



## Imperas Guide to using Virtual Platforms

Platform / Module Specific Information for  
[altera.ovpworld.org](http://altera.ovpworld.org) / AlteraCycloneIII\_3c120

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## Model Release Status

This model is released as part of OVP releases and is included in OVPworld packages. Please visit [OVPworld.org](http://OVPworld.org).

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## 1.0 Platform / Module: AlteraCycloneIII\_3c120

This document provides the details of the usage of an Imperas OVP Virtual Platform / Module. The first half of the document covers specifics of this particular component. For more information about Imperas OVP virtual platforms, how they are built and used, please see the later sections in this document.

### 1.1 Virtual Platform / Module Type

Hardware described using OVP can either be a platform, module, processor, or peripheral.

This hardware component is described as being a module. A module is a component that is used in other modules, platforms, or test harnesses. It is normally used to encapsulate a layer in a hierarchical system.

### 1.2 Licensing

Open Source Apache 2.0

### 1.3 Description

This platform models the Altera Cyclone III 3c120.

The processor is an Altera Nios\_II procesor, Nios\_II\_F.

### 1.4 Limitations

Peripherals are modeled only to the extent required to boot and run Operating Systems such as Linux.

### 1.5 Reference

Altera Cyclone III 3c120 Reference Guide

### 1.6 Location

The AlteraCycloneIII\_3c120 virtual platform / module is located in an Imperas/OVP installation at the VLNV: [altera.ovpworld.org / module / AlteraCycloneIII\\_3c120 / 1.0](http://altera.ovpworld.org/module/AlteraCycloneIII_3c120/1.0).

### 1.7 Module Simulation Attributes

Table 1. Module Simulation Attributes

Attribute	Value	Description
stoponctrlc	stoponctrlc	Stop on control-C

## 2.0 Command Line Control of the Module

### 2.1 Built-in Arguments

Table 2. Module Built-in Arguments

Attribute	Value	Description
allargs	allargs	The Command line parser will accept the complete imperas argument set. Note that this option is ignored in some Imperas products

When running a platform in a Windows or Linux shell several command arguments can be specified. Typically there is a '-help' command which lists the commands available in the platforms. For example:

```
myplatform.exe -help
```

Some command line arguments require a value to be provided. For example:

```
myplatform.exe -program myimagefile.elf
```

## ***2.2 Module Specific Command Line Arguments***

No platform / module specific command line arguments have been specified.

## **3.0 Processor [altera.ovpworld.org/processor/nios\_ii/1.0] instance: cpu**

### ***3.1 Processor model type: 'nios\_ii' variant 'Nios\_II\_F' definition***

Imperas OVP processor models support multiple variants and details of the variants implemented in this model can be found in:

- the Imperas installation located at ImperasLib/source/altera.ovpworld.org/processor/nios\_ii/1.0/doc
- the OVP website: [OVP Model Specific Information nios ii Nios II F.pdf](#)

#### **3.1.1 Description**

Nios\_II Family Processor Model.

#### **3.1.2 Licensing**

Open Source Apache 2.0

#### **3.1.3 Limitations**

No Custom instructions.  
No Cache model.  
No JTAG.

#### **3.1.4 Verification**

Models have been extensively tested by Imperas, and validated against tests from Altera.

#### **3.1.5 Features**

Barrel Shifter.  
Configurable MPU.  
Configurable MMU.  
Shadow Register Sets.  
Hardware Multiply.  
Hardware Divide.  
Hardware Extended Multiply.

## ***3.2 Instance Parameters***

Several parameters can be specified when a processor is instantiated in a platform. For this processor instance 'cpu' it has been instantiated with the following parameters:

Table 3. Processor Instance 'cpu' Parameters (Configurations)

Parameter	Value	Description
endian	little	Select processor endian (big or little)
simulateexceptions	simulateexceptions	Causes the processor simulate exceptions instead of halting
mips	125.0	The nominal MIPS for the processor

Table 4. Processor Instance 'cpu' Parameters (Attributes)

Parameter Name	Value	Type
variant	Nios_II_F	enum
BREAK_VECTOR	0xc7fff820	uns32
EXCEPTION_VECTOR	0xd0000020	uns32
RESET_VECTOR	0xc2800000	uns32
FAST_TLB_MISS_EXCEPTION_VECTOR	0xc7fff400	uns32
HW_DIVIDE	1	bool
HW_MULTIPLY	1	bool
HW_MULX	0	bool
INCLUDE_MMU	1	bool
MMU_TLB_SET_ASSOCIATIVITY	16	string
MMU_TLB_ENTRIES	128	string
MMU_PID_BITS	8	uns32
DATA_ADDR_WIDTH	29	uns32
INST_ADDR_WIDTH	29	uns32
TEST_HALT_EXIT	1	bool
EXCEPTION_EXTRA_INFORMATION	1	bool

### 3.3 Memory Map for processor 'cpu' bus: 'ibus'

Processor instance 'cpu' is connected to bus 'ibus' using master port 'INSTRUCTION'.

Table 5. Memory Map ( 'cpu' / 'ibus' [width: 32] )

Lo Address	Hi Address	Instance	Component
0x0	0xFFFFFFFF	pb_ibus_to_smbus	bridge

Table 6. Bridged Memory Map ( 'cpu' / 'pb\_ibus\_to\_smbus' / 'smbus' [width: 32] )

Lo Address	Hi Address	Instance	Component
0x0	0x3FFFFFFF	flash_mem_64m	ram
0x7FFF400	0x7FFF7FF	tlb_miss_ram_1k	ram
0x10000000	0x17FFFFFFF	pb_cpu_to_ddr2_bot	ram

### 3.4 Memory Map for processor 'cpu' bus: 'dbus'

Processor instance 'cpu' is connected to bus 'dbus' using master port 'DATA'.

Table 7. Memory Map ( 'cpu' / 'dbus' [width: 32] )

Lo Address	Hi Address	Instance	Component
0x0	0x7FFFFFFF	pb_dbus_to_smbus_1	bridge
0x8000000	0x87FFFFFFF	pb_cpu_to_io	bridge
0x8800000	0xFFFFFFF	pb_dbus_to_smbus_2	bridge

Table 8. Bridged Memory Map ( 'cpu' / 'pb\_dbus\_to\_smbus\_1' / 'smbus' [width: 32] )

Lo Address	Hi Address	Instance	Component
0x0	0x3FFFFFFF	flash_mem_64m	ram
0x7FFF400	0x7FFF7FF	tlb_miss_ram_1k	ram

Table 9. Bridged Memory Map ( 'cpu' / 'pb\_cpu\_to\_io' / 'iobus' [width: 32] )

Lo Address	Hi Address	Instance	Component
0x4C80	0x4C9F	uart_s1	Uart
0x4D40	0x4D47	sysid	SystemIDCore
0x4D50	0x4D57	jtag_uart	JtagUart
0x400000	0x400017	timer_1ms	IntervalTimer32Core

Table 10. Bridged Memory Map ( 'cpu' / 'pb\_dbus\_to\_smbus\_2' / 'smbus' [width: 32] )

Lo Address	Hi Address	Instance	Component
0x10000000	0x17FFFFFFF	pb_cpu_to_ddr2_bot	ram

### 3.5 Net Connections to processor: 'cpu'

Table 11. Processor Net Connections ( 'cpu' )

Net Port	Net	Instance	Component
d_irq10	irq10	uart_s1	Uart
d_irq1	irq1	jtag_uart	JtagUart
d_irq11	irq11	timer_1ms	IntervalTimer32Core

## 4.0 Peripheral Instances

### 4.1 Peripheral [[altera.ovpworld.org/peripheral/Uart/1.0](http://altera.ovpworld.org/peripheral/Uart/1.0)] instance: uart\_s1

#### 4.1.1 Licensing

Open Source Apache 2.0

#### 4.1.2 Description

Altera Avalon UART

#### 4.1.3 Limitations

No Support for pin level transitions



#### 4.1.4 Reference

Embedded Peripherals IP User Guide, UG-01085-11.0 11.0 June 2011

There are no configuration options set for this peripheral instance.

### 4.2 Peripheral [[altera.ovpworld.org/peripheral/SystemIDCore/1.0](http://altera.ovpworld.org/peripheral/SystemIDCore/1.0)] instance: *sysid*

#### 4.2.1 Licensing

Open Source Apache 2.0

#### 4.2.2 Description

Altera Avalon System ID Core

#### 4.2.3 Limitations

No Support for pin level transitions

#### 4.2.4 Reference

Embedded Peripherals IP User Guide, UG-01085-11.0 11.0 June 2011

There are no configuration options set for this peripheral instance.

### 4.3 Peripheral [[altera.ovpworld.org/peripheral/JtagUart/1.0](http://altera.ovpworld.org/peripheral/JtagUart/1.0)] instance: *jtag\_uart*

#### 4.3.1 Licensing

Open Source Apache 2.0

#### 4.3.2 Description

Altera Avalon JTAG UART

#### 4.3.3 Limitations

No Support for pin level transitions

#### 4.3.4 Reference

Embedded Peripherals IP User Guide, UG-01085-11.0 11.0 June 2011

Table 12. Configuration options (attributes) set for instance 'jtag\_uart'

Attribute	Value	Type	Expression
writeIRQThreshold	8	uns32	
readIRQThreshold	8	uns32	
writeBufferDepth	64	uns32	
readBufferDepth	64	uns32	
console	1	bool	
finishOnDisconnect	1	bool	

outfile	jtag_uart.log	string	
---------	---------------	--------	--

#### **4.4 Peripheral [[altera.ovpworld.org/peripheral/IntervalTimer32Core/1.0](http://altera.ovpworld.org/peripheral/IntervalTimer32Core/1.0)] instance: *timer\_1ms***

##### **4.4.1 Licensing**

Open Source Apache 2.0

##### **4.4.2 Description**

Altera Avalon Interval Timer32 Core

##### **4.4.3 Limitations**

No Support for pin level transitions

##### **4.4.4 Reference**

Altera Interval Timer Core

There are no configuration options set for this peripheral instance.

## 5.0 Overview of Imperas OVP Virtual Platforms

This document provides the details of the usage of an Imperas OVP Virtual Platform / Module. The first half of the document covers specifics of this particular virtual platform / module.

This second part of the document, includes information about Imperas OVP virtual platforms and modules, how they are built and used.

The Imperas virtual platforms are designed to provide a base for you to run high-speed software simulations of CPU-based SoCs and platforms on any suitable PC. They are typically based on the functionality of vendors fixed or evaluation platforms, enabling you to simulate software on these reference platforms. Typically virtual platforms are fixed and require the vendor to modify or extend them. Imperas virtual platforms are different in that they enable you to extend the functionality of the virtual platform, to closer reflect your own platform, by adding more component models, running different operating systems or adding additional applications.

Imperas virtual platforms are created using the Imperas iGen technology, allowing them to be used with Imperas OVP based simulators and also with Accellera/OSCI compliant SystemC simulators and commercial EDA System Design environments that use SystemC.

Virtual platforms include simulation models of the target devices, including the processor model(s) for the target device plus enough peripheral models to boot an operating system or run bare metal applications. The platform and the peripheral models used in most of the virtual platforms are open source, so that you can easily add new models to the platform as well as modify the existing models. Some models are only provided as binary, normally because the IP owner has restricted the release of the model source. In this case, please contact Imperas for more information.

There are typically several generic flavors of the virtual platforms for specific processor families, some targeting full operating systems, such as Linux, and some which focus on Real Time Operating Systems (RTOS) such as Mentor Nucleus or freeRTOS. OVP models of the processor cores are included in the virtual platforms, and for those processors which support multiple cores SMP Linux is often supported for that virtual platform. For all of these virtual platforms, many of the peripheral components of the platform are modeled, often including the Ethernet and USB components. The semi-hosting capability of the Imperas virtual platform simulator products enables connection via the Ethernet and USB components from the virtual platform to the real world via the x86 host machine.

The Imperas OVP CPU models are written using the OVP Virtual Machine Interface (VMI) API that defines the behavior of the processor. The VMI API makes a clear line between model and simulator allowing very good optimization and world class high speed performance. The processor models are Instruction Accurate and do not model the detailed cycle timing of the processor and they implement functionality at the level of a Programmers View of the processor and peripherals and the software running on them does not know it is not running on hardware. Many models are provided as a binary shared object

and also as source. This allows the download and use of the model binary or the use of the source to explore and modify the model. The models are run through an extensive QA and regression testing process and most processor model families are validated using technology provided by the processor IP owners. All the models in this platform are developed with the Open Virtual Platforms APIs and are implemented in C. A platform can be modeled as different levels of hierarchy using separately describable and compilable modules.

More information on modeling and APIs can be found on the [www.OVPworld.org](http://www.OVPworld.org) site.

## 6.0 Getting Started with Imperas OVP Virtual Platforms

Virtual platforms are downloadable from the OVPworld website [OVPworld.org/downloads](http://OVPworld.org/downloads). You need to browse and look for '<platform processor name> Examples'. You do need to be registered and logged in on the OVP site to download. OVPworld currently provides 32 bit host versions of packages containing virtual platforms.

When downloading, choose, Linux or Windows host. 32 bit packages can be installed and executed on 32 bit or 64 bit hosts. If you require a 64 bit host version please contact Imperas.

For example, for the ARM Versatile Express platform booting Linux on Cortex-A15MP Single, Dual, and Quad core procesors, you would want the download package: 'OVPSim\_demo\_Linux\_ArmVersatileExpress\_arm\_Cortex-A15MP'.

Most virtual platform packages contain the platform and all the processor and peripheral models needed. You will need to download a simulator to run the platform. You can use OVPSim, downloadable from [OVPworld.org/downloads](http://OVPworld.org/downloads), or you can use one of the Imperas simulators ([imperas.com/products](http://imperas.com/products)) available commercially from Imperas.

## 7.0 Simulating Software

### 7.1 Getting a license key to run

After you have downloaded you will need a runtime license key before the simulators will run. For OVPSim please visit [OVPworld.org/likey](http://OVPworld.org/likey) and provide the required information and an evaluation/demo license key will be automatically sent to you. If you are using Imperas, then please contact Imperas for a license key.

### 7.2 Normal runs

To run a platform, read the section below on command line control of the platform and the section on setting command line arguments.

### 7.3 Loading Software

For most virtual platforms the platform is already configured to run the default software application/program and there is normally a script to run that sets some arguments. You can then copy/edit this script to select your own applications etc.

The example application programs are typically .elf format files and are provided pre-compiled. There are normally makefiles and associated scripts to recompile the example applications.

To find more information about compiling and loading software, the following document should be looked at: [Imperas Installation and Getting Started.pdf](#).

#### ***7.4 Semihosting***

In a virtual platform, semihosting is not normally used as there is normally hardware that implements the appropriate functionality - for example I/O will be handled by UARTs etc.

#### ***7.5 Using a terminal (UART)***

If the platform includes one or more UARTs you will need to connect a terminal program to it so that you can see output and type into the simulated program. Review the list of peripherals below and see what configuration options it has been set with. In most cases there is an option to set to instruct the simulator to 'pop up' a terminal window connected to the simulated UART.

#### ***7.6 Interacting with the simulation (keyboard and mouse)***

If the platform has a simulated UART you can normally set a command to get the simulator to pop up a terminal window allowing you to see output from the simulated UART and also allowing you to type characters into the UART that can be processed by the simulated software.

If your simulated platform has an LCD device then you can often configure it to recognize mouse movements and mouse clicks - allowing full interaction.

To see these interactions in action, have a look at some of the available videos available at [OVPworld.org/demosandvideos](http://OVPworld.org/demosandvideos).

#### ***7.7 More Information (Documentation) on Simulation***

To find more information about running simulations and more of the options the simulators provide, the following documents should be looked at:

[Imperas Installation and Getting Started.pdf](#)

[Simulation Control of Platforms and Modules User Guide.pdf](#)

[Advanced Simulation Control of Platforms and Modules User Guide.pdf](#)

[OVP Control File User Guide.pdf](#)

A full list of the currently available OVP documentation is available: [OVPworld.org/documentation](http://OVPworld.org/documentation).

### **8.0 Debugging Software running on an Imperas OVP Virtual Platform**

The Imperas and OVP simulators have several different interfaces to debuggers. These include several proprietary formats and also the standard GNU RSP format is supported allowing many compatible debuggers to be used. Below are some examples that Imperas directly support.

### **8.1 Debugging with GDB**

A GNU debugger (GDB) can be connected to a processor in a platform using the RSP protocol. This allows the application program running on a processor to be debugged using a specific GDB for the processor selected. When using the Imperas Professional products many connections can be made allowing a GDB to be connected to all the processors in the platform.

The use of GDB is documented: [OVPsim Debugging Applications with GDB User Guide.pdf](#).

### **8.2 Debugging with Imperas M\*DBG**

The Imperas multi-processor debugger can be connected to a platform and through this connection you can debug application programs running on all of the processors instanced within the platform. It is also capable, within this single unified environment, to debug peripheral model behavioral code in conjunction with the processor application programs.

For more information please see the Imperas M\*DBG user guide.

The Imperas multi-processor debugger is also capable of controlling the Imperas Verification Analysis and Profiling (VAP) tools in real time, making them invaluable to application program development, debugging and analysis.

For more information please see the Imperas VAP tools user guide.

### **8.3 Debugging with the Imperas eGui and GDB**

Imperas eGui gives a GUI front end to the use of the GDB debugger. It allows use of all the features of GDB including source level application program debugging on processors.

### **8.4 Debugging with the Imperas eGui and M\*DBG**

Imperas eGui gives a GUI front end to the Imperas multi-processor debugger. It provides all the features of this debugger but does so with source level application program debugging on processors and source level debugging of the behavioral code on peripheral components in the platform. A context view shows all the processor and peripheral components within the platform and allows switching between them to examine the state of each at the event at which the simulation was stopped

Imperas eGui provides a menu from which the Imperas VAP tools can be controlled.

### **8.5 Debugging with Imperas eGui and Eclipse**

Imperas provide a GUI based on Eclipse called eGui. This provides a GUI front end to use with a standard GDB or the Imperas MPD (Multi-Processor Debugger).

The use of eGui is documented: [eGui Eclipse User Guide.pdf](#).

A standard Eclipse CDT development environment can be connected to one or more processors in a

platform (multiple processors require an Imperas professional product). The simulation platform is started remotely or using the external tool feature in Eclipse, opens a debug port and awaits the connection with Eclipse. All features provided by the Eclipse CDT development environment are available to be used to debug software applications executing on the processors in the platform.

The use of Eclipse is documented: [OVPSim Debugging Applications with Eclipse User Guide.pdf](#).

### ***8.6 Debugging applications running under a simulated operating system***

If the simulated platform is running an Operating System and the platform has a UART or Ethernet etc connection then it is often possible to connect an external debugger and debug the applications running under the simulated operating system.

An example would be a simulated platform running the Linux operating system, such as the MIPS Malta, or ARM Versatile Express. Within the simulated Linux you can start a gdbserver that connects from within the simulation through a UART out to the host PC via a port. Within the host PC you start a terminal program and connect to the port with a debugger such as GDB and can then debug the simulated user application.

## **9.0 Modifying the Platform / Module**

### ***9.1 Platforms / Modules use C/C++ and OVP APIs***

The Imperas and OVP simulators execute a platform / module that is written in C/C++ and that makes function calls into the simulator's APIs. Thus the virtual platform / module is compiled from C/C++ into a binary shared object that the simulator loads and runs. OVP provides the definition and documentation that defines the C APIs for modeling the platforms, modules, the peripherals, and the processors. You can find more information about these APIs on the OVP website and in the OVP API documentation.

### ***9.2 Platforms/Modules/Peripherals can be easily built with iGen from Imperas***

Imperas provides a product 'iGen' that takes an input script file and creates the C/C++ files needed for platforms, modules, and peripherals - it creates the C/C++ file that is compiled into the platform, module or peripheral that is needed as an object file by the simulator. iGen creates the C/C++ files, you then need to add any necessary behaviors or further details etc. For platforms iGen creates either a C platform or a C++ SystemC TLM2 platform. For peripherals or modules iGen creates the C files and also provides a native C++ SystemC TLM2 interface to allow the peripheral/module to be instantiated in SystemC TLM2 platforms.

Information on iGen is available from: [imperas.com/products](http://imperas.com/products).

### ***9.3 Re-configuring the platform***

There will normally be several configuration options that you can set when running the platform without the need to change any source. Refer to the section above on command line arguments. If these do not allow you to make the changes you need, then you may need to edit and recompile the source of the platform.

The source of the platform, modules, and the source of the peripherals will be installed as part of the packages you are using. The sources are located in the Imperas/OVP installation VLNV source tree. The VLNV term refers to: Vendor (eg arm.ovpworld.org), Library (eg platform), Name, (eg ArmVersatileExpress-CA15), and Version (eg 1.0). To modify the platform, locate the platform source files.

If you are an Imperas user and have access to iGen, we recommend you modify the source script files and regenerate and recompile the C that makes up the platform. Refer to the Imperas iGen model generator guide and the Imperas platform generator guide.

If you are using the C or SystemC TLM2 platforms with OVPsim, then you can edit the C/C++ files, recompile the source directly using the supplied makefiles, and then run the simulator directly with the resultant shared object.

#### ***9.4 Replacing peripherals components***

If you need to replace peripherals, find the appropriate place in the source of the platform, make the change you need, and recompile etc. Look in the library for documentation on available peripherals and their configuration options.

#### ***9.5 Adding new peripherals components***

If you need to add peripherals, find the appropriate place in the source, make the additions you need, and recompile etc. Look in the library for documentation on available peripherals and their configuration options.

If you need to create new peripheral components then use iGen to very quickly create the necessary C/C++ files that get you started. With iGen you can create peripherals with register/memory state in a few lines of iGen source. When adding behavior to the peripherals refer to the OVP API documentation.



## 10.0 Available Virtual Platforms

Table 13. Imperas / OVP Extendable Platform Kits (13 available)

Name	Vendor
AlteraCycloneIII_3c120	altera.ovpworld.org
AlteraCycloneV_HPS	altera.ovpworld.org
ArmIntegratorCP	arm.ovpworld.org
ArmVersatileExpress	arm.ovpworld.org
ArmVersatileExpress-CA15	arm.ovpworld.org
ArmVersatileExpress-CA9	arm.ovpworld.org
AtmelAT91SAM7	atmel.ovpworld.org
FreescaleKinetis60	freescale.ovpworld.org
FreescaleKinetis64	freescale.ovpworld.org
FreescaleVybridVFXx	freescale.ovpworld.org
MipsMalta	mips.ovpworld.org
RenesasUPD70F3441	renesas.ovpworld.org
XilinxML505	xilinx.ovpworld.org

Table 14. Imperas General Virtual Platforms (6 available)

Name	Vendor
arm-ti-eabi	arm.imperas.com
armm-ti-coff	arm.imperas.com
armm-ti-eabi	arm.imperas.com
HeteroAlteraCycloneV_HPS_CycloneIII_3c120	imperas.ovpworld.org
HeteroArmNucleusMIPSLinux	imperas.ovpworld.org
SiFiveFU540	imperas.ovpworld.org

Table 15. Imperas Modules (component of other platforms) (55 available)

Name	Vendor
AlteraCycloneIII_3c120	altera.ovpworld.org
AlteraCycloneV_HPS	altera.ovpworld.org
AE350	andes.ovpworld.org
ARMv8-A-FMv1	arm.ovpworld.org
ArmIntegratorCP	arm.ovpworld.org
ArmVersatileExpress	arm.ovpworld.org
ArmVersatileExpress-CA15	arm.ovpworld.org
ArmVersatileExpress-CA9	arm.ovpworld.org
AtmelAT91SAM7	atmel.ovpworld.org
ArmCortexMFreeRTOS	imperas.ovpworld.org
ArmCortexMuCOS-II	imperas.ovpworld.org
ArmKernel	imperas.ovpworld.org
ArmKernelDual	imperas.ovpworld.org
BareMetalMIPS	imperas.ovpworld.org
Dual_ARMv8-A-FMv1_VLAN	imperas.ovpworld.org
Hetero_1xArm_3xMips32	imperas.ovpworld.org
Hetero_ARM_RISCV_NeuralNetwork	imperas.ovpworld.org

Hetero_ARMv8-A-FMv1_Cortex-M3	imperas.ovpworld.org
Hetero_ARMv8-A-FMv1_MIPS_microAptiv	imperas.ovpworld.org
Hetero_AlteraCycloneV_HPS_AlteraCycloneIII_3c120	imperas.ovpworld.org
Hetero_ArmIntegratorCP_XilinxMicroBlaze	imperas.ovpworld.org
Hetero_ArmVersatileExpress_MipsMalta	imperas.ovpworld.org
Hetero_ArmVersatileExpress_XilinxMicroBlaze	imperas.ovpworld.org
Quad_ArmVersatileExpress-CA15	imperas.ovpworld.org
RiscvRV32FreeRTOS	imperas.ovpworld.org
MipsMalta	mips.ovpworld.org
iMX6S	nxp.ovpworld.org
RenesasUPD70F3441	renesas.ovpworld.org
ghs-multi	renesas.ovpworld.org
virtio	riscv.ovpworld.org
FaultInjection	safepower.ovpworld.org
PublicDemonstrator	safepower.ovpworld.org
Zynq_PL_DualMicroblaze	safepower.ovpworld.org
Zynq_PL_NoC	safepower.ovpworld.org
Zynq_PL_NoC_node	safepower.ovpworld.org
Zynq_PL_NostrumNoC	safepower.ovpworld.org
Zynq_PL_NostrumNoC_node	safepower.ovpworld.org
Zynq_PL_RO	safepower.ovpworld.org
Zynq_PL_SingleMicroblaze	safepower.ovpworld.org
Zynq_PL_TTElNoC	safepower.ovpworld.org
Zynq_PL_TTElNoC_node	safepower.ovpworld.org
Zynq_PL_TTElNoC_processing_node_public_demonstrator	safepower.ovpworld.org
Zynq_PL_TTElNoC_public_demonstrator	safepower.ovpworld.org
Zynq_PL_TTElNoC_sensor_actor_node_public_demonstrator	safepower.ovpworld.org
FU540	sifive.ovpworld.org
S51CC	sifive.ovpworld.org
coreip-s51-arty	sifive.ovpworld.org
coreip-s51-rtl	sifive.ovpworld.org
dualFifo	vendor.com
XilinxML505	xilinx.ovpworld.org
Zynq	xilinx.ovpworld.org
Zynq_PL_Default	xilinx.ovpworld.org
Zynq_PS	xilinx.ovpworld.org
zc702	xilinx.ovpworld.org
zc706	xilinx.ovpworld.org

Table 16. Imperas / OVP Bare Metal Virtual Platforms (22 available)

Name	Vendor
BareMetalNios_IISingle	altera.ovpworld.org
BareMetalArcSingle	arc.ovpworld.org
BareMetalArm7Single	arm.ovpworld.org
BareMetalArmCortexADual	arm.ovpworld.org
BareMetalArmCortexASingle	arm.ovpworld.org
BareMetalArmCortexASingleAngelTrap	arm.ovpworld.org
BareMetalArmCortexMSingle	arm.ovpworld.org

ArmCortexMFreeRTOS	imperas.ovpworld.org
ArmCortexMuCOS-II	imperas.ovpworld.org
BareMetalArmx1Mips32x3	imperas.ovpworld.org
Or1kUlinux	imperas.ovpworld.org
BareMetalM14KSingle	mips.ovpworld.org
BareMetalMips32Dual	mips.ovpworld.org
BareMetalMips32Single	mips.ovpworld.org
BareMetalMips64Single	mips.ovpworld.org
BareMetalMipsDual	mips.ovpworld.org
BareMetalMipsSingle	mips.ovpworld.org
BareMetalOr1kSingle	ovpworld.org
BareMetalM16cSingle	posedgesoft.ovpworld.org
BareMetalPowerPc32Single	power.ovpworld.org
BareMetalV850Single	renesas.ovpworld.org
ghs-multi	renesas.ovpworld.org

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