User Guide

ProDG for PlayStation®2

Target Manager

SN Systems Ltd
Version 3.0
November 2002

ProDGPS2_UG(TM)-E / User Guide to ProDG for PlayStation 2 Target Manager / November 2002

Document change control

Ver.	Date	Changes
3.0	Nov. 2002	Released with ProDG for PlayStation 2 v3.0. Amended Load & Run ELF File and Load & Run IRX File dialogs in Ch. 2.

Contents

Chapter 1: Introduction 1

Overview of ProDG for PlayStation 2 1
Upgrading to ProDG Plus 1
Updates and technical support 2
Updating ProDG over the web 3
Updating the ProDG Debugger and Target Manager 3

Chapter 2: ProDG Target Manager 5

Overview of the Target Manager 5
Accessing PlayStation 2 targets from your own applications 5
Launching the Target Manager 5
ps2tm command-line syntax 6
The Target Manager user interface 8
Target manager tray icon 9
Keyboard shortcuts 9
Exiting the Target Manager 10
Adding and removing targets 10
Configuring targets 12
Connecting to targets 13
Disconnecting from targets 14
Loading and running ELF files 15
Loading and running IRX files 16
Resetting the target 17
Viewing output from the PlayStation 2 17
Viewing TTY stream output 18
Viewing IOP modules loaded 23
Viewing your application file serving 24
File serving 24
Flashing the kernel 26
The PS2TM.INI file 29
PlayStation 2 target settings 30

Chapter 3: The ps2run command-line utility 33

Overview 33
ps2run command-line syntax 33
Specifying target name 35
Loading and running ELF files 35
Showing TTY output 36
Disconnecting from the target 36

Index 37

Chapter 1: Introduction

Overview of ProDG for PlayStation 2

ProDG for PlayStation 2 is a suite of development tools that enable you to build and debug your games for Sony's PlayStation 2. Using the ProDG tools you can build your application on a Win32 PC and debug it running directly on the Sony Computer Entertainment Inc. PlayStation 2 Development Tool DTL-T10000.

ProDG for PlayStation 2 consists of:

- **ProDG for PlayStation 2 Build Tools**: including Win32 port of the GNU PlayStation 2 tools; Microsoft Visual Studio integration option; ProDG compiler driver; ProDG linker and ProDG DLL linker; SN Systems utilities and library; ProDG assemblers. The Build Tools are described in *Power User's Guide to ProDG for PlayStation 2 Build Tools.*
- **ProDG Target Manager** that enables you to control connection to the PlayStation 2 targets in your network.
- **ProDG Debugger** for PlayStation 2, a fully featured Win32 debugger for debugging your PlayStation 2 applications. The Debugger is described in *Power User's Guide to ProDG for PlayStation 2 Debugger.*

This manual covers ProDG Target Manager.

Upgrading to ProDG Plus

ProDG Plus for PlayStation 2 is a suite of advanced game development and debugging tools for the Sony PlayStation 2.

- **ProDG for PlayStation 2** — a suite of development tools for building and debugging PlayStation 2 games. It consists of a C/C++ compiler, assemblers, linker, debugger and target manager. An optional Visual Studio Integration provides App-Wizards for building executables and libraries, and launching the ProDG Debugger from within Visual Studio.
- **Advanced ProDG Debugger features** — debugger scripting, and other enhanced features to be announced, provide ProDG Plus customers with the 'gold standard' in PlayStation 2 debuggers.

- **Tuner for PlayStation 2** — lets you capture and visualize program behavior so that you can eliminate conflicts and bottlenecks in your code. High performance games can now be achieved with less guesswork. The Tuner captures data to a host PC in real-time while you play the game. The captured data can then be analyzed frame by frame and saved for later comparison with your optimized code.

- **NDK for PlayStation 2** — enables you to add networking capabilities to your PlayStation 2 game. The NDK TCP/IP stack is located on the IOP with a BSD like interface on the EE. We have added a fast EE API to significantly improve performance. NDK supports the Sony Network Adapter (Ethernet/modem) and the widest range of USB Ethernet adapters and USB modems.

For details about upgrading from ProDG to ProDG Plus, please contact **sales@snsys.com**.

Updates and technical support

First line support for all SN Systems products is provided by the Support areas of our website. To view these pages you must be a registered user with an SN Systems User ID and Password.

- If you have forgotten your User ID and Password, send an e-mail to **webmaster@snsys.com** and we will send you a reminder.

Once you have a valid User ID and Password you can visit our website Support areas at these URLs:

www.snsys.com/support (English)
www.snsys.jp/support (Japanese)

If the answer to your problem cannot be found on the Support areas of our website, you can also e-mail our support team at:

support@snsys.com (English)
j-support@snsys.com (Japanese)

Please make sure that you explain your problem clearly and include details of your software version and hardware setup. If you have been given an SN Systems support log number (LN number) then this should be quoted in all correspondence about the problem.

SN Systems Limited

4th Floor - Redcliff Quay
120 Redcliff Street
Bristol BS1 6HU
United Kingdom

Tel.: +44 (0)117 929 9733
Fax: +44 (0)117 929 9251

WWW: **www.snsys.com** (English)
www.snsys.jp (Japanese)

Updating ProDG over the web

Regular updates to ProDG for PlayStation 2 are posted on the SN Systems web site (see "Updates and technical support" on page 2). You need to select **Technical Support** > **Downloads**, to access the Downloads area. You will be required to give your SN Systems User ID and Password to access these pages.

- Full product updates of ProDG for PlayStation 2 are provided in the **Full Install** section.
- Fully tested component updates are found in the **Product Updates** section.
- Beta versions of components may be provided in the **Pre-Release Files** section.

Updating the ProDG Debugger and Target Manager

If you download the .zip archive for the ProDG Debugger and Target Manager then you should put the files where they were previously installed on your system. The default location is C:\Program Files\ProDG for PlayStation2.

If you choose to put the programs elsewhere, then you must configure your path to provide visibility to the commands. This involves adding a path to the ProDG Debugger and ProDG Target Manager executables, to the PATH= environment variable, either in your autoexec.bat file, or, if you have Windows 2000 or NT, via the Control Panel, in the **Advanced** tab of the **System** icon.

For example:

```
SET PATH=%PATH%;"C:\PS2\SN Programs"
```

To make this change apply globally you will need to restart your machine. You should now be able to type any of the application commands (ps2dbg or ps2tm) in any directory at the MS-DOS prompt, and the associated application will start.

[THIS PAGE IS LEFT BLANK INTENTIONALLY]

Chapter 2: ProDG Target Manager

Overview of the Target Manager

A *target*, in this context, is a DTL-T10000 development tool on a LAN.

ProDG Target Manager for PlayStation 2 is used to control access to any PlayStation 2 targets that you have on your network. It provides control, host fileserving and TTY output for all PlayStation 2 development kits on a LAN.

- In order for applications that communicate with the PlayStation 2 target to run, (ProDG Debugger, ps2run, etc.) the Target Manager must be running and have at least one target set up.
- This application has been developed separately so that multiple tools can connect to the target via the same interface, and to allow you to connect to targets, maintain sessions and view session information outside of your particular application.

Starting ProDG Target Manager prior to ProDG Debugger enables you to set up a session on the required PlayStation 2 that you can use with the Debugger or with ps2run. This allows you to maintain a session with a particular target even when you start and stop the Debugger. This way of working also has the advantage of allowing you to lock out a session on the required target PlayStation 2 for as long as you wish to work with it. This means that when you exit the Debugger you can remain connected to the target for further use with the Debugger or ps2run.

Accessing PlayStation 2 targets from your own applications

ProDG Target Manager for PlayStation 2 SDK is now available as a separate product for those who wish to access PlayStation 2 targets from their own applications, for example, art preview and internal tools.

For further information, visit the Products area of the SN Systems web site (see "Updates and technical support" on page 2 for contact information).

Launching the Target Manager

The ProDG Target Manager for PlayStation 2 can be launched via the command line or via the **ProDG for PlayStation2 > ProDG Target Manager for PS2** shortcut in the **Start** menu, and is automatically started when you start ProDG Debugger.

The **Start** menu shortcut just accesses the `ps2tm` command line, and can therefore be customized to start the Target Manager in the state that you wish. For example you can specify that the Target Manager always tries to connect to a particular target on start-up.

The Target Manager must be running and have at least one target set up for any of the other tools to be able to communicate with the target PlayStation 2.

ps2tm command-line syntax

The Target Manager command line is the following:

```
ps2tm [<options> [<args>]]
```

where `<options>` can be either commands or options that relate to those commands.

The command switches can be any of the following:

Command switches	Actions
-?	Show a list of all the command-line options
-a <target>	Enables you to add a new target. This must be followed with the –i <ip address> argument, and any other arguments as required
-t <target>	Allows you to modify the parameters of an existing target. This can be followed by a list of arguments to do whatever is required to the specified target
--delete <target>	Deletes the specified target
-m	Starts the Target Manager in a minimized state (system tray icon)

If the target name contains a space, then `<target>` must be placed inside quotation marks, e.g. "my devtoool".

The two commands –a and –t are used to add or indicate a particular target. If you put either one of these on the ps2tm command line, you can follow it with any number of target options that enable you to specify what you wish to do on the target.

The options that can be used on a target are the following:

Option switches	Actions
-f <path>	Set the file serving directory path for the specified target.
-h <path>	Set the home directory for the specified target.
-i <ip address>	Set the network address for the specified target. Note that this will fail if you are already connected to the target (i.e. -devtool1 –c –i add1 will fail).

-b <ee_boot>, <iop_boot>	Set boot parameters for the specified target. These are the parameters that are to specify behavior when you reboot your PlayStation 2 (see "Resetting the target" on page 17).
-p <port>	Set the port number for the specified target (by default this is set to 8510). Note that this will fail if you are already connected to the target.
-c	Connect to the specified target.
-d	Disconnect from the specified target.
-r	Reset the target, which can only be used when you are connected to the target (for example -c –r will always work).

For a particular target, you can enter any number of options, in any order, though there are some exceptions:

- You cannot change the port number or IP address after connecting to a target
- You cannot reset the target unless you have previously connected to it

If you try to do something that fails, then remaining changes on the current target will be ignored and the next target command on the command line will be executed.

For example, the command:

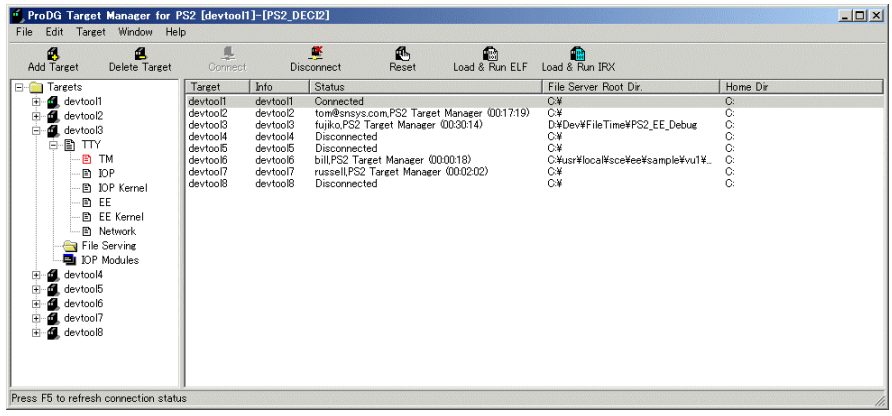
```
ps2tm –a Devtool1 –i <ip_address> –c –r
```

will start the Target Manager, add a new target called "Devtool1" with the specified IP address, connect to it and reset it, whereas

```
ps2tm –a Devtool1 –i <ip_address> –c –r –t Devtool2 –c –r
```

will do the same as the previous example, but in addition connect to and reset the target called "Devtool2".

The Target Manager user interface



The Target Manager window includes five menus: **File**, **Edit**, **Target**, **Window** and **Help**. These contain the commands that enable you to add and configure targets, connect to them and load files on selected targets.

Below the menu bar is a toolbar containing buttons that enable you to access the most useful commands rapidly.

The rest of the Target Manager window resembles Windows Explorer and shows any PlayStation 2 targets that you might have added on the left and their properties in the right part of the window.

In the left-hand part of the window, targets to which you are already connected have the LEDs highlighted on the target icon.

In the right-hand part of the window, the target properties are arranged in columns labelled **Target**, **Info**, **Status**, **File Server Root Dir.** and **Home Dir**. The column widths may be resized by dragging the column separators either left or right.

To update target connection status

At any time you can refresh display of the current connection status and directory settings for all of the available targets, by pressing the shortcut key <F5>. Pressing <F5> should always result in the connect time for connected targets being updated, and any targets that have been newly connected or disconnected.

To sort rows in Target Manager main window

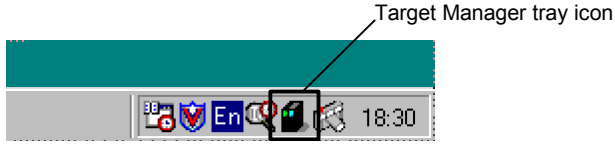
You can sort the rows displayed on the right by clicking on either the **Target** or **Address** column headings. This will sort the listed targets alphabetically by their target name or IP address, respectively.

To expand out a target

You can view the different TTY output streams of any target, by expanding the target folder in the left part of the window, then expanding the TTY folder, and finally selecting the module whose TTY output you wish to monitor. TTY output will then be sent to the right part of the window.

Target manager tray icon

When you minimize the Target Manager it becomes a system tray icon. If you wish to open the main window again at any time, you can either double-click the tray icon or click the **Open** command in the tray icon shortcut menu:



Keyboard shortcuts

Many of the most frequently used commands in the Target Manager can be accessed via keyboard shortcuts. Currently the keyboard shortcuts are not customizable.

Keyboard shortcut	Description	Context
c	Connects to the currently selected target.	A target must be selected in the target manager that you are not currently connected to.
d	Disconnect from the currently selected target.	You must be connected to the currently selected target.
e	Load and run ELF.	You must be connected to the currently selected target.
r	Resets the currently selected target.	You must be connected to the currently selected target.
x	Load and run IRX.	You must be connected to the currently selected target.
Insert	Add a new target.	Any
Delete	Removes the currently	The target to be deleted

	selected target.	must be selected.
Tab/Shift+Tab	Toggles focus between the left and right parts of the target manager main pane.	Any
F5	Refresh connection status.	Any

Exiting the Target Manager

The Target Manager can either be closed from a menu option in the main window or through its tray icon shortcut menu.

To exit the Target Manager

1. If the Target Manager main window is displayed, click **Close** in the **File** menu. However if the Target Manager is minimized you can click **Exit** in the icon shortcut menu.

2. In both cases a dialog appears asking if you are sure that you wish to exit the Target Manager.

3. Click **OK**.

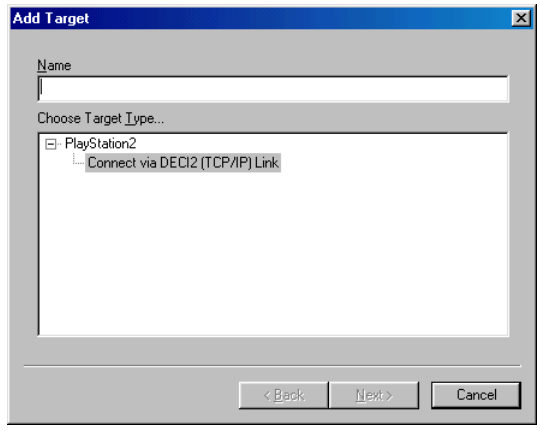
Note: If you are connected to a target when you exit the Target Manager, this connection will be terminated.

Adding and removing targets

This section describes how you set up the targets in the Target Manager to enable you to connect to the different PlayStation 2 targets in your network.

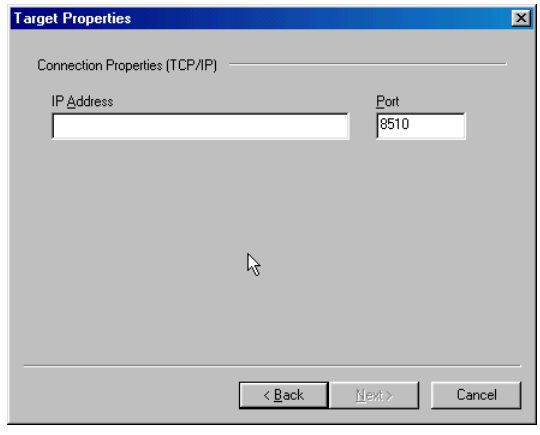
To add a new target

1. Click **Add Target** in the **File** menu (or use the **Add Target** toolbar button, or the <Insert> shortcut key), and the following dialog is displayed:



2. Enter a name to identify the target session, in the **Name** field. Then click **Next**.

   The Target Properties dialog is displayed:



3. Enter the IP address of the PlayStation 2 that you would like to connect to in the **IP Address** field.

4. Enter the connection port in the **Port** field (this would normally not be changed from 8510 unless your network administrator has modified this).

5. Click **Next**.

   The Add Target Completed confirmation window is displayed, with details about the target to be added.

6. If you wish to proceed, click **Finish** to add the target. The new target and its properties appear in the main part of the Target Manager window.

Note: It is possible to change the properties of a target when it is not connected. For more information see "Configuring targets" on page 12.

To remove a target

1. Click on the target that you wish to delete in the main window.
2. Click **Delete Target** in the **File** menu (or use the **Delete Target** toolbar button, or use the <Delete> shortcut key). A dialog is displayed asking you to confirm that you wish to delete the target.
3. Click **OK**.

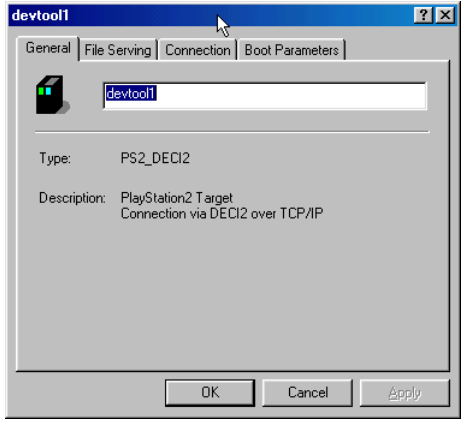
   The target is deleted. If you were connected to the target when you delete the session then you are automatically disconnected.

Configuring targets

If you wish to change any of the properties of an existing target in a single dialog, you can do this in the target property sheet. However, you will not be able to change any connection properties if you are already connected to the target; they are greyed out in the dialog.

To modify the target properties

1. Select the required target in the left hand list.
2. Click **Target Properties** in the **Target** menu, or right-click to display the shortcut menu and then select **Properties**, or use the <Alt+enter> shortcut key. The property sheet for the selected target is displayed.



In this dialog you can modify all the properties of the selected target, including its name, IP address, port, home directory and file serving directory and its boot parameters. Note that you cannot modify the name, IP address or port of a target when

connected to it. You will need to disconnect first. For more information on boot parameters, see "Resetting the target" on page 17.

3. Modify the required properties.

4. Click **OK**.

Connecting to targets

ProDG Target Manger can either be launched via the command line or Windows shortcut, or it is launched automatically by the Debugger. For any other tools (Debugger or `ps2run`) to be able to interact with a particular target, it must already be configured in the Target Manager.

When the Debugger or ps2run exit, by default they will leave the target in the state that it was in when they started. So, for example, if you connect to an existing session when you start the Debugger, the session will remain connected when you quit the Debugger. However you can modify this behavior using options on their command lines to specify, for example, that you are always disconnected.

To connect to a target

1. Select the target that you would like to connect to in the right-hand list of the Target Manager main window.

2. Double-click on the target name, or click **Connect** in the **Target** menu (or click the **Connect** toolbar button, or the <c> shortcut key).

   If your connection was successful then the target properties in the right-hand part of the window will be updated to show `Connected` in the **Status** column. However if another user is currently connected to the target a dialog is displayed saying that the target is in use by another user, and the identity of the user that is currently connected is displayed in the **Status** column. The **Status** field for another connected user takes the form:

   ```
   <computer>@<domain>,<app> (<connect time [hh:mm:ss]>)
   ```

   e.g.

   ```
   Mike@snsys.com,PS2 Target Manager (02:00:10)
   ```

Your connection may also time out which means that the target is unavailable on the network. There may be several reasons for this, including the following:

- The selected target may not be connected to the network correctly or it may be switched off.

- The TCP/IP software may not be correctly configured. For example, the PlayStation 2 may have a duplicate IP address. To test for this you can power off the PlayStation 2 development platform and ping the IP address. If you receive a response then the IP address is duplicated on your network.

- When you enter the IP address or DNS name to identify the PlayStation 2 target there is no verification of the name when you input it, therefore when you connect you may find that you have badly specified the IP address or DNS name or that the DNS name you entered is not associated with the correct IP address.

- The PlayStation 2 Development Tool may simply need to be rebooted.

Disconnecting from targets

When the Debugger or the `ps2run` command exit, then you may still be connected to the PlayStation 2 target in the Target Manager. If you wish to disconnect from the target because you have finished working with it, then you will need to do this in the Target Manager.

To disconnect from a target

1. Select the connected target that you would like to disconnect from in the right hand list of the Target Manager main window.

2. Double-click on the target name, or click **Disconnect** in the **Target** menu (or click the **Disconnect** toolbar button, or the <d> shortcut key). The target properties will update to show Disconnected in the **Status** column.

It is also possible to disconnect from the target using the following function call:

```
sceOpen("host:DISCONNECT:", SCE_RDONLY);
```

To forcibly disconnect a target

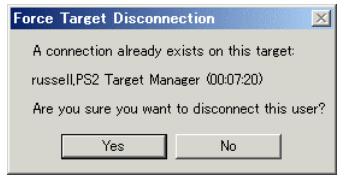
The Target Manager also allows you to forcibly disconnect another user who is connected. Target manager will not allow you to forcibly disconnect from a target to which *you* are already connected.

Forced disconnection is useful if someone has connected via dsidb/dsedb but has closed the telnet connection; the session can be disconnected via the Target Manager without having to reset the DTL-T10000.

Note: The connected user will not receive any warning that they are being disconnected, and may lose valuable work as a result, so this option should be used only when absolutely necessary.

1. Click **Force Disconnect** in the **Target** menu.

2. A connect status query is performed to determine if any users are connected via either the EE or IOP debug protocols. If so, the Force Target Disconnection confirmation dialog is displayed:

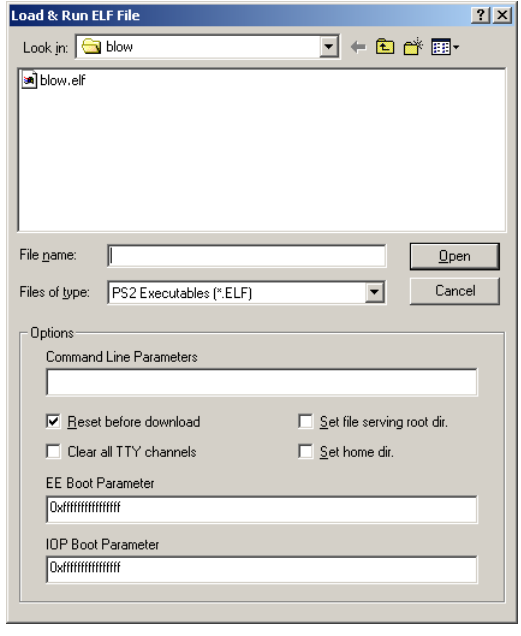


3. Click **Yes** provided you are absolutely sure you want to forcibly disconnect the user who is using this target.

4. The target properties will update to show `Disconnected` in the **Status** column.

Loading and running ELF files

You can load and run ELF files on the target directly from the Target Manager. To do this click the **Load and Run ELF** button on the Target Manager toolbar, or click the command in the **Target** menu. A dialog appears in which you can select the ELF file to be loaded:



A space is provided to allow you to specify **Command Line Parameters**, i.e. arguments that are passed in with the program name.

If the **Set file serving root dir.** checkbox is checked, then the directory from which the ELF file has been selected is set as the file serving root directory for that target.

You can specify that the target is reset before the program load, by setting the **Reset before download** checkbox.

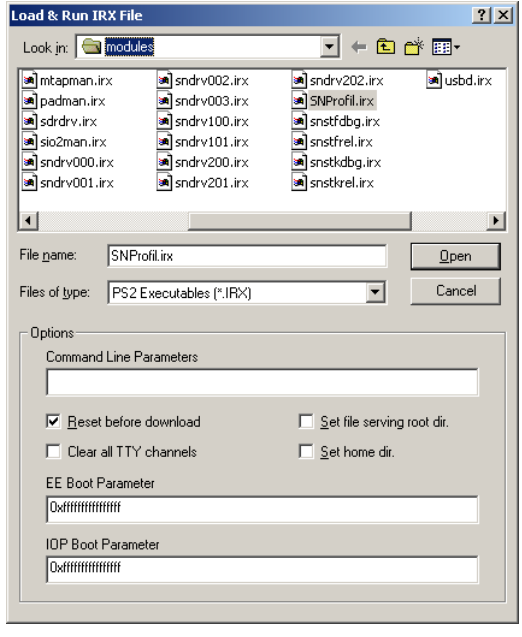
Clear all TTY channels will clear all TTY channels for the current target before loading the ELF file.

If the **Set home dir.** checkbox is checked, the directory from which the ELF file has been selected is set as the home directory for that target.

The dialog also enables you to set the boot parameters for the EE and IOP units (see "Resetting the target" on page 17), which are used during a reset.

Loading and running IRX files

You can load and run IRX files on the target directly from the Target Manager. To do this click the **Load and Run IRX** button on the Target Manager toolbar, or click the command in the **Target** menu. A dialog appears in which you can select the IRX file to be loaded.



A space is provided to allow you to specify **Command Line Parameters**, i.e. arguments that are passed in with the program name.

If the **Set file serving root dir.** checkbox is checked, then the directory from which the IRX file has been selected is set as the file serving root directory for that target.

You can specify that the target is reset before the program load, by setting the **Reset before download** checkbox.

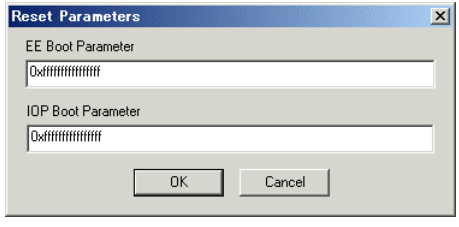
Clear all TTY channels will clear all TTY channels for the current target before loading the IRX file.

If the **Set home dir.** checkbox is checked, the directory from which the IRX file has been selected is set as the home directory for that target.

The dialog also enables you to set the boot parameters for the EE and IOP units (see "Resetting the target" on page 17), which are used during a reset.

Resetting the target

At any time the target can be reset using the **Reset** button. A dialog appears in which you can set the boot parameters for the EE and IOP units separately. Click **OK** to start the target reset. If the Debugger is currently connected to the target that you are resetting, then you will need to load your application ELF file to the target to continue debugging. In addition any breakpoints that you have already set in the application source in the Debugger will be discarded.



This command always resets both PlayStation 2 units but their behavior following a reset is determined by the boot parameters. Within the Target Manager the boot parameters are specific to each target and can be changed in either the Target Properties sheet (see "Configuring targets" on page 12), or when you reset the target or load and run an ELF or IRX file.

For more information on the boot parameters, please refer to the Sony PlayStation 2 Developer Tool documentation.

Viewing output from the PlayStation 2

You can expand each target node listed in the left part of the window to show the content of the different output streams originating from the PlayStation 2 processors.

If you are not currently connected to the selected target, the TTY panes will still show any output resulting from a previous connection.

The first level under the target node is split into three directories: **TTY**, **IOP Modules** and **File Serving**.

Viewing TTY stream output

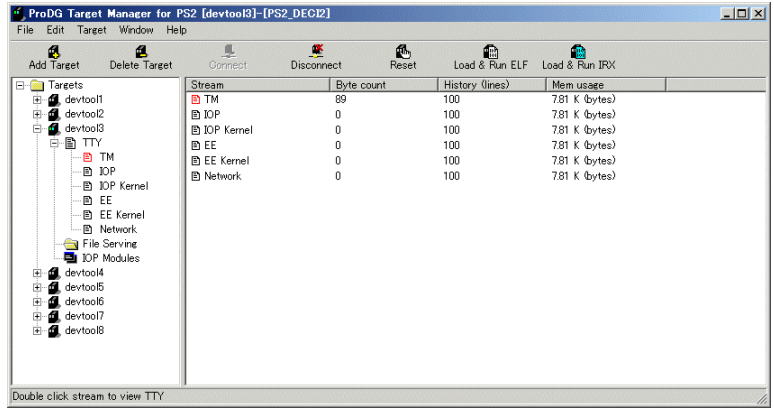
You can view a summary of the TTY channels, or each TTY channel can be displayed individually. You can also display a context menu for a particular TTY channel. This provides further functionality, for example, it enables you to stream the TTY output to a specified file and view channel properties.

To view a summary of TTY channels

- Click on the **TTY** directory to select it.

  The right-hand pane switches to show a list of TTY streams available: **PS2 Target Manager**, **IOP streams 0-9** and **IOP Kernel**, **EE streams 0-9** and **EE Kernel**, and **Network**.

  For each channel the **Byte Count** column contains the number of output bytes to that channel, while the **History (lines)** and **Mem usage** columns indicate the amount of memory available for the channel's TTY buffer:



To view an individual TTY channel

This procedure assumes that you are already viewing the TTY node for a chosen target (see "To view a summary of TTY channels" on page 18).

There are two ways to view an individual TTY channel:

- In the list of TTY channels in the right-hand pane, double-click on a row to select a particular channel.

or

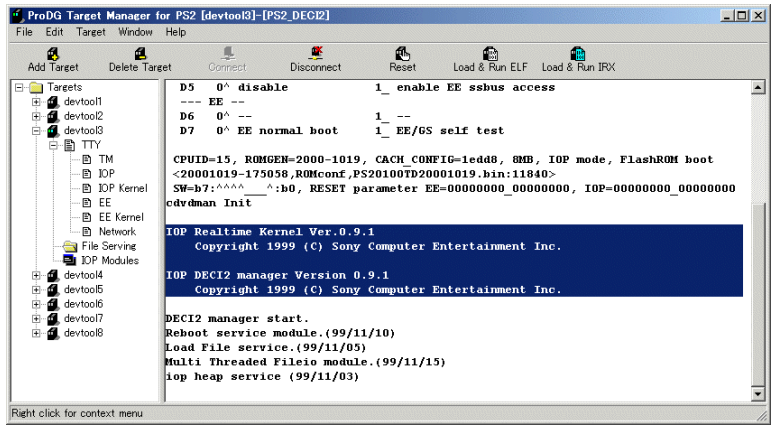
- Double-click on the **TTY** directory, or click on the + sign next to it.

  The **TTY** directory expands to show a tree view of all TTY output channels available.

  When a TTY pane contains new output it is indicated by a red icon in the TTY channel list.

Select an individual TTY channel from the list presented.

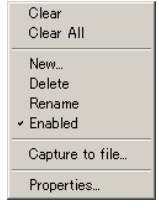
The right-hand pane switches to show any TTY output from that channel:



To access the context menu for a TTY channel

- Right-click the required TTY channel in the right-hand pane.

  The following context menu will be displayed:



Clear	Clears the currently selected TTY channel.
Clear All	Clears all TTY channels for the selected target.
New...	Creates a new TTY channel.
Delete	Causes the current TTY channel to be permanently deleted.
Rename	Enables you to rename the channel.
Enabled	Toggle to determine whether the TTY channel is active. When disabled, the channel no longer

active. When disabled, the channel no longer appears in the left-hand tree view and TTY output is not captured for that channel.

Capture to file... Allows you to stream TTY output to a file on the disk. See "To capture to a file" on page 20.

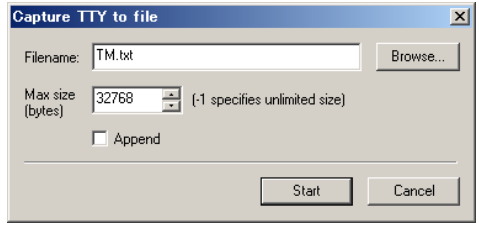
Properties... Opens the TTY channel's property page. See "To view channel properties" on page 20.

To capture to a file

You can stream TTY output from a particular channel to a specified file as follows:

1. Right-click the TTY channel in the right-hand pane for which you wish to capture TTY output.
2. From the displayed context menu select **Capture to file...**

   The following dialog will be displayed:

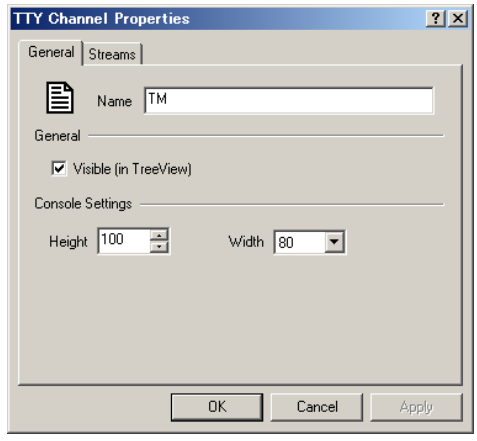


3. Select the file that you wish to stream TTY output to.
4. Specify the maximum limit for the size of the file. Enter –1 for an unlimited size.
5. Check **Append** to place the output after any existing data in the file. If this box is not checked any existing data will be overwritten.
6. Click **Start** to begin the file capture.

To view channel properties

1. Right-click the TTY channel in the right-hand pane for which you wish to view channel properties.
2. From the displayed context menu select **Properties...**

   The **General** tab of the Channel Properties dialog will be displayed:



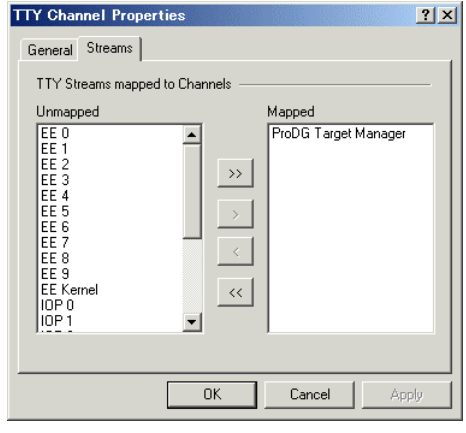
Name Enables you to rename the channel.

Visible Toggle to determine whether the TTY channel is active. When disabled, the channel no longer appears in the left-hand tree view and TTY output is not captured for that channel.

Height Determines the height (in lines) of the TTY channel. Increase this value to allow more output to be captured in the channel.

Width Determines the width (in characters) of the TTY channel. This can be 80 or 132.

3. Select the **Streams** tab of the TTY Channel Properties dialog to display the following:



This page allows you to map output from several TTY streams to the currently selected channel. The left-hand list displays the currently available (unmapped) streams and the right-hand list shows those streams that are currently mapped to the selected channel.

4. The buttons between the lists enable you to move streams between them. Select as required.

   >> Moves all unmapped streams from the left to the right list.

   > Moves the currently selected unmapped stream to the right list.

   < Moves the currently selected mapped stream to the left list.

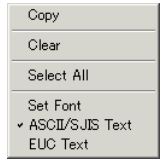
   << Moves all mapped streams from the right to the left list.

To clear a TTY channel

TTY streams are cleared automatically when you shut down ProDG Target Manager. However, the output will persist after a connection has been closed, so it may be useful to know how to clear the output from a stream when necessary.

1. Select the channel to be cleared.

2. Right-click on the right-hand pane to display the shortcut menu:



3. Click **Clear** to clear the output.

To clear all TTY channels for a target

1. Right-click the TTY directory in the left hand tree view for which you wish to clear all TTY channels.

   The following context menu will be displayed:

2. Click **Clear All** to clear all TTY channels for the selected target.

To copy TTY stream output to another application

TTY stream output can be saved to another application for later analysis using the standard Windows cut, copy and paste operations:

1. Select the channel containing the output to be copied.

2. Select the text to be copied by swiping it with the mouse button depressed, or click **Select All** or <Ctrl+A> from the TTY pane shortcut menu if you want to select everything in the pane.

3. Press <Ctrl+C> to copy the selected text to the clipboard, or click **Copy** from the TTY pane shortcut menu.

4. Press <Ctrl+V> to paste the selected text from the clipboard to the application, or select **Paste** in the application's menu.

To change the TTY channel font

The TTY channel font can be altered to suit your preference.

1. Select **Set Font** from the TTY pane shortcut menu.

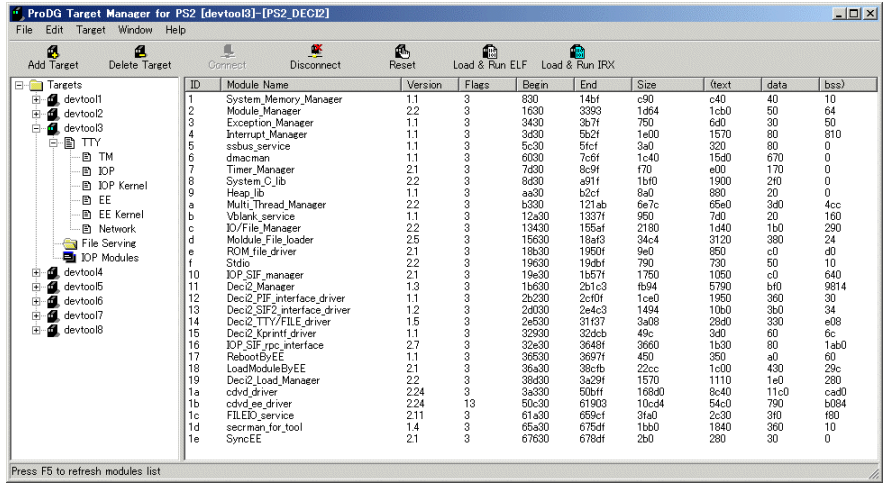
   The Font dialog is displayed for you to set the font face, style and point size.

2. Press **OK** to accept the new settings.

The settings will apply to all TTY channels, not just the current one.

Viewing IOP modules loaded

You can view a table showing all the IOP modules currently loaded on the IOP processor, by selecting the **IOP Modules** directory under the target icon in the left-hand side of the Target Manager window.



This displays a view of the IOP modules with detailed information for each module, including the module **Version**, where the module is loaded in memory (**Begin** and **End**), the **Size** of the module, and the size of the `text`, `data` and `bss` sections.

You can alphabetically sort the IOP module display by clicking on either the **ID** or **Module Name** column headings.

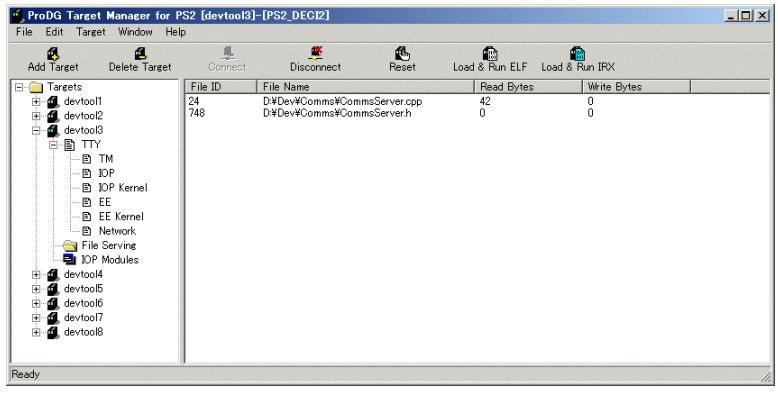
To refresh the IOP Modules table

The IOP Modules table is refreshed automatically only after selecting the **Connect** or **Reset** menu options from Target Manager (not if the connection / reset is done from ProDG Debugger).

At all other times if you need to refresh the IOP modules list, press <F5> or right-click on the pane to display the IOP Modules shortcut menu and select the only available option: **Refresh List**.

Refreshing the list will only work if the IOP is running. If the operation cannot be carried out the display will remain blank and no error will be displayed.

Viewing your application file serving



If you open the **File Serving** directory for the target that you are currently debugging, while your application is running on the target, you can see in real time the files that have been opened and written to, or read from, by your application. In addition the total number of bytes that have been written to each file or read from each file, while your application is running, is shown.

File serving

The ProDG Debugger and Target Manager provide full Windows support for file serving. File serving allows an application running on the target to access files from a named directory on the host.

This directory is a property of each target referred to as the **File Server Root Dir.** in the Target Manager, and can be changed at any time.

Another property of a target in the Target Manager is the **Home Dir**. If you are migrating from Linux you may have entered absolute filenames in your source using the "~" character, to refer to your home directory. The Target Manager and Debugger support these path names and will replace the ~ directory, in any file path name, with the **Home Dir** specified.

For example if your file was found in ~/myappfiles on Linux then the Debugger will look for the file in C:\myappfiles on your Win32 machine if the Target Manager home directory is set to C:

The file serving directory can also be quickly changed in the Debugger to the directory you load an ELF file from when you load manually.

When running your application on the PlayStation 2 you can view the file serving statistics in real-time in the Target Manager (see "Viewing your application file serving" on page 24).

To change the file serving directory

The file serving directory can be changed at any time.

1. Select the target for which you wish to change the file server root, in the left-hand list of PlayStation 2 targets.

2. Click **Set File Server Root** in the **Target** menu, and a folder browsing dialog appears.

3. Browse until you locate the directory that you would like to be used for file serving and click on it.

4. Click **OK**.

   The properties of the selected target should be updated in the right side of the main window to show the newly selected file server root directory under the **Current Dir** title.

It is also possible to change the file serving directory from inside your code using the following function call:

```
sceOpen("host:SETROOT:<path>", SCE_RDONLY);
```

e.g.

```
sceOpen("host:SETROOT:d:\\", SCE_RDONLY);
```

To set the home directory

The home directory is the directory on your Win32 PC that is used to replace any file paths that you might have specified with a "~" (representing your Linux home directory) in your application source.

1. Select the target for which you wish to change the home directory, in the left hand target list in the Target Manager main window.

2. Click **Set Home Directory** from the **Target** menu, and a folder browsing dialog appears.

3. Browse until you locate the directory that you would like to be used to replace the Linux home directory (~) and click on it.

4. Click **OK**.

   The properties of the selected target should be updated in the right side of the main window to show the newly selected home directory.

It is also possible to change the home directory from inside your code using the following function call:

```
sceOpen("host:SETHOME:<path>", SCE_RDONLY);
```

e.g.

```
sceOpen("host:SETHOME:d:", SCE_RDONLY);
```

Flashing the kernel

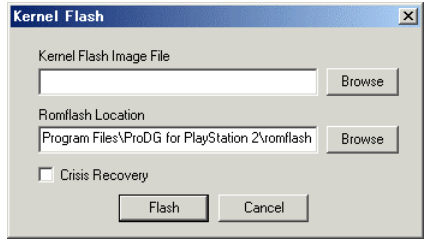
Whenever new Sony libraries are released it may be necessary to update the PlayStation 2 Development Tool kernel held in EEPROM. This can be achieved by using the Flash Kernel option provided in Target Manager.

It is also possible to recover from a situation where a ROM flash has created an error, by re-flashing from the DTL-T10000's shadow ROM.

To flash the target kernel

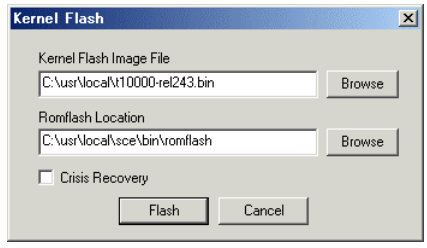
1. Connect to the target to be flashed.
2. Click **Flash Kernel** from the **Target** menu.

   The Kernel Flash dialog is displayed:



3. Using the **Browse** button, browse for the **Kernel Flash Image File**. This is normally located in your \usr\local directory and will have a .bin filename extension, e.g. C:\usr\local\t10000-rel243.bin.
4. The **Romflash Location** field defaults to the directory in which the ProDG Target Manager program ps2tm.exe is found, plus the filename `romflash`. Using the **Browse** button, browse for the romflash program in its actual location. This is normally in your \usr\local\sce\bin directory, e.g. C:\usr\local\sce\bin\romflash.

The Kernel Flash dialog should now look similar to the following:

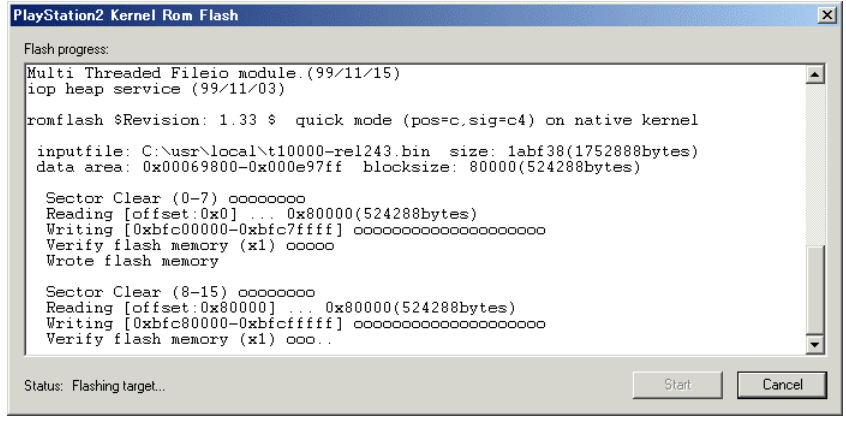


5. Make sure that the **Crisis Recovery** checkbox is clear. Click **Flash**.

6. The existence of both the ROM flash module and kernel flash image files are verified. Then the main Target Manager window is locked to prevent the user from disconnecting halfway through the flash.

Note: It is VERY IMPORTANT that the ROM flash process is allowed to continue to completion, otherwise it may be difficult to reconnect to the DTL-T10000.

7. During flashing the Target Manager opens a new dialog that displays the flash progress. Click **Start** to begin the flash process.



First a reset of the target is issued with the boot parameters ee=0, iop=7 (see "Resetting the target" on page 17). Then the ROM flash module is downloaded to the IOP and run, passing in the name of the kernel flash image file as an argument.

Finally, a reset of the target is issued with the boot parameters ee=0, iop=0 (see "Resetting the target" on page 17).

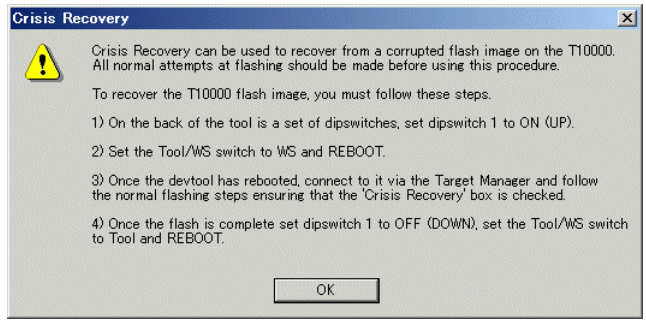
8. Once finished, the Target Manager pops up a dialog. Click **OK** to complete the flash.

9. The DTL-T10000 EEPROM has now been updated with the new version of the kernel flash image file.

To recover from a ROM flash crisis

Crisis recovery should only be necessary if a ROM flash has aborted with an error, or if an invalid flash image file has been used, so rendering the kernel unbootable. In this situation you would not be able to connect and/or communicate with the DTL-T10000 from Target Manager.

1. Click **Flash Kernel** from the **Target** menu.
2. Check the **Crisis Recovery** checkbox.
3. Read the Crisis Recovery instructions carefully:



The instructions displayed form the rest of this procedure:

4. On the back of the DTL-T10000 are some dip switches. Set dip switch 1 ON (up).
5. Set the Tool / WS switch to WS and reboot the DTL-T10000.
6. Now connect to the target from Target Manager.

   Follow the normal flashing procedure (see "To flash the target kernel" on page 26), but ensuring that the **Crisis Recovery** checkbox is still checked.

   In this situation booting is from the shadow ROM on the workstation. Then the romflash module is downloaded to the IOP and run, passing in the name of the kernel flash image file as an argument. Because the -mpu4shadow parameter has been specified, the EEPROM on the Development Tool is then updated with the specified kernel image file. During flashing the TTY window is switched to IOP channel 0 so that the results of the flash can be observed.

7. When the flash operation has completed, set the DTL-T10000 dip switch 1 to OFF (down), set the Tool / WS switch to Tool and reboot the DTL-T10000.

The PS2TM.INI file

The ProDG Target Manager for PlayStation 2 INI file contains settings which are global to the application and also a list of the currently installed or 'set-up' targets and their associated settings. Most of these settings are configurable from the Target Manager user interface and it is not usually necessary to edit the ini file directly.

This section gives a general overview of the INI file and details what global application settings there are and how targets are specified.

The following general Target Manager options are available:

"Left", "Top", "Right", "Bottom", "WindowState"	Application position and minimize/maximize state
"NoAskExit"	Whether the confirm exit dialog is displayed on exit.
"VSplit Pos"	Position of the explorer splitter bar.
"Target Sort"	Whether the target view is sorted on name or address.
"DefTTYFont"	Font used by the TTY pane.
"ListViewCols"	Positions of the list view column headers.
"LastUsedTarget"	The last target that was selected when TM was shutdown.
"DefaultTimeout"	The default timeout for target commands. If this value is not set, TM will use a default of 3000ms (3 secs) before timing out a command on the server. It may be necessary to increase this for very slow networks.
"MaxTransferSize"	The maximum amount of memory that can be transferred to a target in a single transaction (in Kbytes). If this value is not set, a default of 63k is used. Valid values are 1k to 63k inc.
"1394SendInterval"	Applies only to ProView/ProView+ targets and specifies the timeout between transactions. If you are experiencing communications problems with ProView or ProView+ targets (e.g. slow communications), you can try raising or lowering this value in increments of 100-200. The default is 1000 and should typically be somewhere between 500 – 2000.

"Logging"	Determine the level of debug logging output by the TM. This value is interpreted as a decimal bit field, so the flags can be combined to produce different levels of debugging. Available flags are: Bit Flag (Decimal) Debugging level 1 Log all communications with targets 2 Log all host PC commands 4 Log file serving activity 8 Output log to file rather than TTY 16 Log update notifications 32 Log ProView/ProView+ error messages (always to file called ps21394.log) 64 Log NDK Analyzer error messages (always to file called tcpip.log) So, for example, the value 13 (1 + 4 + 8) would log all target comms and file serving activity to a log file.

PlayStation 2 target settings

Target Manager for PlayStation2 supports multiple target types (i.e. DECI2 / DTL-T10000, ProView and ProView+ target types). Each target object is identified in name by the section name and many settings are common to all target types.

Settings common to all target types

[Devtool8]	Name of target (max 255 chars)
Target Type	Type of target this object describes (PS2_DECI2, PS2_1394 (ProView), PS2_1394D (ProView+) or PS2_NULL (null target)
Current Dir	Fileserving root directory
Home Dir	Home directory (for unix style ~ expansion)
Last Load	Last ELF loaded for this target
Elf Arguments	Arguments for ELF
Elf SetFS First	Set fileserving root check box value (1 or 0)
Elf Reset First	Reset before download check box value (1 to 0)
Last IRX Load	Last IRX filename for this target
Irx Arguments	Arguments for IRX file.
Irx SetFS First	Set fileserving root check box value (1 or 0)
Irx Reset First	Reset before download check box value (1 or 0)

Settings applicable only to DECI2 / DTL-T10000 targets

IP Address	TCP/IP address of DTL-T10000.
Port	TCP/IP Port No. for DTL-T10000 connection

EE Boot	EE Boot Parameter
IOP Boot	IOP Boot Parameter
Flash Image	Location of last used flash image
Flash Program	Location of ROMFLASH program

Settings applicable only to ProView targets

1394 GUID	ProView GUID value

[THIS PAGE IS LEFT BLANK INTENTIONALLY]

Chapter 3: The ps2run command-line utility

Overview

This section contains information on the command-line utility ps2run, that is available as part of ProDG for PlayStation 2.

ps2run is a command-line tool for communicating with a PlayStation 2 target, which is used in conjunction with the ProDG Target Manager for PlayStation 2 application: ps2tm.

The Target Manager (ps2tm) must be running for ps2run to work properly. ps2run has options which can reset the target, set its file server directory, load an ELF file, download a binary file and disconnect from the target.

ps2run command-line syntax

ps2run can either be used directly from the command line, or in batch or make files.

The ps2run command line is as follows:

```
ps2run <options> [<file> [<args>]]
```

Use <file> [and optional <args>] to specify the name of the executable ELF file (and optional arguments to that program) which you wish to run on the target.

Omitting <file> and <args> just performs the specified options.

The following options may be entered as arguments to ps2run:

-b <address>	Enables you to specify that a binary download will take place, to the hexadecimal address that you specify.
-d	Disconnects from the target when ps2run has finished running. However, if there was an existing session in the Target Manager that you connected to, then ps2run will leave the session intact.

-da	Specifies that you are always disconnected from the target when ps2run finishes running.
-f <path>	Enables you to set the path of the file serving directory.
-h <path>	Set home directory to <path>.
-nd	Enables you to specify that you are not disconnected from the target when the ps2run finishes running (default).
-nr	The target is not reset. This is the default behavior.
-nx	Enables you to specify that the code is not executed on the target after loading. This switch is ignored if you are downloading a binary file.
-p	Enables you to specify that `stdout` stream is displayed. No ELF file is necessary with this switch.
-q	Enables you to specify that ps2run is in quiet mode providing there are no errors; ps2run prints a progress report unless the -q option is specified.
-r <ee_boot>, <iop_boot>	Resets the PlayStation 2 target before loading and running your application. The boot parameters enable you to specify the behavior of the target after reset (see "Resetting the target" on page 17).
-t <name>	Enables you to specify the target to connect to using its name (as shown in the Target Manager, see "To add a new target" on page 10). The name must be enclosed in quotes if it has spaces in it (e.g. "my devtool"). If you enter a name that cannot be identified in the list of targets on the Target Manager, or you do not enter a name, then a dialog appears asking you to select from the available targets when you launch the Debugger. Note that if the name of the target contains spaces you must enclose it in double quotes on the command line.
-x	Enables you to specify that the code is executed on the target after load. This is the default behavior when you load an ELF file. This switch is ignored if you are downloading a binary file.
-xs	Specifies that code is executed but stopped at entry point.

The return code of the program is 0 if everything worked or 1 if there were any errors.

Specifying target name

If a target name is specified using the –t <target> option then the target name is matched (case sensitively) against the names listed in the ProDG Target Manager for PlayStation 2.

If no target name is specified then the environment variable PS2TARGET is searched for. This environment variable can be set manually by inserting a line like the following into your autoexec.bat file:

```
SET PS2TARGET=<target_name>
```

If PS2TARGET has been set, the target name is taken from this, otherwise if there is only one target available then that will be used, otherwise if a single target is currently connected in the Target Manager then that target will be used.

If all of the above fail, then ps2run will stop with an error.

To set the file server directory

After connecting to the target, the file server directory is set if one is specified using the –f <path> option. This means that, when the target is reset, loading of `iopconf` will occur from this directory.

If the reset option is specified using the –r option, then the target is reset.

To specify a binary download

A binary download puts an exact image of a file onto the target. This would typically be graphics or level data, not code.

If a binary download is specified using the –b <address> option, then the file is downloaded to the specified address. The address is given in hexadecimal either with or without a `0x` prefix, for example:

```
ps2run -b 0x200000
```

and

```
ps2run -b 200000
```

are the same.

The target is not started after downloading a binary file.

Loading and running ELF files

If binary download is not specified then the file is assumed to be an ELF file. Checks are performed to make sure it is an ELF file. If it is, then it is loaded to the target.

The program will then be executed unless the "no execution" option is specified using the –nx option.

Showing TTY output

Debugging with ps2run is most easily achieved using two instances of the program running in separate command prompt sessions.

In one command prompt window use the command:

```
ps2run -t <name> -p
```

to intercept all TTY output from your target.

From a second command prompt window you can then reset the target and run the program you wish to debug by invoking the command:

```
ps2run -t <name> -r <file>
```

where <file> is the name of the ELF file to be executed.

Disconnecting from the target

After all operations are performed the target can either be left connected so that file serving can take place, or it can be disconnected so that other users can connect to it.

- -nd specifies no disconnect (the default)
- -da always disconnects
- -d ensures that the target is left in the same state as before the ps2run command was executed. Therefore if you were already connected to the target in the Target Manager then you use ps2run, when ps2run has finished the connection will remain.

Index

A

access targets from your application, 5
adding targets, 10

C

command line utility
  command-line syntax, 33
  overview, 33
  specifying target name, 35
command-line syntax, 6, 33
command-line utility
  disconnecting from targets, 36
  loading and running ELFs, 35
  TTY output, 36
configuring targets, 12
connecting to targets, 13

D

debugger
  updating, 3
Debugger
  advanced features, 1
disconnecting from targets, 14, 36

E

exiting, 10

F

file serving, 24
flashing the kernel, 26

K

keyboard shortcuts, 9

L

launching target manager, 5
loading and running ELFs, 15, 35
loading and running IRXs, 16

N

NDK for PlayStation 2, 2

O

overview, 1, 5, 33

P

ProDG for PlayStation 2, 1
  overview, 1
  updating over the web, 3
ProDG Plus for PlayStation 2
  what is it?, 1
PS2TM.INI file, 29

R

removing targets, 10
resetting target, 17

S

specifying target name, 35

T

target manager

access targets from your application, 5
adding targets, 10
command-line syntax, 6
configuring targets, 12
connecting to targets, 13
disconnecting from targets, 14
exiting, 10
file serving, 24
flashing the kernel, 26
keyboard shortcuts, 9
launching, 5
loading and running ELFs, 15
loading and running IRXs, 16
overview, 5
PS2TM.INI file, 29
removing targets, 10
resetting target, 17
tray icon, 9
TTY output, 17
TTY stream output, 18
updating, 3
user interface, 8
viewing file serving, 24
viewing IOP modules, 23
tray icon, 9
TTY output, 17, 36
TTY stream output, 18
Tuner for PlayStation 2, 2

U

updating debugger, 3
updating over the web, 3
updating target manager, 3
user interface, 8

V

viewing file serving, 24
viewing IOP modules, 23