DrivExpress Installation and License Setup Guide

System Requirements

Altera

Quartus II 12.0 (including all service packs and patches)

Simulator

MentorGraphics simulators including: ModelSim Altera Starter Edition (ASE), ModelSim Altera Edition (AE), ModelSim PE/SE/DE 10.1a or later, Questa Sim 10.1a or later

OS

Microsoft Windows 7, RedHat Enterprise Linux 5 and 6, CentOS 5 and 6

Installing on Windows

- 1. <u>Download the installer</u> for your **simulator** platform, 32-bit or 64-bit. **Note:** ModelSim-Altera (Starter) Edition is 32-bit.
- 2. When prompted, select *Save and Open* or *Open*. The DrivExpress installer .jar file will download and run.

Do you want to open or save drivexpress-1.0.0_64bit.jar (30.7 MB) from dl.boxcloud.com ?				×	
	Open	Save	•	Cancel	
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3. Continue to the Licensing Agreement. **Note:** by accepting the Licensing Agreement you agree to use DrivExpress to develop and debug designs **only on Altera FPGAs**.

🔠 - Installation of DrivExpress
Licensing Agreements DrivExpress
Please read the following license agreement carefully: PLEASE READ THIS DOCUMENT CAREFULLY BEFORE USING THE LICENSED MATERIALS. BY USING THE LICENSED EVALUATION MATERIALS, LICENSEE ARE AGREEING TO BE BOUND BY THE TERMS OF THIS LICENSE. This License is entered into between the party specified in the signature block below as licensee ("Licensee"), and Macnica Americas, Inc. with an office at 380 Stevens Avenue, Suite 206, Solana Beach, CA 92075 ("Licensor").
 1.0 Definitions:For the purposes of this Agreement, the following definitions shall apply: 1.1 "Altera® Device(s)" means field programmable gate arrays, complex programmable logic devices, structured application specific integrated circuit devices, and/or any other semiconductor devices designed, developed or manufactured by or on behalf of Altera Corporation. 1.2 "Confidential Information" shall mean any business, marketing, technical, scientific, or other information disclosed which, at the time of disclosure, is designated as confidential (or like designation), is disclosed in circumstances of confidence, or would be understood by a person, exercising reasonable business judgment, to be confidential, or is otherwise stated in this Agreement to be confidential. 1.3 "Deliverables" means (a) the applicable Design for as listed in Section 12.0, (b) any format test benches (if applicable) and/or suite of test vectors (if applicable), and (c) product/user documentation (if applicable) relating to the Design. 1.4 "Intellectual Pronenty" means any or all of the following and all rights in arising out of or associated therewith: (a) all United I do not accept the terms of this license agreement.
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4. Select the installation path. **Note**: the installation path **cannot contain spaces**.

E Select the installation path:	
C:\drivexpress	🕒 Browse

5. Select the installation components. **Note:** DrivExpress requires Python 2.7, which is an optional component in the installer.

Installation of DrivExpress		
 Select the packs you want to install: Note: Grayed packs are required. DrivExpress DPI Library OPI Library Samples FPGA Design Examples Python Script Examples 	4.9 MB 963.67 KB 3.4 MB 579.12 KB 556.17 KB 22.96 KB 15.66 MB	
Description Installing Python 2.7 which is necessary for Please be sure to install if Python 2.7 has n After installing Python 2.7, please add the f - Python Install Directory (Example: C:\Pyth - 3rd Party Script Directory (Example: C:\Py Total space Required: Available space:	DrivExpress. ot been installed in your PC. ollowing 2 directories to Windo ion27) (thon27\Scripts)	ows system environment variable PATH. 20.56 MB 14.08 GB
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6. DrivExpress will perform a quick installation, then run the Python installer. Select *Install for all users* then click *Next*.



7. Select the Python install directory and click *Next*.

Python 2.7.3 (64-bit) Setup		X
	Select Destination Directory	
	Please select a directory for the Python 2.7. files.	3 (64-bit) Up New
	libs	
python		
wind <mark>ows</mark>	JC:\Python27\	
	< Back Next >	Cancel

8. We recommend a complete Python installation, which is the default setting. Click Next.

Python 2.7.3 (64-bit) Setup	X
	Customize Python 2.7.3 (64-bit)
	Click on the icons in the tree below to change the way features will be installed.
	Python Python Tc/Tk Documentation Utility Scripts Test suite
	Python Interpreter and Libraries
pyth <mark>on</mark> wind <mark>ows</mark>	This feature requires 23MB on your hard drive. It has 5 of 5 subfeatures selected. The subfeatures require 30MB on your hard drive.
Disk Usage Advanced	Sack Next > Cancel

9. The Python installation will proceed. Clicking *Finish* will return to the DrivExpress installer. Click

Next.

10. The Information screen has details about environment variables, licensing, and getting started. Click *Next* then *Done* to finish the installation.

Installing on Linux

- 1. <u>Download the installer</u> for your **simulator** platform, 32-bit or 64-bit. ModelSim-Altera (Starter) Edition is 32-bit.
- 2. When prompted, select *Save*. The DrivExpress installer .jar file will download.

関 Openir	ig drivexpress-1.0.0_32bit.jar	×
You have chosen to	open	
drivexpress-	L.0.0_32bit.jar	
which is a: Jav	a archive (37.8 MB)	
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③ <u>S</u> ave File		
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	🗙 Cancel 🥥 OK]

- 3. In a terminal window, cd to the directory containing the DrivExpress download, for example: \$ cd ~/Downloads
- 4. The installer is run using the java command: \$ java -jar drivexpress-<version number>.jar
- 5. Continue to the Licensing Agreement. **Note:** by accepting the Licensing Agreement you agree to use DrivExpress to develop and debug designs **only on Altera FPGAs**.

- Installation of DrivExpre	55 - >
Licensing Agreements	DrivExpress
Please read the following license agreement carefully:	
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 1.0 Definitions: For the purposes of this Agreement, the follor 1.1 "Altera® Device(s)" means field programmable gate arrays, comparticutured application specific integrated circuit devices, and/or any developed or manufactured by or on behalf of Altera Corporation. 1.2 "Confidential Information" shall mean any business, marketing, te disclosed which, at the time of disclosure, is designated as confidentia circumstances of confidence, or would be understood by a person, e judgment, to be confidential, or is otherwise stated in this Agreement 1.3 "Deliverables" means (a) the applicable Design for as listed in Set (if applicable) and/or suite of test vectors (if applicable), and (c) prod relating to the Design. 1.4 "Intellectual Property" means any or all of the following and all rig therewith: (a) all United States and foreign patents and applications the set of t	by by the second
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11. Select the installation path. **Note**: the installation path **cannot contain spaces**.

E Select the installation path:	
/opt/drivexpress	Browse

12. Select the installation components. **Note:** DrivExpress requires Python 2.7, which is an optional component in the installer and will likely be required by all RHEL/CentOS 5/6 installations.

Select the options you want t	o install:
Note: Grayed out options are	e as Mp
Python 2.7	16.83 MB
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DrivExpress will perform a quick installation, then run the Python installer.

8	- Installation of DrivExpress	_ ×
Installation		DrivExpress
🏶 Pack installation progress:		
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Overall installation progress:		
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	- Installation of DrivExpress	_ ×
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		Previous Next Quit

6. The Information screen has details about environment variables, licensing, and getting started.

- Installation of DrivExpress	
Information DrivExpr	ess
If using DrivExpress on Linux, it is important to set the following two environment variables: - LD_LIBRARY_PATH - PYTHONHOME Example:	
<pre>\$ export LD_LIBRARY_PATH=\$LD_LIBRARY_PATH:/opt/drivexpress/python2.7/lib \$ export PYTH0NH0ME=/opt/drivexpress/python2.7</pre>	
The license file is not installed automatically. If you don't have it, please subscribe using the <u>DrivExpress License Request Form</u> . Put the obtained lice file in the Verilog simulation running directory, or specify the location path at the top of the main Python t script (test_main.py), as follows.	nse est
from dxpress import *	
<pre># Create simulation control instance. sim = SimControl()</pre>	
# Location path of license file. sim.license_file = "/opt/drivexpress/drivexpress_lic_enc.bin"	•
Previous Next	🔕 Quit

7. The Generate an automatic installation script button creates an .xml file containing the parameters used in the current installation.



This can be used to run batch mode installations:

\$ java -jar drivexpress-<version number>.jar <exported name>.xml

8. Click *Done* to close the installer.

Licensing

Each time DrivExpress runs, it looks for a license to check feature availability. A valid license file must be specified in the main DrivExpress python script or DrivExpress will not run.

- 1. To request a license, contact your local Macnica sales representative or use the <u>online license</u> request page.
- 2. Fill out the form. The <u>DrivExpress page</u> has a comparison of the 3 Editions.

Macnica Americas Technology		
Request a DrivExpress license		
Name *		
Company *]	
Street Address		
City	State / Province / Region	
Postal / Zip Code	Country	
DrivExpress Edition *]	
Operating System Preference *]	
Simulator Preference *		
Comments		

- 3. Evaluation licenses will be generated within 24 hours. Other licenses will be generated after the transaction is complete. Macnica sales will contact you as required.
- 4. You will receive your license via email. Save *drivexpress_lic_enc.bin* to the root directory of the DrivExpress installation. This is the location checked by the sample design. **Note:** Do not rename the file.

Additional Licensing Information

 When creating a new design, the location of the license file can be specified. Begin the Python simulation script with the below code, with <path to license file> filled out. Note: always use a forward slash "/", not a backslash "\", regardless of the operating system.

An example path on Windows:

```
sim.license_file = "c:/drivexpress/drivexpress lic enc.bin"
```

Python simulation script starting point:

```
from dxpress import *
sim = SimControl()
sim.license_file = "<path to license file>"
```

Running the Sample Design

The DrivExpress installation includes a sample which simulates Altera's Chaining DMA reference design on a Stratix IV GX FPGA. It can be found in *<DrivExpress installation>/sample*.

By default, the design simulates a Gen2x4 End Point. This can be changed by editing *pcie_gen* to 1 or 2 and *pcie_lane* to 1, 4, or 8 in *<DrivExpress installation>/sample/design/build_run.do*.

Running the Sample

- 1. Place a copy of the license file in the DrivExpress installation directory (see Licensing section).
- 2. Make sure the environment variables are set correctly:
 - a. **Windows:** Start Quartus II 12.0 (including all service packs and patches). This will set up the QUARTUS_ROOTDIR environment variable used by DrivExpress.
 - Linux: Set the environment variables mentioned in the installer including: QUARTUS_ROOTDIR=<Quartus 12.0 installation>
 LD_LIBRARY_PATH=<DrivExpress installation>/python2.7/lib
 PYTHONHOME=<DrivExpress installation>/python2.7
- 3. Start ModelSim or Questa Sim via the GUI or by running vsim.
- 4. Change to the directory: <DrivExpress installation>/sample/design
- 5. Type *do build_run.do*. This script will automatically compile the library files if necessary, generate the Chaining DMA example, and run the design.
- 6. Once the simulation is complete, you will should see a message similar to this in the console:

7. We recommend exploring the example .do, .py, and .v files to learn about DrivExpress.