# Platform Specification Format Reference Manual

## *Embedded Development Kit EDK*

**EDK 10.1, Service Pack 3**

XILINX®

## Platform Specification Format Reference Manual
## EDK 10.1, Service Pack 3

The following table shows the revision history for this document.

| Date | Revision |
|---|---|
| 08/20/04 | Initial release for EDK 6.3i. |
| 02/15/05 | EDK 7.1i release. |
| 04/28/05 | EDK 7.1i Service Pack 1 release. |
| 07/05/05 | EDK 7.1i Service Pack 2 release. |
| 10/24/05 | EDK 8.1i release. |
| 01/16/06 | EDK 8.1 Service Pack 1 release. Updated to note obsolete cores. |
| 06/23/06 | EDK 8.2i release. |
| 01/08/07 | EDK 9.1i release. |
| 09/05/07 | EDK 9.2i release. |
| 01/14/07 | EDK 10.1 release. |
| 09/19/08 | EDK 10.1 Service Pack 3 release. |

# About This Guide

## Guide Contents

This manual contains the following chapters:

- Chapter 1, "Introduction"
- Chapter 2, "Microprocessor Hardware Specification (MHS)"
- Chapter 3, "Microprocessor Peripheral Definition (MPD)"
- Chapter 4, "Peripheral Analyze Order (PAO)"
- Chapter 5, "Black-Box Definition (BBD)"
- Chapter 6, "Microprocessor Software Specification (MSS)"
- Chapter 7, "Microprocessor Library Definition (MLD)"
- Chapter 8, "Microprocessor Driver Definition (MDD)"
- Chapter 9, "Xilinx Board Description (XBD) Format"
- Appendix A, "Glossary"

## Additional Resources

To find additional documentation, see the Xilinx website:

http://www.xilinx.com/support/documentation/index.htm.

The following table lists some of the resources you can access from this website. You can also directly access these resources using the provided URLs.

| Resource | Description/URL |
|---|---|
| EDK Home | Embedded Development Kit home page, FAQ, and tips.<br>http://www.xilinx.com/ise/embedded_design_prod/platform_studio.htm |
| EDK Examples | A set of complete EDK examples.<br>http://www.xilinx.com/ise/embedded/edk_examples.htm |
| Tutorials | Tutorials covering Xilinx design flows from design entry to verification and debugging<br>http://www.xilinx.com/support/techsup/tutorials/index.htm |

| Resource | Description/URL |
|---|---|
| Answer Browser | To search the Answer Database of silicon, software, and IP questions and answers, or to create a technical support WebCase, see the Xilinx website at:<br>http://www.xilinx.com/support/mysupport.htm |
| Application Notes | For descriptions of device-specific design techniques and approaches, click the **Doc Type** tab on the following web page:<br>http://www.xilinx.com/support/documentation/index.htm |
| Data Sheets | For device-specific information on Xilinx device characteristics, including readback, boundary scan, configuration, length count, and debugging, click the **Doc Type** tab on the following web page:<br>http://www.xilinx.com/support/documentation/index.htm |
| Problem Solvers | Interactive tools that allow you to troubleshoot your design issues:<br>http://www.xilinx.com/support/troubleshoot/psolvers.htm |
| GNU Manuals | The entire set of GNU manuals may be found at:<br>http://www.gnu.org/manual |

# Conventions

This document uses the following conventions. An example illustrates each convention.

## Typographical

The following typographical conventions are used in this document:

| Convention | Meaning or Use | Example |
|---|---|---|
| `Courier font` | Messages, prompts, and program files that the system displays | `speed grade: - 100` |
| **`Courier bold`** | Literal commands that you enter in a syntactical statement | **`ngdbuild`** *`design_name`* |
| **Helvetica bold** | Commands that you select from a menu | **File → Open** |
| | Keyboard shortcuts | **Ctrl+C** |

| Convention | Meaning or Use | Example |
|---|---|---|
| *Italic font* | Variables in a syntax statement for which you must supply values | **ngdbuild** *design_name* |
| | References to other manuals | See the *Development System Reference Guide* for more information. |
| | Emphasis in text | If a wire is drawn so that it overlaps the pin of a symbol, the two nets are *not* connected. |
| Square brackets [ ] | An optional entry or parameter. However, in bus specifications, such as **bus[7:0]**, they are required. | **ngdbuild** [*option_name*] *design_name* |
| Braces { } | A list of items from which you must choose one or more | **lowpwr** ={**on**\|**off**} |
| Vertical bar \| | Separates items in a list of choices | **lowpwr** ={**on**\|**off**} |
| Vertical ellipsis<br>.<br>.<br>. | Repetitive material that has been omitted | IOB #1: Name = QOUT'<br>IOB #2: Name = CLKIN'<br>.<br>.<br>. |
| Horizontal ellipsis ... | Repetitive material that has been omitted | **allow block** *block_name loc1 loc2 ... locn;* |

## Online Documents

The following conventions are used in this document:

| Convention | Meaning or Use | Example |
|---|---|---|
| Blue text | Cross-reference link to a location in the current document | See the section "Additional Resources" for details.<br>Refer to "Title Formats" in Chapter 1 for details. |
| Blue, underlined text | Hyperlink to a website (URL) | Go to http://www.xilinx.com for the latest speed files. |

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## Chapter 3: Microprocessor Peripheral Definition (MPD)

## Chapter 4: Peripheral Analyze Order (PAO)



## Chapter 5: Black-Box Definition (BBD)

## Chapter 6: Microprocessor Software Specification (MSS)



## Chapter 7: Microprocessor Library Definition (MLD)



## Chapter 8: Microprocessor Driver Definition (MDD)

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Chapter 1

# Introduction

EDK tools are designed to operate in a data-driven manner. There are various meta-data files that capture information, for example, about various IPs, drivers, and software libraries being used in the EDK tools. Files are also used to capture both hardware and software aspects of your design information. These are ASCII files. The set of all these meta-data formats is referred to as the Platform Specification Format or PSF.

This chapter contains the following sections:



## Files

### BBD - Black Box Definition

The Black Box Definition (BBD) file manages the file locations of optimized hardware netlists for the black-box sections of your peripheral design.

Refer to Chapter 5, "Black-Box Definition (BBD)," for more information.

### MDD - Microprocessor Driver Definition

An MDD file contains directives for customizing software drivers.

Refer to Chapter 8, "Microprocessor Driver Definition (MDD)," for more information.

### MHS - Microprocessor Hardware Specification

The Microprocessor Hardware Specification (MHS) file defines the hardware component. You supply an MHS file as an input to the Platform Generator (Platgen) tool.

Refer to Chapter 2, "Microprocessor Hardware Specification (MHS)," for more information.

## MPD - Microprocessor Peripheral Definition

The Microprocessor Peripheral Definition (MPD) file defines the interface of the peripheral.

Refer to Chapter 3, "Microprocessor Peripheral Definition (MPD)," for more information.

## MSS - Microprocessor Software Specification

You supply an MSS file as an input to the Library Generator (Libgen). The MSS file contains directives for customizing libraries, drivers, and file systems.

Refer to Chapter 6, "Microprocessor Software Specification (MSS)," for more information.

## MLD - Microprocessor Library Definition

An MLD file contains directives for customizing software libraries and operating systems.

Refer to Chapter 7, "Microprocessor Library Definition (MLD)" for more information.

## PAO - Peripheral Analyze Order

A PAO (Peripheral Analyze Order) file contains a list of HDL files that are needed for synthesis and defines the analyze order for compilation.

Refer to Chapter 4, "Peripheral Analyze Order (PAO)," for more information.

## XBD - Xilinx Board Definition

An XBD file contains a definition of logical interfaces present on a board and how they are connected to the FPGA. Refer to Chapter 9, "Xilinx Board Description (XBD) Format," for more information.

# File and IP Naming Rules

File and IP names must be all lower-case to ensure consistency across the following:

- OS: UNIX (case-sensitive) vs. Win (case-insensitive)
- HDL: Verilog (case-sensitive) vs. VHDL (case-insensitive)

A lower-case naming convention is used to deal with the above combinations. For example: `MYCORE_v2_1_0` and `mycore_v2_1_0` would mean two different files in UNIX, whereas in Windows, they would be the same.

Assembly of lower-level cores into the top-level are merged by name reference. Therefore, it is important that names match.

## Version Scheme

Form of the version level is `X.Y.Z`

- `X` - major revision
- `Y` - minor revision
- `Z` - patch level

## Version Setting for MHS and MSS

In the body of the MHS and MSS file, add the following statement:

```
PARAMETER VERSION = 2.1.0
```

The version is specified as a literal of the form 2.1.0.

## Version Setting for BBD, MPD, and PAO

The version level is concatenated to the base name of the data files. The literal form of the version level is `vX_Y_Z`.

- `<ipname>_vX_Y_Z.mpd`
- `<ipname>_vX_Y_Z.bbd`
- `<ipname>_vX_Y_Z.pao`
- `<ipname>_vX_Y_Z.mdd`