*3	Supported	Not supported*3
Application TTY input/output	Supported			Not supported
Cell OS (Lv-2) TTY output	Supported		Supported	Not supported
Functions to debug an application	Supported	See *4	See *5	Not supported
Performance monitoring functions (libperf, libprof, Tuner for PlayStation®3)	Supported	See *4	Not supported	
Use of GCM HUD or libgcm_pm	Supported		Supported*6	Not supported
Memory size that can be used by the application	Tool mode or console mode		Console mode*7	Console mode
Exception handler functions	Enable or disable			
Core dump functions	Enable or disable			
BD emulator functions	Supported (internal HDD or USB mass storage)		Supported (USB mass storage)	
Network configuration	Single settings or Dual settings*8			
DECI3 use from the application	Supported		Supported*9	Not supported
Others (Restrictions)			Uses Port1000*10	

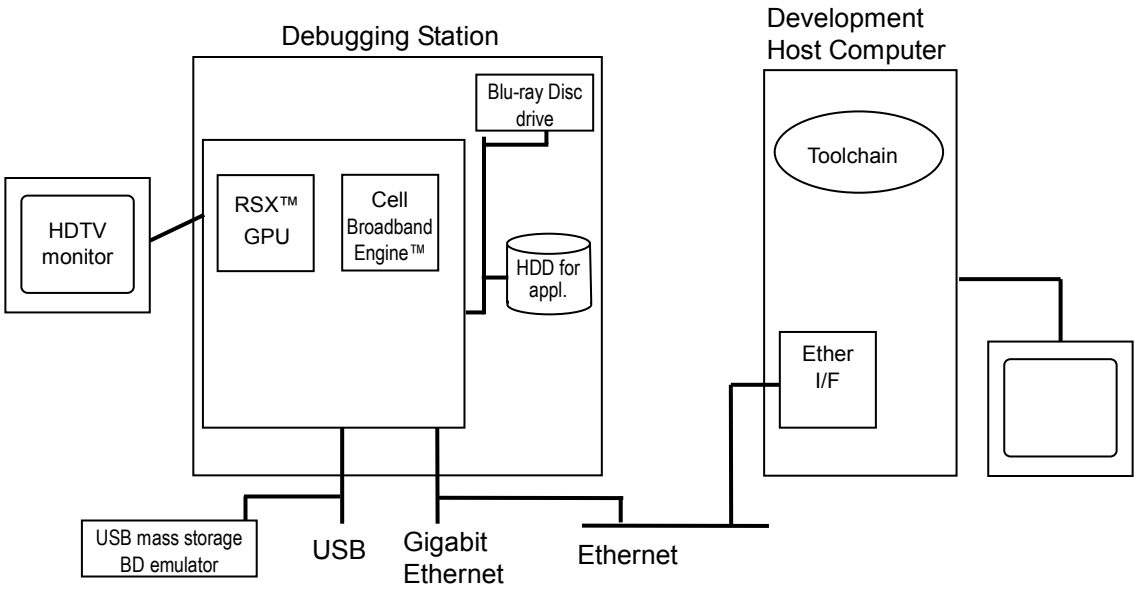
*1 On DECR-1000, the release mode and the system software mode are the same.
*2 On the Debugging Station, the release mode is equivalent to the system software mode without the debug functions.
*3 Instead of HOSTFS, DUMMYFS is mounted and the application will be unable to access files on the host PC.
*4 Possible to attach the debugger to the target program.
*5 Debug functions can be used in the debugger mode or the system software mode. Debug functions cannot be used in the release mode.
*6 Supported from SDK 2.1.0.
*7 In the debugger mode and the system software mode, memory that can be used will be 2MB less. In the release, the size of memory that can be used is the same as the console mode.
*8 Supported from SDK 2.5.0. The default configuration is Single.
*9 Use of DECI3 from the application is limited to one protocol. The size that can be specified for a data exchange is 4096 bytes.
*10 Because Port1000 is always opened, when connecting from the host PC, it is possible to reset the Debugging Station, change the startup procedure, or to change the release check mode.

3 Debug Environment

Overview of the Hardware Configuration

The hardware configuration of the debug environment realized using the Debugging Station is as follows.

Figure 1 Hardware Configuration of the Debug Environment

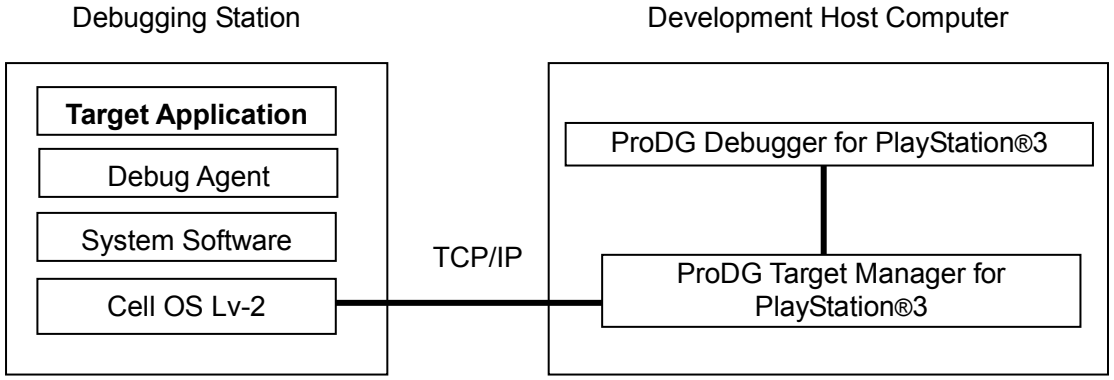


The main difference from DECR-1000 is that the network interface for debugging, and the communication processor that are used for communicating with the host PC are not implemented on the Debugging Station. Because of this, the Gigabit Ethernet for the application is used to communicate with the host PC.

Overview of the Software Configuration

The software configuration of the debug environment realized using the Debugging Station is as follows.

Figure 2 Software Configuration of the Debug Environment



When using the Debugging Station for debugging, use the ProDG Target Manager for PlayStation®3 and the ProDG Debugger for PlayStation®3 in the same manner as when connecting to DECR-1000. Only the ProDG Target Manager for PlayStation®3 is required to execute the target application. The subsequent

sections explain how to use the ProDG Target Manager for PlayStation®3. Refer to the help file for an explanation on how to use the ProDG Debugger for PlayStation®3.

4 Network Configuration of the Debugging Station

From SDK 2.5.0, the network for debugging can be configured to either Single or Dual settings. The Single configuration corresponds to the network configuration used in SDKs earlier than 2.5.0, in which the network settings of the system software are used both in the application and for debugging.

The Dual configuration, which was added in SDK 2.5.0, uses a wireless network configured on the system software for the application and a wired network for debugging. The application and debugging networks are assigned different IP addresses, so the wireless network and the network for debugging can be kept separate. In the Dual configuration, place the host PC and the Debugging Station on the same segment. However, if network settings are set to "wired" in the system software, the behavior will be the same as the Single configuration even if Dual is specified.

<table>
<tr><th>Network Configuration for Debugging</th><th>Network Settings of the System Software</th><th colspan="2">Network Settings of the Application</th><th>Network Settings for Debugging</th></tr>
<tr><td rowspan="2">Single settings</td><td>Wireless</td><td colspan="3">Wireless</td></tr>
<tr><td>Wired</td><td colspan="3">Wired</td></tr>
<tr><td rowspan="2">Dual settings</td><td>Wireless</td><td>Wireless</td><td colspan="2">Wired</td></tr>
<tr><td>Wired</td><td colspan="3">Wired (same handling as Single)</td></tr>
</table>

Switch the network configuration for debugging by using “Debug Settings” of the system software's “Settings” column or by switching the boot parameter after making a connection with ProDG Target Manager for PlayStation®3. When using the Dual configuration, specify the network settings for debugging via “Connection Settings for Debug (Dual Settings)” in ”Debug Settings” of the system software.

5 Debug Environment Setup

Debugging Station Settings

Connect the machines as shown in Figure 1. Start up the Debugging Station and make the following settings on the “Settings” column of the system software screen. For operation guidance and an explanation on other configuration items, refer to the “System Software Overview” as necessary.

Network Settings

Make appropriate network settings, according to your LAN environment, in “Network Settings”.

Boot Mode

Set “Boot Mode” to “Debugger Mode” in “Debug Settings”. This setting is necessary to start up the application from the host PC.

Release Check Mode

Change “Release Check Mode” to “Development Mode” in “Debug Settings”. “Release Mode” is a mode for running the application in an environment equivalent to the PlayStation®3, to check its operation; the application cannot access the host PC in this mode.

Game Output Resolution (Debugger)

Set the TV display resolution to “Game Output Resolution (Debugger)” in “Debug Settings”.

Game Type (Debugger)

Set the “Game Type (Debugger)”, in “Debug Settings”, to “Disc Boot Game” for a disc boot game, and to “HDD Boot Game” for an HDD boot game. This changes the operation that takes place upon disc ejection when the target application is executed from the debugger.

Wake On LAN

When “On” is set to “Wake On LAN” in “Debug Settings”, the debugger can be switched On from the host PC using the Magic Packet.

Host PC Settings

Install software for development

Download and install the SDK Runtime Library package and the ProDG for PlayStation®3 package from the PlayStation®3 Developer Network website onto your host PC.

Create a Target on the ProDG Target Manager for PlayStation®3

(1) Click on “Add Target” from the “File” menu.

(2) Select “Debugging Station (DECHA00A)” for the target type, enter the “Name” field for identifying the target, and click “Next”.

(3) Input the IP address of the target Debugging Station in “IP Address”. Leave the “Port” field as is (1000), and click “Next”.

(4) If you do not find any problems with the setting for the target to be created, click “Finish”.

6 Application Execution in the Debug Environment

Target Application Startup

This section explains how to execute the target application using the ProDG Target Manager for PlayStation®3.

(1) Check that the Debugging Station to be used is turned On.

(2) Click on the target Debugging Station (created in the "Create a Target on the ProDG Target Manager for PlayStation®3" section).

(3) Click "Connect" from the "Target" menu.

(4) Click "Load & Run Executable..." from the "Target" menu. The "Load Module" dialog will be displayed. Select the target application file and click "Open".

The above procedure starts the execution of the target application.

7 Target Application Processing

File Access on the Host PC

In the same way as with DECR-1000, the target application can access a file on the host PC in a using the mount points `SYS_APP_HOME` and `SYS_HOST_ROOT`.

Note
When the ProDG Target Manager for PlayStation®3 is not connected to the Debugging Station, files on the host PC cannot be accessed in the same manner as in the Release mode.

Memory

The size of memory that the target application can use when debug functions are used, is 2MB less than when the debug functions are not used (in the final test environment).

Network

When the target application uses the network, there are several points that must be noted.

Unusable port

Because the port is being used for communication with the host PC, TCP port number 1000 cannot be used by the target application.

Processing load for file transfers

While performing file transfer with the host PC, the protocol stack on the PPU is used, whereby the processing load of the PPU will increase.

Insertion and removal of the network cable

When using the DCHP, if the network cable is removed and inserted again, port number 1000 will close and the ProDG Target Manager for PlayStation®3 will be unable to connect to the Debugging Station. Disable “Internet Connection” in “Network Settings” of the system software's “Settings” column once, and then enable it again. This switch will restore the connection.

DECI3 communication

When “Development Mode” in “Debug Settings” of the system software's “Settings” column is set to the “Release Check Mode”, one user-defined protocol can be used. However, the buffer size of `sys_deci3_create_event_path()` and the data send of `sys_deci3_send()` are limited to 4096 bytes.

8 Remote Execution Environment

In the same manner as the debug environment, an application on the host PC can be executed using the ProDG Target Manager for PlayStation®3 in the remote execution environment. The only difference from the debug environment is that the boot mode of the remote execution environment should be the same as the final test environment – this enables the target application to run on the same memory size as the final test environment. Note, however, that the debugger cannot be used in this environment and there are limitations on the functions of the ProDG Target Manager for PlayStation®3 as well.

Functional Limitations of the ProDG Target Manager for PlayStation®3

Function	Operation
TTY	Supported
File Serving	Supported
Module List	Not supported
File Sync	Not supported
VRAM Viewer	Not supported
Resources	Not supported

Debugging Station Settings

Perform setup in the same manner as the debug environment and make sure the target application runs normally. Having done that, start up the Debugging Station and make the following settings from the "Settings" column of the system software screen.

Boot Mode

Set "Boot Mode" to "Release Mode" in "Debug Settings".

Additional Settings of the ProDG Target Manager for PlayStation®3

To start up the target application in the remote execution environment, enable the mapping of PARAM.SFO from "Load Options" of "Target Properties" of the ProDG Target Manager for PlayStation®3 and read PARAM.SFO. If mapping is not enabled, \app_home\PS3_GAME\PARAM.SFO will be read.

Application Execution in the Remote Execution Environment

Refer to the procedure described under Chapter 6 "Application Execution in the Debug Environment".

9 Final Test Environment

This chapter provides an overview on how to set up the final test environment, where the application's operation can be tested in an environment equivalent to the actual PlayStation®3; and how to execute the application in this final test environment.

Hardware Configuration

Connect the TV, audio device, controller, etc., to the Debugging Station. The host PC is not used for the final test environment.

System Software Settings

When testing the operation of the application, make the following settings.

Debug Settings	Value
Boot Mode	Release Mode
Release Check Mode	Release Mode
Core Dump	On or Off
Exception Handler	On or Off
Blu-ray Disc Access	BD Drive

Boot mode

Set to "Release Mode" to disable the debug functions.

Release check mode

Switch to "Release Mode" in order to restrict access to the host PC.

Core dump

Write to /app_home is not possible when "Release Check Mode" is set to "Release Mode". Make setting to "On (Save to /dev_usb)", "On (Save to /dev_ms)" or "Off".

Exception handler

Setting can be either "On" or "Off".

Blu-ray Disc access

Set to "BD Drive".

Application Execution

If the application is a disc boot game, create a disc image using the Disc Image Generator for PlayStation®3, and create a boot disc by burning a BD-R/RE media. Set the boot disc on the Debugging Station, and select it from the "Game" column of the system software to start it up.

If the application is an HDD boot game, create an install package using the Disc Image Generator for PlayStation®3 and save it on a storage media such as the Memory Stick™. Set this storage media to the Debugging Station, and install the package onto the internal HDD from "Install Package Files" of the "Game" column of the system software. Once installed, an icon of the application will appear in the "Game" column. Select this icon and start up the application.

10 FAQ

When the IP Address for Debugging is Unknown

When switching the power of the Debugging Station ON while the “Boot Mode” in “Debug Settings” of the system software is set to “Debugger Mode”, the network settings of the connection target will be displayed, just like on DECR-1000.

When the IP Address Used by the Application is Unknown

When switching the power of the Debugging Station ON, press the power switch for at least 5 seconds (this is the same procedure as for initializing the resolution setting). This will start up the system software. Check the IP address of the Debugging Station from the system software.

When the Debugging Station Cannot Be Connected to

Because the number of clients that can connect to Port1000 is limited to 1, if another PC is already connected, connection to the Debugging Station is not possible. Check the IP address of the connected PC displayed by turning on the power of the Debugging Station (pressing the power switch) with the system software Debug Settings > Boot Mode set to “Debugger Mode”.

When ProDG Target Manager for PlayStation®3 Cannot Connect in Dual Settings

Check the system software Debug Settings > Connection Status List for Debug. The IP address of the wired network should be displayed. If instead the IP address of the wireless network is displayed, select “Yes” in Debug Settings > Initialize Boot Parameters, then set Debug Settings > Network Settings for Debug to “Dual Settings” and reboot the Debugging Station.

Displaying the SDK Version of the Debugging Station

Press the power switch and turn on the power of the Debugging Station with the system software Debug Settings > Boot Mode set to “Debugger Mode”. The SDK version will be displayed.

Switching the Debugging Station On from a Remote Device/Machine

The Debugging Station can be switched On by pressing the PS button of the wireless controller. In addition, the Wake On LAN feature using the Magic Packet is supported from SDK2.2.0.

When the Debugging Station Does Not Boot Correctly

Try booting in safe mode. Safe mode has a variety of features that help the Debugging Station boot correctly. For more information regarding safe mode, refer to the document “Reference Tool Software Setup Guide“. Safe mode boots are supported from system software 2.60 onwards.

Format of the USB Mass Storage to Be Used for Core Dump

The USB mass storage to be used for a core dump output should be formatted in FAT32 or FAT16 beforehand.

Using the BD Emulator Function with a USB Mass Storage

Unlike DECR-1000, the Debugging Station does not have an HDD for the BD emulator. Thus, in order to use BD emulator functions on the Debugging Station, it is necessary to use a USB mass storage as the BD emulator storage. The procedure is described below. (It is assumed that the disc image file for the BD emulator has already been created by using Disc Image Generator for PlayStation®3.)

(1) Format the USB mass storage for the BD emulator. To format the USB mass storage, use the BD Emulator HDD Utility provided in Disc Image Generator for PlayStation®3. Start up Disc Image Generator for PlayStation®3, and select "BD Emulator HDD Utility" from the Command menu.

(2) In the BD Emulator HDD Utility window, the USB mass storage devices currently connected to the PC will be displayed. Select the USB mass storage to format, and click the "Format HDD for BD Emulator" button. A confirmation message will appear twice regarding this formatting request. Check that the name of the selected device is correct, and select "Yes". Checking the device name is crucial, because it is possible for the HDD of the PC to be formatted if it is selected by mistake.

(3) After formatting the USB mass storage, select it and press the "Write Image" button. Write the disc image for the BD emulator to the USB mass storage.

(4) Remove the USB mass storage from the PC, and connect the USB mass storage to the BD emulator port of the Debugging Station. The port for the BD emulator depends on the model of the Debugging Station. Refer to the section "Connection Port for the USB Mass Storage" in the document "Reference System Supplement" for more information.

(5) Boot the Debugging Station and go to "Debug Settings" of the system software's "Settings" column. Change the setting "Blu-ray Disc Access" to "BD Emulator (USB)". This setting will be enabled when the Debugging Station is restarted.

(6) After the reboot, the disc image for the BD emulator written to the USB mass storage will be recognized as a game disc, and a disc icon will be displayed in the "Game" column of the system software. If there is no disc image for the BD emulator written to the USB mass storage, or if the disc image is corrupted, the disc icon will not appear.