Reference Tool (DECR-1400J/DECR-1400A) Software Setup Guide

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1 About This Document

This document describes how to set up your debug environment using the Reference Tool DECR-1400J/DECR-1400A (DECR-1400 hereafter).

First, characteristics of the DECR-1400 features will be summarized in comparison to the Reference Tool DECR-1000/DECR-1000A. Following, an overview will be given of the debug environment using DECR-1400, and the procedure for setting up the network configuration and debug environment will be explained, as well as the main points regarding how to execute the target application.

Reference Materials

Reference Tool Software Setup Guide

This document explains how to set up the debug environment using Reference Tool DECR-1000/DECR-1000A. Refer to this document for instructions on how to install the software for development (SDK), how to update the system software, and how to execute the target application, as these procedures are the same for DECR-1400.

System Software Overview

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

Reference System Supplement

Refer to this document for information on how to use the BD emulator using the USB mass storage (because this document is about the Reference Tool DECR-1000/DECR-1000A, some contents may not apply to DECR-1400).

2 Characteristics of DECR-1400 Features

The functional differences between Reference Tool DECR-1000/DECR-1000A and DECR-1400 are as follows.

	DECR-1000/DECR-1000A		DECR-1400J/DECR-1400A	
	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*1	
File access on the host PC	Supported	Not supported*2	Supported	Not supported*2
Application TTY input/output	Supported			Not supported
Cell OS Lv-2 TTY output	Supported		Supported	Not supported
Functions to debug an application	Supported	See *3	Supported	Not supported
Performance monitoring functions (libperf, libprof, Tuner for PlayStation®3)	Supported	See *2	See *4	Not supported
Use of GCM HUD or libgcm_pm	Supported		Supported	Not supported
Memory size that can be used by the application	Tool mode or 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*5			
DECI3 use from the application	Supported		Supported*6	Not supported
Others (Restrictions)			Uses port 1000 *7	

*1 On the Reference Tool, the release mode and the system software mode are the same

*2 Instead of HOSTFS, DUMMYFS is mounted and the application will be unable to access files on the host PC

*3 Possible to attach the debugger to the target program

*4 The following functions of the Tuner for PlayStation®3 cannot be used

- SPU
  - PC sampling
  - Performance counters
  - Bookmark
  - Raw SPU support
- RSX™
  - Signal trace
  - User events

*5 The default is Single settings

*6 Use of DECI3 from the application is limited to one protocol. The size that can be specified for a data exchange is 65535 bytes.

*7 Because Port1000 is always opened, when connecting from the host PC, it is possible to reset DECR-1400, change the startup procedure, or to change the release check mode.

3 Debug Environment

Overview of the Hardware Configuration

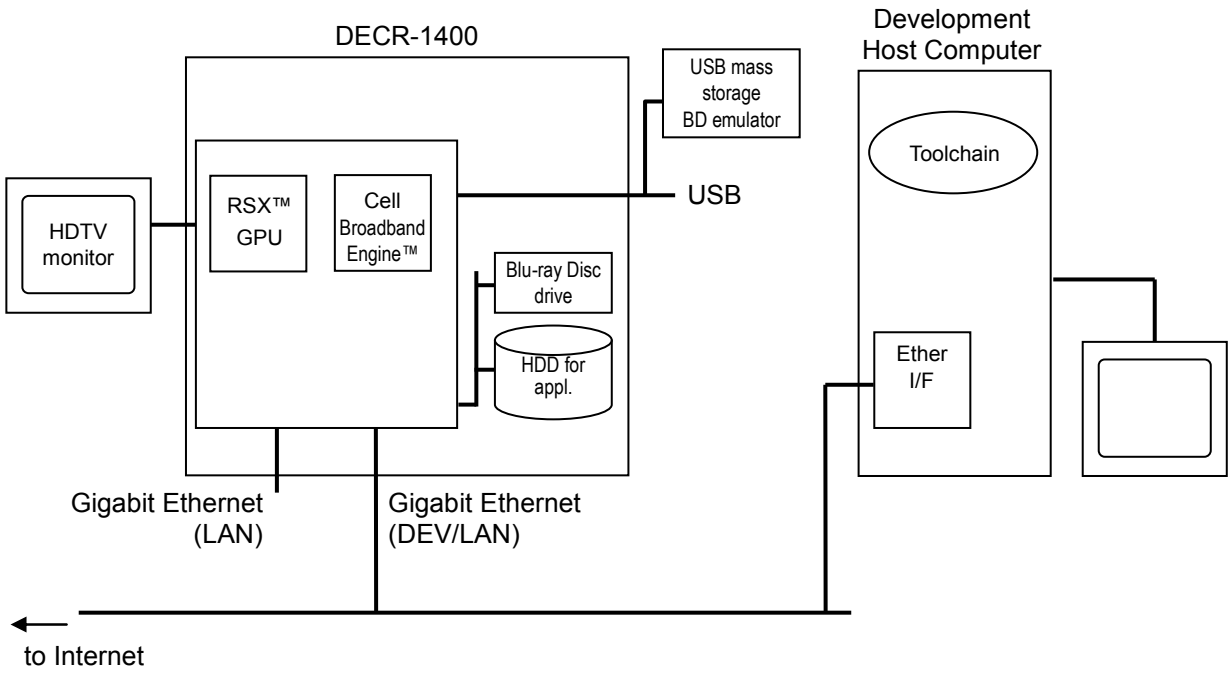
DECR-1400 has two wired LAN ports: Gigabit Ethernet (LAN) and Gigabit Ethernet (DEV/LAN). This enables the following two types of network configurations.

- Single settings (configuration where the same network settings are used in the application and for debugging)
- Dual settings (configuration where the network configuration for the application is separate from the network configuration for debugging)

Single Settings

In Single settings, the same network settings of the system software are used both in the application and for debugging. In this case, only the Gigabit Ethernet terminal (DEV/LAN) is used.

Figure 1 Hardware Configuration for Single Settings

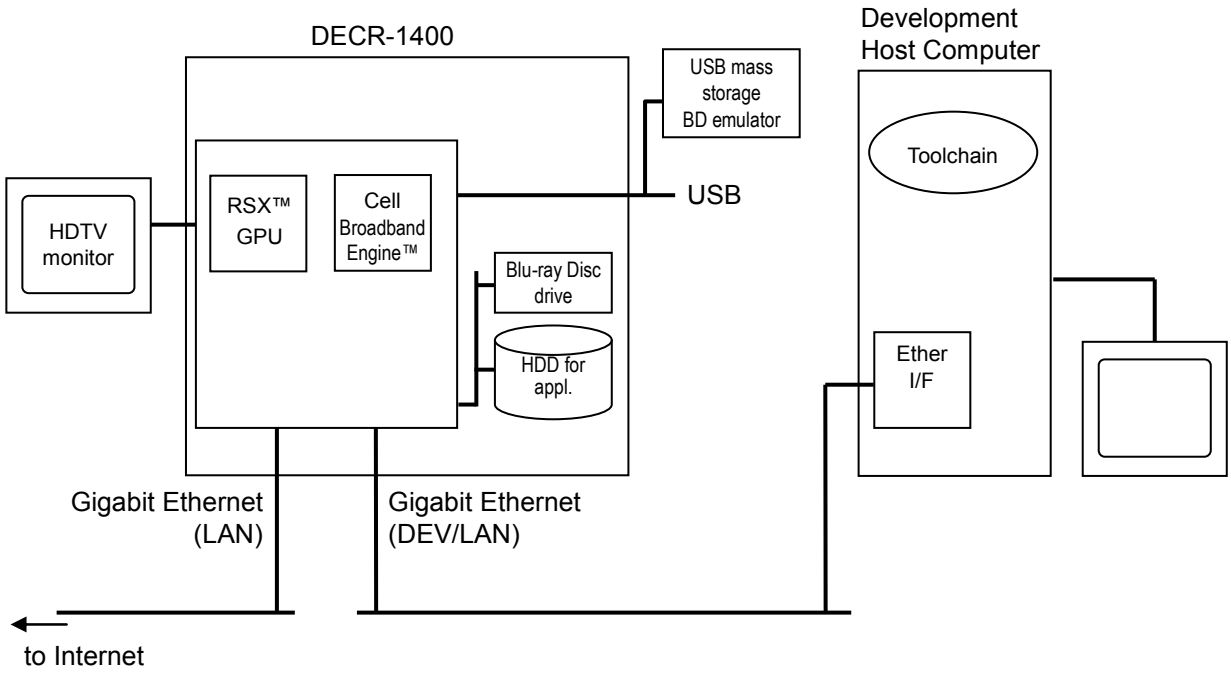


Dual Settings

In Dual settings, different network settings are used for the application and for debugging.

The Gigabit Ethernet terminal (DEV/LAN) is used for debugging, and the Gigabit Ethernet terminal (LAN) is used for the application. Note, however, that because these two Gigabit Ethernet terminals share the same MAC address, they cannot connect to the same network segment.

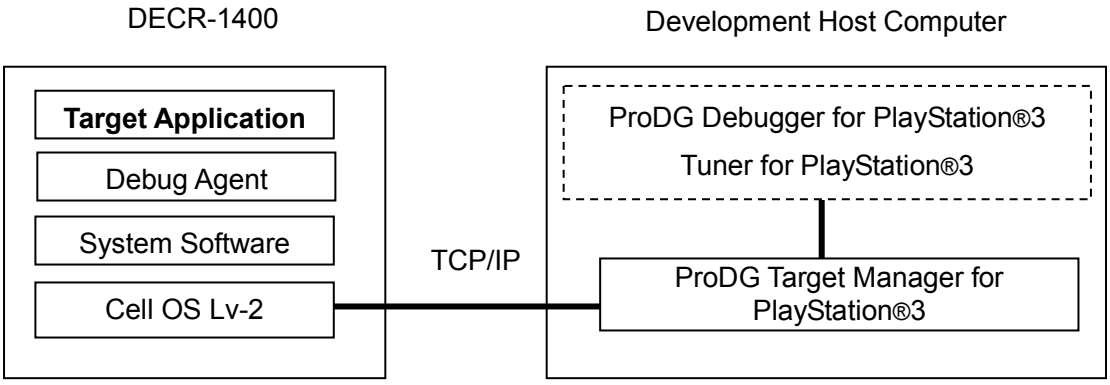
Figure 2 Hardware Configuration for Dual Settings



Overview of the Software Configuration

The software configuration of the debug environment realized using DECR-1400 is as follows.

Figure 3 Software Configuration



To connect to DECR-1400 from your host PC, use the ProDG Target Manager for PlayStation®3 and, if required, the ProDG Debugger for PlayStation®3 or the Tuner for PlayStation®3. 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 files for explanations on how to use the ProDG Debugger for PlayStation®3 and the Tuner for PlayStation®3.

4 Network Settings for DECR-1400

Network Settings for Single Settings

Connect the machines as shown in Figure 1, and start up DECR-1400. Make the following settings from the "Settings" column of the system software screen and reboot.

> **Note**
> If the system software screen is not displayed upon boot, press the power switch of DECR-1400 for at least 5 seconds to switch it on.

Network Settings for Debug

Set the "Network Settings for Debug" of "Debug Settings" to "Single Settings".

Internet Connection

Set the "Internet Connection" of "Network Settings" to "Enable".

Internet Connection Settings

Set the network settings to be commonly used for the application and for debugging in "Internet Connection Settings" of "Network Settings".

Network Settings for Dual Settings

Connect the machines as shown in Figure 2, and start up DECR-1400. Make the following settings from the "Settings" column of the system software screen and reboot.

> **Note**
> If the system software screen is not displayed upon boot, press the power switch of DECR-1400 for at least 5 seconds to switch it on.

Network Settings for Debug

Set the "Network Settings for Debug" of "Debug Settings" to "Dual Settings".

Connection Settings for Debug (Dual Settings)

Make network settings for debugging in "Connection Settings for Debug (Dual Settings)" of "Debug Settings".

Internet Connection

Set "Internet Connection" of "Network Settings" to "Enable".

Internet Connection Settings

Make network settings for the application in "Internet Connection Settings" of "Network Settings".

5 Debug Environment Setup

DECR-1400 Settings

Make the following settings from "Debug Settings" in the "Settings" column of the system software screen.

Boot Mode

Set "Boot Mode" to "Debugger Mode". This setting is necessary to start up the application from the host PC.

Release Check Mode

Set "Release Check Mode" to "Development Mode".

"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 "Game Output Resolution (Debugger)" according to the resolution supported by the TV connected to DECR-1400.

Game Type (Debugger)

Set "Game Type (Debugger)" according to the type of application to develop: "Disc Boot Game" for a disc boot game, and "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 "Wake On LAN" is set "On", the power of DECR-1400 can be switched on from ProDG Target Manager for PlayStation®3.

DECR-1400 Update

As necessary, update the system software of DECR-1400. The update procedure is described in the "Reference Tool Software Setup Guide" document. Note that for DECR-1400, update data for the Reference Tool of SDK 2.6.0 or later must be used.

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.

Details of the procedure are described in the "Reference Tool Software Setup Guide" document.

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

Start up ProDG Target Manager for PlayStation®3 and register the connection-target DECR-1400. Steps are as follows.

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

(2) Select "Reference Tool (DECR-1400J/DECR-1400A)" for the target type, enter the "Name" field for identifying the target, and click "Next".

(3) Input the IP address for debugging of the target DECR-1400 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 DECR-1400 to be used is turned on. If not, connection will not be possible from the ProDG Target Manager for PlayStation®3.

(2) Click on the target DECR-1400 created in the "Create a Target on the ProDG Target Manager for PlayStation®3" section of Chapter 5.

(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

A target application that runs on DECR-1400 can access a file on the host PC using the mount points `SYS_APP_HOME` and `SYS_HOST_ROOT`.

Note
When the ProDG Target Manager for PlayStation®3 is not connected to DECR-1400, and when the "Release Check Mode" is set to "Release Mode", files on the host PC cannot be accessed.

Network

When a target application running on DECR-1400 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 will be used and the processing load of the PPU will increase.

Insertion and Removal of the Network Cable

When using the DHCP, 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 DECR-1400. 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

One user-defined protocol can be used on DECI3. However, the "Release Check Mode" must be set to "Development Mode" for this. In addition, the buffer size of `sys_deci3_create_event_path()` and the size of data that can be sent by `sys_deci3_send()` are each limited to 65535 bytes or less.

8 FAQ

When the IP Address for Debugging is Unknown

When switching the power of DECR-1400 on while the "Boot Mode" is set to "Debugger Mode", the network settings for debugging will be displayed on the monitor screen.

In the factory default setting (system software version 2.60), if the "Game Output Resolution (Debugger)" of "Debug Settings" does not match the resolution supported by the TV, there will be no display. In this case, switch the power of DECR-1400 on by pressing the power switch for at least 5 seconds. Initialize the resolution setting, and match the settings of the "Game Output Resolution (Debugger)" to the TV's resolution. This restriction does not apply for SDK 2.7.0 and later.

When the IP Address Used by the Application is Unknown

When switching the power of DECR-1400 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 for the application by selecting "Settings" -> "Network Settings" -> "Settings and Connection Status List".

When Being Unable to Connect to DECR-1400

Because the number of clients that can connect to port 1000 is limited to 1, if another PC is already connected, connection to DECR-1400 will not be possible.

To check which PC is connected to DECR-1400, start up the system software and execute the launcher program (if you are using software version 2.60). This will enable you to check the IP address of the connected PC.

The launcher program is provided as a sample ($CELL_SDK\samples\util\debug\launcher). In addition, a readymade DVD boot disc ISO image and NPDRM package are provided in $CELL_SDK\sample_data\util\debug\launcher.

In SDK 2.7.0 and later, the IP address of the connected PC will be displayed when the DECR-1400 is turned on by pressing the power switch while the "Boot Mode" is set to "Debugger Mode".

Checking the System Software Version

The system software version can be checked by selecting "Settings" -> "System Settings" -> "System Information" from the system software screen.

For SDK 2.7.0 and later, the version of the system software will be displayed when the DECR-1400 is turned on by pressing the power switch while the "Boot Mode" is set to "Debugger Mode".

Switching On DECR-1400 from a Remote Machine

DECR-1400 can be switched on by pressing the PS button of the wireless controller. It also supports being turned on from the ProDG Target Manager for PlayStation®3.

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

The USB mass storage is required to use the BD emulator function on DECR-1400. Procedural steps are as follows.

(1) Use the Disc Image Generator for PlayStation®3 to create an image file for the BD emulator.

(2) Start up the Disc Image Generator for PlayStation®3 and select the "BD Emulator HDD Utility" from the Command menu.
The USB mass storage devices connected to the PC will be displayed on the BD Emulator HDD Utility window. Select the USB mass storage to use and click on 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 an HDD of the wrong PC to be formatted if it is selected by mistake.

(3) After selecting the USB mass storage, press the "Write Image" button and write the image file for the BD emulator.

(4) Connect the USB mass storage to the inner most USB port of DECR-1400.

(5) Boot DECR-1400. Go to "Debug Settings" from the system software's "Settings" column. Change "Blu-ray Disc Access" to "BD Emulator (USB)", and reboot.

(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.