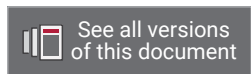


SDAccel Development Environment

Release Notes, Installation, and Licensing Guide

UG1238 (v2018.3) May 15, 2019



Revision History

The following table shows the revision history for this document.

Section	Revision Summary
5/15/2019 Version 2018.3	
Changed Behavior	Corrected an error.
4/30/2019 Version 2018.3	
Xilinx Runtime (XRT) and Shell Nomenclature	Added nomenclature used when describing XRT and shells.
Installing the Packages on Ubuntu	Clarified required Ubuntu packages.
Setting Up the Environment to Run SDAccel	Added an <i>Important!</i> note regarding the need to set up the SDAccel™ tool and XRT for the SDAccel environment.
1/24/2019 Version 2018.3	
Chapter 2: SDAccel Development Environment Requirements and Setup	Restructured and updated entire section.
Chapter 3: Create a Licensing File to Enable Software	Updated for 2018.3.
Chapter 4: SDAccel Environment Installation	Restructured and updated entire section.
Changed Behavior	Added entry about Solaris OS support and new license server tool upgrade requirements.
Release Notes from Previous Versions	Removed redundant section.
Chapter 2: SDAccel Development Environment Requirements and Setup	Restructured and updated entire section.
12/5/2018 Version 2018.3	
What's New for 2018.3	Added new and enhanced features introduced in the 2018.3 release.
Changed Behavior	Describes changed behavior introduced in the 2018.3 release.
Supported Platforms in 2018.3	Added descriptions for new boards that are supported.
Install Required CentOS/RHEL Packages	Updated requirements.
Install Ubuntu Packages and Libraries	Updated requirements.
System Requirements	Updated requirements.
General Updates	Updated screen captures, values, and other areas for the 2018.3 release.
10/02/2018 Version 2018.2.xdf	
What's New for 2018.2.xdf	Added an <i>Important!</i> note regarding the separate delivery and installation of the deployment files for SDAccel platforms, and the software installation of the SDAccel development environment.
Supported Platforms	Added a table of the available platform shells and their configuration and resources.
Chapter 4: SDAccel Environment Installation	Added instructions for locating and installing the XRT, deployment shell, and development shell to support the deployment of the SDAccel platforms.
07/10/2018 Version 2018.2	
Chapter 1: Release Notes	Added sections for Known Issues and Release Notes from Previous Versions.

Section	Revision Summary
07/02/2018 Version 2018.2	
Document restructure	This document has been made specific to SDAccel. For the SDSoC™ release information, refer to <i>SDSoC Environments Release Notes, Installation, and Licensing Guide (UG1294)</i> .
06/06/2018 Version 2018.2	
Chapter 1: Release Notes	Added information about updates to SDx™ for 2018.2.
04/04/2018 Version 2018.1	
SDSoC - SDAccel Common Updates for 2018.1	Added information about updates to SDx for 2018.1.
SDSoC Development Changes for 2018.1	Added details about feature changes for 2018.1.
SDAccel Development Environment Changes for 2018.1	Added details about feature changes for 2018.1.

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Release Notes

What's New for 2018.3

The 2018.3 release of the SDAccel™ development environment provides support for the Xilinx® Alveo™ U200 and U250 Data Center accelerator cards, as well as the VCU1525 acceleration platform.



IMPORTANT! *In the 2018.3 release (as in the 2018.2.xdf release), the Xilinx Runtime (XRT), the deployment shell to program the card, and the development shell to develop applications, are all delivered as separate installable Linux packages for each supported platform. Users who simply wish to install an accelerator card, and deploy applications to run on an accelerator card, may get started as described in [Getting Started with Alveo Data Center Accelerator Cards \(UG1301\)](#), or the [VCU1525 Reconfigurable Acceleration Platform User Guide \(UG1268\)](#). Users who want to use the complete SDAccel development environment for programming, compiling, and debugging accelerated applications, must do a full installation as described in [Chapter 4: SDAccel Environment Installation](#).*

Enhancements to U200, U250, and VCU1525 Platforms

- A redesigned static portion to better route signals to super logic regions (SLRs).
- Updated Shells and XRT to move the Management Function to Physical Function 0 (PFO) and User Function to Physical Function 1 (PF1).
- An optional memory resource constructed from memory primitives in the programmable logic fabric is now available, called Programmable Logic Random Access Memory (PLRAM).

SDAccel Tool Enhancements

- The SDAccel linker has a new option (`xocc --slr`) to manually assign compute units to specific SLRs. This feature will only work on compatible platforms.
- In addition to DDR banks, the host application can access PLRAM for direct data transfer with a kernel. This feature is enabled using the `xocc --sp` option with compatible platforms.
- Command line users can use the graphical user interface (GUI) to browse results and view graphical timelines.
- This release also provides improved visualization and profiling features.
- New OpenCL™ pragmas have been added:

- `xcl_loop_tripcount`
- `xcl_latency`
- `xcl_pipeline_loop(II)`
- Enhanced debug features for data center applications.
- Ability to export SDAccel kernels directly from standalone high-level synthesis (HLS) projects.
- Comprehensive management and querying of xclbin and platform metadata with the new `xclbinutil` utility.

Changed Behavior

Migrating from 2018.2

The following table specifies changes to existing flows and scripts that are required when using the 2018.3 release, or the 2018.2.xdf release vs. the earlier 2018.2 release.

Table 1: Migration Summary

Area	2018.2 Behavior	Changes for 2018.3, or 2018.2.xdf
Installation	<code>xbinst</code> and <code>xbsak</code> utilities were used to install and manage accelerator cards.	<code>xbutil</code> program replaces both <code>xbsak</code> and <code>xbinst</code> for installing and managing accelerator cards.
Command-line flow	Source <code>settings64.sh</code> as needed to setup the environment for running the SDAccel GUI or command-line tools.	Source both <code>settings64.sh</code> and <code>/opt/xilinx/xrt/setup.sh</code> for proper command-line compilation.
Linking	The <code>--sp</code> option requires specifying DDR banks using <code>bank0, bank1...</code>	The <code>--sp</code> option has been changed to specify the DDR banks as <code>DDR[0], DDR[1]</code> , and to support the use of PLRAM.
Runtime	The order of <code>clCreateProgramWithBinary</code> and <code>clCreateBuffer</code> in the host application was not checked.	The order of <code>clCreateProgramWithBinary</code> and <code>clCreateBuffer</code> in the host application is checked, and <code>clCreateProgramWithBinary</code> must occur before <code>clCreateBuffer</code> , or else a runtime error will occur.
RTL Kernels	RTL Kernels created manually could have register addresses in a reserved space.	The RTL kernel wizard always starts the kernel input arguments at address <code>0x10</code> , locations below this are reserved. A control register is required by all register transfer level (RTL) kernels at base address <code>0x0</code> . Registers at base address <code>0x4</code> , <code>0x8</code> , and <code>0xC</code> are used if kernel interrupts are enabled. You must update any RTL kernels created prior to 2018.3 if they use register addresses below <code>0x10</code> .
KCU1500	The KCU1500 platform was delivered as part of the release installation.	The KCU1500 board is not delivered as part of the release installation. However, a KCU1500 card previously installed from the 2018.2 release is supported for use with the 2018.3 release. Refer to AR# 72061 for more information.
Licensing	Solaris operating system supported.	To use SDAccel 2018.3, you must upgrade your license server tools to Flex 11.14.1 versions. For more information, see License Management Tools - 2018.3

Prior Release Notes

For more information on prior changes, refer to the Release Notes for the release:

- [What's New in SDAccel for 2018.2.xdf](#)
- [What's New in SDAccel for 2018.2](#)
- [What's New in SDAccel for 2017.4](#)

Supported Platforms in 2018.3



TIP: The term and acronym **Device Support Archive (DSA)** was deprecated in the 2018.3 release. The term DSA is replaced by:

- **Deployment Shell** – for users who will only run applications on the accelerator card.
- **Development Shell** – for users who will develop an application using the SDAccel development environment.

Table 2: Specifications for U200 v201830.1

Area	SLR 0	SLR 1	SLR 2
<i>General information</i>			
SLR description	Bottom of device; dedicated to dynamic region.	Middle of device; shared by dynamic and static region resources.	Top of device; dedicated to dynamic region.
XOCC link syntax for compute unit placement ¹	--slr <compute_unit_name>:SLR0 ²	--slr <compute_unit_name>:SLR1	--slr <compute_unit_name>:SLR2
<i>Global memory resources available in dynamic region³</i>			
DDR Memory channels (system port name)	DDR[0] (16 GB DDR4)	DDR[1] (16 GB DDR4, in static region) DDR[2] (16 GB DDR4, in dynamic region)	DDR[3] (16 GB DDR4)
PLRAM memory channels (system port name)	PLRAM[0] (128K, BRAM)	PLRAM[1] (128K BRAM)	PLRAM[2] (128K BRAM)
<i>Approximate available fabric resources in dynamic region</i>			
CLB LUT	354K	159K	354K
CLB Register	723K	328K	723K
Block RAM Tile	638	326	638
URAM	320	160	320

Table 2: Specifications for U200 v201830.1 (cont'd)

Area	SLR 0	SLR 1	SLR 2
DSP	2265	1317	2265

Notes:

1. By default, dynamic platforms might place a kernel in the same SLR as the memory bank that the kernel accesses. However, you can manually assign kernels to specific SLRs. Details on how kernel placement can be manually controlled are provided in the "User-specified SLR Assignments for Kernels" section of the *SDAccel Environment User Guide* (UG1023).
2. The assignment of a kernel to a specific SLR using the `--slr` option should be combined with assigning the global memory access for the kernel using the `--sp` option. Whenever possible, the kernel should be assigned to the DDR bank associated with the specific SLR assignment.
3. Approximately 20K CLB LUTs and 20K CLB Registers are required for each mapped memory channel, except for DDR[1] in the static region. A minimum of 12K CLB LUTs, and 18K CLB Registers are also required for the SmartConnect network, with additional resources required for each mapped memory channel, and each compute unit.

Table 3: Specifications for U250 v201830.1

Area	SLR 0	SLR 1	SLR 2	SLR 3
<i>General information</i>				
SLR description	Shared by dynamic and static region resources.	Shared by dynamic and static region resources.	Shared by dynamic and static region resources.	Shared by dynamic and static region resources.
XOCC link syntax for compute unit placement ¹	<code>--slr <compute_unit_name> :SLR0²</code>	<code>--slr <compute_unit_name> :SLR1</code>	<code>--slr <compute_unit_name> :SLR2</code>	<code>--slr <compute_unit_name> :SLR3</code>
<i>Global memory resources available in dynamic region³</i>				
DDR memory channels (system port name)	DDR[0] (16GB DDR4)	DDR[1] (16GB DDR4)	DDR[2] (16GB DDR4)	DDR[3] (16GB DDR4)
PLRAM memory channels (system port name)	PLRAM[0] (128K BRAM)	PLRAM[1] (128K BRAM)	PLRAM[2] (128K BRAM)	PLRAM[3] (128K BRAM)
<i>Approximate available fabric resources in dynamic region</i>				
CLB LUT	344K	344K	344K	345K
CLB Register	702K	702K	703K	703K
Block RAM Tile	500	500	500	500
URAM	320	320	320	320
DSP	2877	2877	2877	2877

Table 4: Specifications for VCU1525 v201830.1

Area	SLR 0	SLR 1	SLR 2
<i>General information</i>			
SLR description	Bottom of device; dedicated to dynamic region.	Middle of device; shared by dynamic and static region resources.	Top of device; dedicated to dynamic region.
XOCC link syntax for compute unit placement ¹	<code>--slr <compute_unit_name>:SLR0²</code>	<code>--slr <compute_unit_name>:SLR1</code>	<code>--slr <compute_unit_name>:SLR2</code>
<i>Global memory resources available in dynamic region³</i>			

The Xilinx runtime (XRT) packages follow a similar nomenclature that also denotes the release number, such as `xrt_u200_xdma_201830_1`.

Life Cycle for the Alveo runtime and shells

- **Beta:** A pre-production version that is typically distributed through Xilinx-hosted secured web lounges. Shells are marked *BETA* and otherwise *ES* for cards relying on engineering sample devices.
- **Production:** Production shells are available on <https://www.xilinx.com/>, under their respective card product web page. They are supported with the servers and OS combinations documented in *Getting Started with Alveo Data Center Accelerator Cards (UG1301)*, or the *VCU1525 Reconfigurable Acceleration Platform User Guide (UG1268)*.
- **Major Release:** The major release version of a shell is denoted in the customization substring of its file name, as shown in the previous figure (for example, `xdma_201830`).
- **Minor Release:** Shell updates (bug fixes or enabling specific new features) have an incremented suffix (>1). It is recommended to update to the latest minor release of a shell whenever possible.
- **Superseded:** Runtime or shells updated and replaced by a newer version, typically a minor release with backward compatibility.
- **Discontinued:** XRT or shells that are no longer supported.

Shells and Tool Compatibility

- When developing applications, the XRT and the SDAccel development environment must have the same major release version.
- A shell for a given major release version can be used with the XRT and SDAccel development environment for the releases from the next calendar year. For example, 2018.3 shells will be supported with the XRT and SDAccel releases from 2019.
- A specific release of the SDAccel development environment and XRT supports the use shells with a major release version from the prior calendar year, although some additional setup may be required.

Table 5: Shells and Tool Compatibility

Same versions for shells and XRT and SDAccel	Older shell with newer versions of XRT and SDAccel	Newer shells and older versions of XRT and SDAccel
Supported	Supported ¹	Not supported

Notes:

1. A shell for a given release will be supported in the next calendar year's releases of XRT and the SDAccel development environment.

SDAccel Development Environment Requirements and Setup

The 2019.1 SDAccel™ development environment consists of the SDx™ development environment and command-line tools for Data Center and PCIe®-based accelerator systems.

The SDAccel environment also includes the Vivado® Design Suite, which is used for programming the target devices and for developing custom hardware platforms.



TIP: The version of the Vivado tools installed by the SDx installation is the standard version of the Vivado Design Suite that can be installed as a separate product. If you are using both the SDAccel environment and the Vivado tools just install the SDAccel environment as described here.

System Requirements

The SDAccel development environment runs on the Linux operating systems only, and does not support Windows. To install and run on a computer, your system must meet the following minimum requirements:

Table 6: Minimum System Requirements

Component	Requirement
Operating System	Linux, 64-bit: <ul style="list-style-type: none">• Ubuntu 16.04.5 LTS, 18.04.1 LTS• CentOS 7.4, 7.5, 7.6• RHEL 7.4, 7.5, 7.6
System Memory	64 GB (80 GB is recommended)
Internet Connection	Required for driver, utilities, and demonstration installation
Hard disk space	100 GB

Install Required CentOS/RHEL Packages

For CentOS or RedHat, you must install the Extra Packages for Enterprise Linux (EPEL), as well as additional packages using the `yum` command. Install the EPEL repository using the instructions at <https://fedoraproject.org/wiki/EPEL>. The initial setup commands depend on your operating system.

1. Install EPEL.

On RedHat:

- a. To enable an additional repository on your system, open a terminal window, and enter the following command:

```
sudo subscription-manager repos --enable=rhel-7-server-optionalrpms
```

- b. To install EPEL, enter the following command:

```
sudo yum install -y https://dl.fedoraproject.org/pub/epel/epelrelease-latest-7.noarch.rpm
```

On CentOS:

- a. Open a terminal window, and enter the following command:

```
sudo yum install epel-release
```

2. To install kernel headers and kernel development packages, run the following two commands:

```
$ sudo yum install kernel-headers-`uname -r`
$ sudo yum install kernel-devel-`uname -r`
```

Note: Ensure that `uname` is surrounded by backticks (```) and not single quotes (`'`).

3. After step 2 completes, cold reboot your system.

Install Ubuntu Packages and Libraries

You do not need to install additional Ubuntu packages. The packages installed by the OS and by the XRT, deployment and development shells, and the SDAccel development environment should provide everything the tool needs.

Create a Licensing File to Enable Software

This section describes the steps to obtain a license for the SDx™ development environment. The software tools and IP product entitlements you have purchased are presented as selectable options in a table to include for licensing.

1. To create or manage your licenses, go to [Product Licensing](#).

If prompted to, sign in with your Xilinx.com credentials and confirm any necessary information to continue.

2. Under Certificate Based Licenses, select an environment product license.

Certificate Based Licenses

Product	Type	License	Available Seats	Status	Subscription End Date
<input type="checkbox"/> Model Composer : 90-day Evaluation License	Certificate - Evaluation	Node	1/1	Current	90 days
<input type="checkbox"/> Vivado Design Suite: 30-Day Evaluation License	Certificate - Evaluation	Node	1/1	Current	30 days
<input type="checkbox"/> SDSoC Environment, 60 Day Evaluation License	Certificate - Evaluation	Node	1/1	Current	60 days
<input type="checkbox"/> SDAccel OpenCL Development Environment: 30 Day Node Locked Evaluation Lice...	Certificate - Evaluation	Node	1/1	Current	30 days
<input type="checkbox"/> Vivado Design Suite: HL WebPACK 2015 and Earlier License	Certificate - No Charge	Node	1/1	Current	None
<input type="checkbox"/> ISE WebPACK License	Certificate - No Charge	Node	1/1	Current	None
<input type="checkbox"/> Xilinx MicroBlaze/All Programmable SoC Software Development Kit – Standalone	Certificate - No Charge	Node	1/1	Current	None
<input type="checkbox"/> PetaLinux Tools License	Certificate - Evaluation	Node	1/1	Current	365 days
<input type="checkbox"/> Vivado HLS Evaluation License	Certificate - Evaluation	Node	1/1	Current	30 days

Note: The table displays options based on what licenses you have purchased or redeemed. Xilinx also offers an evaluation license for the SDAccel development environment, which you can see in your available license list.

3. After selecting the environment, generate a license.

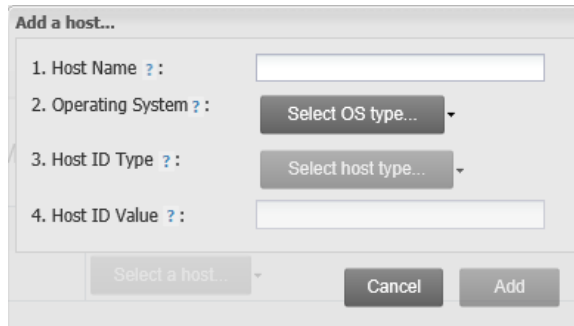
A new window is displayed where you define the product and system that you are generating the license for.

4. Under System Information, click **Select a host**, and then click **Add a host**.

2 SYSTEM INFORMATION

License	Node
Host ID * ?	Select a host... ▾

5. Enter information about the host.



- a. Enter a host name.
- b. For Operating System, select **Linux 64-bit**.
- c. Select the host identification type.
- d. Enter the Host ID.

The easiest way to obtain the Host ID of your machine is to run Xilinx® License Configuration Manager on the machine you want to license.

- e. Click **Add**.

6. Accept the licensing agreement.

You will receive an email from `xilinx.notification@entitlenow.com` with the license file, which you must save to your machine.

7. To enable the software, set the `XILINXD_LICENSE_FILE` environment variable to point to the location of the license file on your system.

SDAccel Environment Installation

With the delivery of the Xilinx[®] Alveo™ U200 and U250 Data Center accelerator cards, as well as the VCU1525 acceleration platform, you can configure your system for deploying applications only, or you can configure for development. This enables you to develop and debug applications, in addition to deploying them. However, the latter requires additional software installation.

Deployment Systems

To deploy accelerated applications, install the accelerator card into a system, and then install the required Xilinx Runtime (XRT) and deployment shell to support running applications. The following documents describe how to install the accelerator card and the required software for a deployment system:

- *Getting Started with Alveo Data Center Accelerator Cards* ([UG1301](#))
- *VCU1525 Reconfigurable Acceleration Platform User Guide* ([UG1268](#))

Development Systems

A development system enables you to not only deploy accelerated applications, but also develop and debug them. A development system does not require the actual accelerator card, but does require XRT and deployment shell, as well as a development shell. These packages are a required part of the SDAccel™ development environment to support a specific accelerator card in the tool.

To configure your system, use this workflow:

1. Install the SDAccel environment software, as described in [Run the Installation File](#).
2. For each acceleration platform that you want to develop for, install the platform-specific packages, as described in [Installing Platform-Specific Packages](#).

Note: For multiple accelerator cards, repeat the installation of platform-specific packages.

Prepare to Install the Tools

You must perform these actions prior to installation.



TIP: To reduce installation time, disable anti-virus software.

1. Ensure your system meets the system requirements, as described in [System Requirements](#).
2. Close all open programs.

Download the Installation File

1. Go to the [Xilinx Downloads Website](#).
2. Click an installation file to download it.

- **Web installer:**

The Web Installer is the recommended installation method, because it reduces download time and saves significant disk space.

When you use the Web Installer, you choose the design tools, device families, and installation options at the time of installation. The only files that are downloaded and installed are files necessary to support those options.

This method also mitigates issues such as network outages by resuming installation from where it stopped, instead of starting over.

- **Single File Download (SFD):** The SFD installation download is an image containing all devices and tool options that can be used for installation at a later time. This option is useful for installing all files on a network drive, or for providing maximum flexibility to users when they install the environment.

Run the Installation File

Use the installation file you downloaded to install the SDAccel development environment.

1. Run the installation file, which opens the SDx IDE Installer.
2. Click **Next**.
3. Enter your account credentials.
4. Select **Download and Install Now**, and then click **Next**.
5. Read and accept the license agreements.
 - To indicate that you accept the Xilinx Inc. End User License Agreement, click **I Agree**.
 - To indicate that you understand and accept the WebTalk Terms and Conditions, click **I Agree**.
 - To indicate that you accept the Third Party Software End User License Agreement, click **I Agree**.

6. After accepting all license agreements, click **Next**.
7. Customize the installation by selecting and clearing options in the tree.
To add to this installation later, click **Vivado** → **Help** → **Add Design Tools or Devices**.
8. Click **Next**.
9. Select the installation directory.



CAUTION! *The installation directory path must not contain any spaces.*

10. (Optional) Select shortcut and file association options.
11. Click **Next**.

An Installation Summary window is displayed, describing the following information:

- Devices
- Design tools
- Installation options
- Installation locations
- Download locations
- Disk space requirements

12. After reviewing the installation summary, click **Install**.

Install With the Single File Download

If you downloaded the full product installation, decompress the file, and then run `xsetup` to launch the installation.

Configuring Batch Mode Installation Flow

The installer can run in an unattended batch process. To run the installer unattended, you must do one of the following.

- Specify a standard edition and installation location
- Include a configuration file that provides the installer with the install location and the tools, devices, and options you want to install



RECOMMENDED: *Generate this reference for each new release, so that new devices, tools, options, or other changes will be accounted for in your options file.*

To begin using batch mode, open a command shell, and change to the directory where you have stored your extracted installer.

Generate a Configuration File

1. Run `xsetup -b ConfigGen`.

This will put you in an interactive mode where you will see the following menu:

```
1. SDx Development Environments
Please choose:
```

Type 1, and then press **Enter**.

2. After you make a selection, you will be prompted with the location/file name for your configuration file and the interactive mode exits. Below is a sample configuration file:

```
Edition=SDx Development Environments

# Path where Xilinx software will be installed.
Destination=/opt/Xilinx

# Choose the Products/Devices the you would like to install.
Modules=Built-in Platforms and associated devices for SDSoC:1,Zynq
UltraScale+ MPSoC:1,Virtex UltraScale+ HBM ES:0,Zynq-7000:1,Kintex
UltraScale+ ES:0,Kintex UltraScale+:1,ARM Cortex-A53:1,Spartan-7:1,ARM
Cortex-A9:1,ARM Cortex R5:1,Virtex UltraScale+ ES:0,System Generator for
DSP:0,Artix-7:1,Built-in Platforms and associated devices for
SDAccel:1,DocNav:1,Kintex-7:1,Virtex UltraScale+:1,Model Composer:0,Zynq
UltraScale+ RFSoc ES:0,Kintex UltraScale:1,Engineering Sample Devices
for Custom Platforms:0,Virtex UltraScale:1,Zynq UltraScale+ MPSoC
ES:0,MicroBlaze:1,Virtex-7:1

# Choose the post install scripts you'd like to run as part of the
finalization step. Please note that some of these scripts may require
user interaction during runtime.
InstallOptions=Acquire or Manage a License Key:0,Enable WebTalk for SDK
to send usage statistics to Xilinx:1,Enable WebTalk for Vivado to send
usage statistics to Xilinx (Always enabled for WebPACK license):1

## Shortcuts and File associations ##
# Choose whether Start menu/Application menu shortcuts will be created
or not.
CreateProgramGroupShortcuts=1

# Choose the name of the Start menu/Application menu shortcut. This
setting will be ignored if you choose NOT to create shortcuts.
ProgramGroupFolder=Xilinx Design Tools

# Choose whether shortcuts will be created for All users or just the
Current user. Shortcuts can be created for all users only if you run the
installer as administrator.
CreateShortcutsForAllUsers=0
```

```
# Choose whether shortcuts will be created on the desktop or not.
CreateDesktopShortcuts=1

# Choose whether file associations will be created or not.
CreateFileAssociation=1
```

Each option in the configuration file matches a corresponding option in the GUI. A value of 1 means that option is selected; a value of 0 means the option is unselected.

Note: In this configuration file, by default, there are no devices selected for installation (that is, all devices have a value of 0). To install a device, you *must* change the value to 1.

Running the Installer

After editing your configuration file to reflect your installation preferences, you can run the installer. During the command line installation, you must indicate your acceptance of the [Xilinx End-User License Agreement](#) and [Third Party End-User License Agreement](#), and confirm you understand the WebTalk Terms and Conditions.

WebTalk Terms and Conditions

The WebTalk Terms and Conditions, which you must agree to when running the installer, is below:

By indicating **I Agree**, I also confirm that I have read Section 13 of the terms and conditions above concerning WebTalk and have been afforded the opportunity to read the WebTalk FAQ posted at <https://www.xilinx.com/webtalk>. I understand that I am able to disable WebTalk later if certain criteria described in Section 13(c) apply. If they don't apply, I can disable WebTalk by uninstalling the Software or using the Software on a machine not connected to the Internet. If I fail to satisfy the applicable criteria or if I fail to take the applicable steps to prevent such transmission of information, I agree to allow Xilinx to collect the information described in Section 13(a) for the purposes described in Section 13(b).

When using the command line, use the command-line switch, `-a` or `--agree`, to indicate your agreement to each of the above. If one of the above is left out of the list, or the agree switch is not specified, the installer exits with an error and does not install.

Batch Mode Installation

This is an example of the command line for a typical new installation using a configuration file.

```
xsetup --agree XilinxEULA,3rdPartyEULA,WebTalkTerms
--batch Install --config install_config.txt
```

If you want to use one of the Xilinx default edition configurations, you do not have to specify the `--config` option, but since the destination directory is included in the configuration file, you will be required to specify this on the command line.

```
xsetup --agree 3rdPartyEULA,WebTalkTerms,XilinxEULA
--batch Install --edition "SDx Development Environments" --location "/home/
Xilinx"
```

The above command uses the default configuration options for the edition specified. To see the default configuration options, use the `-b ConfigGen` mode as described above. The batch mode of the installer can also uninstall and upgrade (add additional tools and devices). For the full list of the options in the installer batch mode, run `xsetup -h` or `xsetup --help`.

Resolve Internet Connection Issues

The installer connects to the Internet through the system proxy. The installer uses Firefox browser proxy settings (when explicitly set) to determine connectivity.

If there are connectivity issues, verify the following:

1. If you are using alternate proxy settings to the ones referred to, select the **Manual Proxy Configuration** option to specify the settings.
2. Check whether your company firewall requires a proxy authentication with a user name and password. If so, select the **Manual Proxy Configuration** option in the dialog box above.
3. If either the **Use System settings** or the **Auto detect settings** option is selected in the Firefox browser, then you must manually set the proxy in the installer.

Installing Platform-Specific Packages

To develop FPGA-accelerated applications in the SDAccel environment, you must install the following platform-specific packages for each platform that you want to develop applications for:

- **Xilinx Runtime (XRT):** The XRT is implemented as a combination of user-space and kernel driver components. XRT supports PCIe-based boards, and provides a software interface to Xilinx FPGAs.
- **Deployment Shell:** The deployment shell is the communication layer for the accelerator card, and is needed both to build applications with SDAccel and to run them on the corresponding accelerator card.
- **Development Shell:** To develop and deliver accelerated applications in the SDAccel development environment, you must install the development shell. The development shell includes platform information necessary for compiling and debugging new acceleration applications.

Before you install platform-specific packages, download the Xilinx Runtime (XRT), the Deployment Shell, and the Development Shell for your specific card from these product pages:

- [Alveo U200 Data Center Accelerator Card](#)
- [Alveo U250 Data Center Accelerator Card](#)
- [Virtex® UltraScale+™ FPGA VCU1525 Acceleration Development Kit](#)



IMPORTANT! *The installation packages found on the product pages are updated regularly, and the file names specified in this document might be different. Make sure to update file names in commands to match the packages that you actually downloaded.*

All software installations use standard Linux RPM and Linux DEB distribution files, and root access is required for all software and firmware installations.

Your operating system might require additional packages to be installed prior to installing the XRT and shells. See [System Requirements](#) for a list of required packages.

Installing the Packages on CentOS/RedHat

To install and use the XRT on CentOS/RedHat, ensure that you have installed all required packages and recommended libraries, as described in [Install Required CentOS/RHEL Packages](#).

On CentOS/RedHat, XRT supports Linux kernel up to: 3.10.0-862.14.4.el7.x86_64.

After you verify the installation of required packages and recommended libraries install the XRT, Deployment shell, and Development shell — in that order.



IMPORTANT! *The installation packages found on the product pages are updated regularly, and the file names specified below may be different. Make sure to update the file names in the following commands to match the packages that you actually downloaded.*

Use the following commands to install the packages for your specific platform.

- For U200:

```
sudo yum install <rpm-dir>/xrt_201830.2.1.1695_7.4.1708-xrt.rpm
sudo yum install <rpm-dir>/xilinx-u200-xdma-201830.1-2405991.x86_64.rpm
sudo yum install <rpm-dir>/xilinx-u200-xdma-dev-201830.1.x86_64.rpm
```

- For U250:

```
sudo yum install <rpm-dir>/xrt_201830.2.1.1695_7.4.1708-xrt.rpm
sudo yum install <rpm-dir>/xilinx-u250-xdma-201830.1-2405991.x86_64.rpm
sudo yum install <rpm-dir>/xilinx-u250-xdma-dev-201830.1.x86_64.rpm
```

- For VCU1525:

```
sudo yum install <rpm-dir>/xrt_201830.2.1.1695_7.4.1708-xrt.rpm
sudo yum install <rpm-dir>/xilinx-vcu1525-xdma-201830.1-2405991.x86_64.rpm
sudo yum install <rpm-dir>/xilinx-vcu1525-xdma-dev-201830.1.x86_64.rpm
```

Where `<rpm-dir>` is the directory where you downloaded the RPM packages, and `<version>` represents the software release you are installing.



RECOMMENDED: *If you are installing these packages for use with the SDAccel development environment and do not have an installed card, then you can ignore any message asking you to flash the accelerator card. However, if you are installing these packages for use with an installed accelerator card, you must follow the instructions in Getting Started with Alveo Data Center Accelerator Cards (UG1301), or the VCU1525 Reconfigurable Acceleration Platform User Guide (UG1268).*

Installing the Packages on Ubuntu

After you verify the installation of required packages and recommended libraries install the XRT, Deployment shell, and Development shell – in that order.

In the examples provided below, the `<OS>` will either be 18.04, or 16.04 depending on the version of Ubuntu you are running.



IMPORTANT! *The installation packages found on the product pages are updated regularly, and the file names specified below may be different. Make sure to update the file names in the following commands to match the packages that you actually downloaded.*

Use the following commands to install the packages for your specific platform.

- For U200:

```
sudo apt install <deb-dir>/xrt_201830.2.1.1695_<OS>-xrt.deb
sudo apt install <deb-dir>/xilinx-u200-xdma-201830.1_<OS>.deb
sudo apt install <deb-dir>/xilinx-u200-xdma-201830.1-dev_<OS>.deb
```

- For U250:

```
sudo apt install <deb-dir>/xrt_201830.2.1.1695_<OS>-xrt.deb
sudo apt install <deb-dir>/xilinx-u250-xdma-201830.1_<OS>.deb
sudo apt install <deb-dir>/xilinx-u250-xdma-201830.1-dev_<OS>.deb
```

- For VCU1525:

```
sudo apt install <deb-dir>/xrt_201830.2.1.1695_<OS>-xrt.deb
sudo apt install <deb-dir>/xilinx-vcu1525-xdma-201830.1_<OS>.deb
sudo apt install <deb-dir>/xilinx-vcu1525-xdma-201830.1-dev_<OS>.deb
```

Where `<deb-dir>` is the directory where you downloaded the DEB packages, and `<version>` represents the software release you are installing.



RECOMMENDED: *If you are installing these packages for use with the SDAccel development environment, you can ignore any message asking you to flash the accelerator card. However, if you are installing these packages for use with an installed accelerator card, you must follow the instructions in the Getting Started with Alveo Data Center Accelerator Cards (UG1301), or the VCU1525 Reconfigurable Acceleration Platform User Guide (UG1268).*

Setting Up the Environment to Run SDAccel

To set up the environment to run the SDx tools, source the file below so that the `sdx` command is in the `PATH`, and also setup other variables that are required for the development environment.



IMPORTANT! For the SDAccel development environment, you must set up both the SDAccel tool and the XRT that was installed as part of [Installing Platform-Specific Packages](#).

C Shell:

```
source <SDX_INSTALL_DIR>/settings64.csh
source <SDX_INSTALL_DIR>/xrt/setup.csh
```

Bash:

```
source <SDX_INSTALL_DIR>/settings64.sh
source <SDX_INSTALL_DIR>/xrt/setup.sh
```

Additional Resources and Legal Notices

Xilinx Resources

For support resources such as Answers, Documentation, Downloads, and Forums, see [Xilinx Support](#).

Documentation Navigator and Design Hubs

Xilinx[®] Documentation Navigator (DocNav) provides access to Xilinx documents, videos, and support resources, which you can filter and search to find information. DocNav is installed with the SDSoc[™] and SDAccel[™] development environments. To open it:

- On Windows, select **Start** → **All Programs** → **Xilinx Design Tools** → **DocNav**.
- At the Linux command prompt, enter `docnav`.

Xilinx Design Hubs provide links to documentation organized by design tasks and other topics, which you can use to learn key concepts and address frequently asked questions. To access the Design Hubs:

- In DocNav, click the **Design Hubs View** tab.
- On the Xilinx website, see the [Design Hubs](#) page.

Note: For more information on DocNav, see the [Documentation Navigator](#) page on the Xilinx website.

References

1. *SDAccel Environment Release Notes, Installation, and Licensing Guide* ([UG1238](#))

2. *SDAccel Environment Profiling and Optimization Guide* ([UG1207](#))
3. *SDAccel Environment Getting Started Tutorial* ([UG1021](#))
4. [SDAccel™ Development Environment web page](#)
5. [Vivado® Design Suite Documentation](#)
6. *Vivado Design Suite User Guide: Designing IP Subsystems using IP Integrator* ([UG994](#))
7. *Vivado Design Suite User Guide: Creating and Packaging Custom IP* ([UG1118](#))
8. *Vivado Design Suite User Guide: Partial Reconfiguration* ([UG909](#))
9. *Vivado Design Suite User Guide: High-Level Synthesis* ([UG902](#))
10. *UltraFast Design Methodology Guide for the Vivado Design Suite* ([UG949](#))
11. *Vivado Design Suite Properties Reference Guide* ([UG912](#))
12. [Khronos Group web page](#): Documentation for the OpenCL standard
13. [Xilinx® Virtex® UltraScale+™ FPGA VCU1525 Acceleration Development Kit](#)
14. [Xilinx® Kintex® UltraScale™ FPGA KCU1500 Acceleration Development Kit](#)
15. [Xilinx® Alveo™ web page](#)

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