

SDx Environments

Release Notes, Installation, and Licensing Guide

UG1238 (v2016.3) December 2, 2016

Revision History

The following table shows the revision history for this document.

Date	Version	Revision
12/02/2016	2016.3	Corrected document title.
11/30/2016	2016.3	Initial release.

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Supported Boards and Release Notes

What's New

SDSoC - SDAccel Development Environment Common Infrastructure

- Integrated installer to download and install SDSoC™ and SDAccel™ Development environments
 - Complete installation environment containing the required tools and data files for supported devices and platforms.
 - Web-based installer support.
 - Option to install SDSoC or SDAccel environments.
- Supported Operating Systems
 - Windows 7 and 7 SP1 Professional (64-bit) (SDSoC only)
 - Windows 10 Professional (64-bit) (SDSoC only)
 - Linux Support
 - Red Hat Enterprise Workstation/Server 7.1-7.2 (64-bit)
 - Red Hat Enterprise Workstation 6.7 and 6.8 (64-bit)
 - CentOS 6.8 (64-bit) (SDAccel only)
 - Ubuntu Linux 16.04.3 LTS (64-bit) (SDSoC only)
- Integrated IDE supporting both SDSoC and SDAccel Development environments
 - Eclipse based IDE with support for project creation, emulation, performance estimation, implementation and debug
 - One-stop Reports View to access all reports
- Enhanced structure for platform definition
 - Enable separation of the hardware and software portions of the platform

SDSoC Development Environment Features

- ARM® compiler tool chain support
 - Linaro-based gcc 5.2-2015.11-2 32-bit and 64-bit tool chains
- Target OS support
 - Linux (kernel 4.6, Xilinx branch xilinx-v2016.3_sdsoc), bare-metal and FreeRTOS 8.2.3
 - Example PetaLinux BSP for ZC702 platform with documentation in *SDSoC Environment Platform Development Guide*, (UG1146) [Ref 4].
- Device support
 - Zynq®-7000 support
 - Enhanced Zynq UltraScale+™ MPSoC support, including
 - 64-bit addressing
 - Support for zero_copy datamovers
 - Support for hardware/software event tracing
 - Support for performance estimation flows
 - Additional 150MHz, 200 MHz, and 300 MHz clocks in the ZCU102 platform
 - Vivado® Tcl APIs to export hardware metadata specification for custom platforms
 - Support for cortex-r5 based hardware functions (standalone/bare metal only)
 - Supports Zynq Ultrascale™ MPSoC Base Targeted Reference Design 2016.3 (embedded video processing platform). zcu102 designs created through SDSoC target 1.0 Si (xc9eg-es1 parts) only.
 - Supports Zynq Ultrascale MPSoC Software Acceleration TRD 2016.3 (embedded signal processing platform)
- Beta: New Emulator based on QEMU and RTL co-simulation (Zynq target, Linux Host OS only)
 - Support for zc702, zc706, zybo, zed, microzed platforms
 - Command line interface with graphical waveform viewer
 - Integrated flows within the Eclipse IDE (Beta release)
- Early Access: OpenCL™ compilation flows are now supported for Zynq and Zynq UltraScale+ MPSoC devices
 - Emulation flows and profile reports are not supported in 2016.3 for OpenCL platforms
 - Contact your sales representative to request early access

- Integrated Eclipse UI
 - Project import from 2016.2 SDSoC
 - Debug, Release, and user defined build configurations with independent project settings
 - Support for platform repositories
- System compiler enhancements
 - Scheduling enhancements for pipelined hardware functions
 - Support for arbitrary numbers of function arguments
 - Support for scalars up to 1024 bits, including double, long long
 - Support for AXI bus width up to 1024 bit data
 - Enhanced pragma processing: user-defined trace points, separate RESOURCE and ASYNC pragmas
- Software runtime enhancements
 - Thread-safe drivers now support multi-threaded, multi-process applications with multiple master threads controlling hardware functions
- Platform updates
 - Updated zc702_axis_io and zybo_axis_io platforms with direct I/O and lossless data capture
 - Renamed directories to reflect tool chain triplets
- Enhanced user-defined platform support
 - Improved error checking for hardware platform and software platform XML files.
 - Updated documentation and tutorial examples for supporting and accessing platform streaming I/O.
 - Created sdspfm utility to assist in SDSoC platform creation.
- New and updated sample applications
 - Lucas-Kanade dense optical flow
 - Stereo block matching
- Bug fixes and infrastructure updates
 - Improved error checking and handling
 - Updated and enhanced accelerator driver API software

SDAccel Development Environment Features

- New onboarding examples
- Device Support Archive (DSA)

Table 1-1: Device Support Archive (DSA)

Board	Device	Supported DSAs	Kernel Clock Frequency MHz	Status	Features
XIL-ACCEL-RD-KU115	KU115	xilinx:xil-accel-rd-pcie3-ku15:4ddr:3.2	300	Beta	<ul style="list-style-type: none"> • PCIe Gen3x8, 4 DDR • Kernel clock frequency control • Automatic frequency scaling • Second kernel clock at a higher frequency (up to 500MHz) is now supported that can be used for user created RTL kernels. • Increased fabric resources for compute units. Global memory changes to volatile, between binary loads
ADM-PCIE-8K5	KU115	xilinx:adm-pcie-8k5:2ddr:3.2	250	Beta	<ul style="list-style-type: none"> • PCIe Gen3x8, 2 DDR • Kernel clock frequency control • Automatic frequency scaling
ADM-PCIE-KU3	KU60	xilinx:adm-pcie-ku3:2ddr:3.2	250	Production	<ul style="list-style-type: none"> • PCIe Gen3x8, 2 DDR • Automatic frequency scaling
ADM-PCIE-KU3	KU60	xilinx:adm-pcie-ku3:2ddr-xpr:3.2	200	Production	<ul style="list-style-type: none"> • PCIe Gen3x8, 2 DDR • Automatic frequency scaling • Increased fabric resources for compute units. Global memory changes to volatile, between binary loads
ADM-PCIE-7V3	V7690T	xilinx:adm-pcie-7v3:1ddr:3.0	200	Production	<ul style="list-style-type: none"> • PCIe Gen3x8, 1DDR • Automatic frequency scaling

- Profiling
 - Enhanced kernel profiling to identify three types of performance stalls: intra-kernel streams, inter-kernel pipes or external memories.
 - Detailed kernel tracing supported in HW Emulation.
 - Comprehensive view of data transfers, computation, and stalls for every kernel and compute unit in an application.
 - All activity shown down to the function level inside the compute units.
 - Key performance characteristics are integrated in the Profile Summary.
 - Improved application tracing with detailed tooltips and descriptors.
- SDAccel Runtime
 - New utility, xbsak, for device status query, flash programming, and clock scaling over PCIe. No JTAG cables!
 - Support for OpenCL 1.2 API `clEnqueueMigrateMemObjects()` which can be used by applications to decouple data transfer from kernel execution enabling applications. This creates runtime pipelines for maximum utilization of hardware resources.
 - Support for runtime configuration control with runtime initialization file (`sdaccel.ini`).
 - Optionally disables OpenCL API checks to remove argument checking overhead in deployment.
 - Specifies a runtime log sink with four different options.
 - Specifies kernel polling interval to reduce host CPU usage.
 - Additional control on debug, profiling, and message logging.
- Usability
 - Utilization reports are automatically generated during compilation. These reports show utilization of LUTs, Registers, BRAMs, and DSPs for both the platform region, as well as for each of the kernels.
 - Enhanced debug checks in HW Emulation Flow covering:
 - Kernel or System transactions hangs.
 - Uninitialized memory read by kernel.
 - Out of DDR Range access.
 - Out of Bounds array access.
 - Periodic aliveness status during long HW Emulation runs.

- SDAccel Compiler
 - Dataflow support at the kernel level in OpenCL to improve performance (beta).
 - Datatype of all AXIMM parameters of the kernel has to be same size.
 - xocc command to define OpenCL Compiler dataflow FIFO size is:
`--xp param:compiler.xclDataflowFifoDepth=4`
 - The following warning message may appear during compile:


```
kernel.cl:28:17: warning: unknown attribute 'xcl_dataflow'
ignored __attribute__ ((xcl_dataflow))
```

Please ignore the warning or use `-k kernel_name` to avoid the warning.
 - New switches in `xbinst` and `xocc` to accept the new style platforms.
 - `xocc -xp` option supports special keywords to apply options to kernel specific compilation only.
 - `xocc -O3` optimization level is supported for targeting high effort optimizations for C/C++/OpenCL kernels.
 - Detailed messages generated by `xocc` to assist with debugging. User specified message controls are also supported.

Known Issues in 2016.3

SDSoC Development Environment Known Issues

- The `zcu102` platform supports ES1 silicon only
- If you cancel a build in the SDSoC IDE, you must delete the build target directory for the current build configuration (e.g., Debug, Release) before rebuilding. Otherwise the SDX_GUI behavior of the build is indeterminate.
- If you encounter an "error copying" message on a Windows host, the SDSoC install directory or your workspace has a pathname that causes file pathnames generated by SDSoC to exceed the Windows limit of 260 characters. To mitigate this issue, you can choose short names for the install and workspace directories, e.g., "C:\i" or "C:\w".
- In performance estimation flows, do not use variables named `clock_start` and `clock_end` in a function marked for acceleration or the performance root function, otherwise a conflict occurs with variables created flow.
- Standalone applications cannot write the filesystem on an SD card due to a bug in the `f_write()` function in the `xilffs` library.

- The Vivado HSI utility used in SDSoC requires the host OS to provide gmake, which is not by default installed with Ubuntu 16.04 LTS. If you see the following error, you need to install gmake:

```
INFO: [SDSoC 0-0] Create board support package library
ERROR: [Common 17-70] Application Exception: Not found in path: gmake
ERROR: [SDSoC 0-0] Exiting sds++ : Error when calling 'hsi -mode batch -notrace
-quiet -source
/proj/dsv_xhd/udayk/sdsoc/ubuntu_wrk2/mul/Release/_sds/swstubs/standalone_bsp/creat
e_bsp_post.tcl'
make: *** [mul.elf] Error 1
```

- SDx may exit unexpectedly on startup. This may occur when the splash screen is displayed or after the you select a workspace. Most often this is caused by out-of-sync preferences stored in the directory `.Xilinx/SDx`. Remove this directory to resolve the problem.
- SDx crashes on RHEL 7.* and Ubuntu 14 when creating a new project. The console message is:

```
java: /builddir/build/BUILD/oxygen-gtk2-1.3.4/src/animations/
oxygencomboboxdata.cpp:87: void
Oxygen::ComboBoxData::setButton(GtkWidget*):
Assertion '!_button._widget' failed
```

This crash is due to a bug in GTK. The workaround is:

- Open `/usr/share/themes/oxygen-gtk/gtk-2.0/gtkrc` file
 - Change `GtkComboBox::appears-as-list = 1` to `GtkComboBox::appears-as-list = 0`
- QEMU/RTL emulation may fail if a hardware function's generated Vivado IP name collides with another IP in the Vivado catalog.
 - In SDSoC 2016.3, a hardware function can have an HLS dataflow pragma at the top level, or it can have multi-buffered BRAM-mapped array arguments at the top level. But assigning both simultaneously results in hardware that does not behave properly.

SDAccel Development Environment Known Issues

- High-Capacity DSA has the following limitations
 - Global memory changes to volatile, between binary loads.
 - `Xilinx_xil-accel-rd-ku115-4ddr` may run into timing/routing issues for large numbers of kernels (approximately 10 or more compute units).
 - Runtime on `Xilinx_xil-accel-rd-ku115-4ddr` is longer than other DSAs, total runtime takes 3 to 10 hours, depending on the size and complexity of the kernel.
 - Autoscaling of kernel clocks may fail if the platform clock does not meet timing

- Overriding kernel clock frequency with lower frequency may help to meet platform clock as well.
- Multiple kernels with same name will cause the tool to crash during emulation.
- There is no dialog to run the license manager if no licenses are found.
- Designs with a large number of AXI transactions can lead to long runtime.
 - Check the *SDAccel Environment Optimization Guide*, [Ref 3] guide or onboarding example for guidance on rewriting the code.
- Running OpenCL application on HW from SDx™ GUI may fail if you change XILINX_OPENCL.
 - Need to select radio button "Replace native environment with specified environment".

Introduction

The 2016.3 SDx™ Environments software release consists of the SDSoC™ Development Environment and the SDAccel Development Environment, each targeting different types of designers. They are both installed together but are licensed separately. The Vivado® Design Suite is also installed with the SDx Environment for programming the device and for custom hardware platform development.

SDSoC Overview

The SDSoC (Software-Defined System On Chip) environment is an Eclipse-based Integrated Development Environment (IDE) for implementing heterogeneous embedded systems using the Zynq®-7000 All Programmable SoC and Zynq UltraScale+™ MPSoC platforms. The SDSoC environment provides an embedded C/C++ application development experience with an easy-to-use Eclipse IDE, and comprehensive design tools for heterogeneous Zynq-7000 AP SoC and Zynq UltraScale+ MPSoC development to software engineers and system architects.

The SDSoC environment includes a full-system optimizing C/C++ compiler that provides automated software acceleration in programmable logic combined with automated system connectivity generation. The application programming model within the SDSoC environment should be intuitive to software engineers. An application is written as C/C++ code, with the programmer identifying a target platform and a subset of the functions within the application to be compiled into hardware. The SDSoC system compiler then compiles the application into hardware and software to realize the complete embedded system implemented on a Zynq device, including a complete boot image with firmware, operating system, and application executable.

The SDSoC environment abstracts hardware through increasing layers of software abstraction that includes cross-compilation and linking of C/C++ functions into programmable logic fabric as well as the ARM CPUs within a Zynq device. Based on a user specification of program functions to run in programmable hardware, the SDSoC environment performs program analysis, task scheduling and binding onto programmable logic and embedded CPUs, as well as hardware and software code generation that automatically orchestrates communication and cooperation among hardware and software components.

SDAccel Overview

SDAccel™ is a development environment for OpenCL™ applications targeting Xilinx FPGA based accelerator cards. This environment enables concurrent programming of the in-system processor and the FPGA fabric without the need for RTL design experience. The application is captured as a host program written in C/C++ and a set of computation kernels expressed in C, C++, or the OpenCL C language.

Hardware Requirements

SDSoC

The 2016.3 SDSoC environment release includes support for the following development boards:

- ZC702, ZC706, MicroZed, ZedBoard, and Zybo development boards featuring the Zynq-7000 AP SoC
- ZCU102 development board featuring the Zynq UltraScale+ MPSoC.

Additional platforms are available from partners. For more information, visit the SDSoC Developer Zone web page [\[Ref 7\]](#).

You also need a mini-USB cable to observe the UART output from the board.

SDAccel

The SDAccel environment requires the following hardware:

- Acceleration Card. Use one of the following:
 - Alpha Data ADM-PCIE-KU3 card. The card is based on the Kintex® UltraScale™ XCKU060T-2FFVA1156E FPGA.
 - Alpha Data ADM-PCIE-7V3 card. The card is based on the Virtex®-7 XC7VX690T-2FFG1157C FPGA.
 - Xilinx Xil-ACCEL-RD-KU115 card. The card is based on the Kintex UltraScale XCKU115-FLVB2104-2-E FPGA.

- Host computer: Desktop computer for hosting the acceleration card. The host computer must provide:
 - Motherboard with a PCIe Gen3 X8 slot
 - 16 GB RAM
 - 100GB free disk space
 - DVD drive
 - Programming computer: Laptop or desktop computer running the supplied Vivado Design Suite 2016.3 for programming the FPGA.
 - Xilinx® Platform Cable USB 2, part number HW-USB-II-G for connecting the programming computer to the acceleration card. See the Platform Cable USB II Data Sheet (DS593) [Ref 5].
 - Additional platforms are available from partners. For more information, visit the SDAccel Developer Zone web page [Ref 8].
-

Software Requirements

The SDx Development Environment runs on both Linux and Windows operating systems. The supported operating systems are listed below.

- Windows 7 and 7 SP1 Professional (64-bit) (SDSoC only)
- Windows 10 Professional (64-bit) (SDSoC only)
- Linux Support
 - Red Hat Enterprise Workstation/Server 7.1-7.2 (64-bit)
 - Red Hat Enterprise Workstation 6.7 and 6.8 (64-bit)
 - CentOS 6.8 (64-bit) (SDAccel only)
 - Ubuntu Linux 16.04.3 LTS (64-bit) (SDSoC only)

Additional Information

About the SDSoC Installation

The installation of SDSoC includes the following:

- SDSoC environment 2016.3, including an Eclipse/CDT-based GUI, high-level system compiler, and ARM GNU toolchain
- Vivado® Design Suite System Edition 2016.3, with Vivado High-Level Synthesis (HLS) and the Xilinx Software Development Kit (SDK)

The SDSoC environment includes the same GNU ARM toolchain included with the Xilinx® Software Development Kit (SDK) 2016.3, which also provides additional tools used by the SDSoC environment. The SDSoC environment setup script sets PATH variables to use this toolchain.

More information about the SDSoC installation:

- The provided toolchains contain 32-bit executables, requiring your Linux host OS installation to include 32-bit compatibility libraries.
- RHEL 6 and 7 64-bit x86 Linux installations might not include the 32-bit compatibility libraries, and might need to be added separately; see <https://access.redhat.com/site/solutions/36238>.
- On RHEL, 32-bit compatibility libraries can be installed by becoming a superuser (or root) with root access privileges and running the yum install glibc.i686 command.
- On Ubuntu, 32-bit compatibility libraries can be installed by becoming a superuser (or root) with root access privileges and running the following commands. Refer to [SDSoC Development Environment Features](#) for additional information.

```
sudo dpkg --add-architecture i386
sudo apt-get update
sudo apt-get install libc6:i386 libncurses5:i386 libstdc++6:i386
sudo apt-get install libgtk2.0-0:i386 dpkg-dev:i386
sudo ln -s /usr/bin/make /usr/bin/gmake
```

- The version of the toolchain can be displayed by running the arm-linux-gnueabi-g++ -v command.
- The last line of the output printed in the shell window should be GCC version 4.9.2 20140904 (prerelease)(crosstool-NG linaro-1.13.1-4.9-2014.09 - Linaro GCC 4.9-2014.09).

About the SDAccel Installation

The SDAccel Environment runs on the Linux operating systems only with no support for Windows. It supports RedHat Enterprise Linux or CentOS 6.4-6.7 and 7.2 64-bit.

Run the following commands to install additional packages:

```
$sudo yum install gcc  
$sudo yum install "kernel-devel-$(uname -r)"  
$sudo yum install glibc.i686 glibc.x86_64
```


Obtaining a License

The steps to obtain a license for the SDx development environment are described below.

Generating a License on the Xilinx Licensing Site

1. Sign in to the Xilinx® licensing website [Ref 6]. See the following figure.

Sign in to the Xilinx Licensing Site

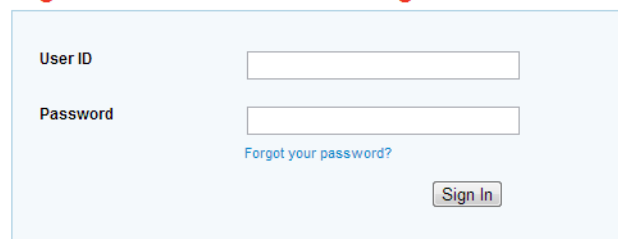


Figure 3-1: Xilinx Licensing Site Sign-in Screen



IMPORTANT: You need a valid account for www.xilinx.com to sign in and generate licenses.

Note: If this is your first time generating a license for the SDAccel™ - Xilinx OpenCL™ Design Environment, contact your Xilinx representative to enable your access to the SDAccel licensing website.

Note: SDSoC comes with a 60-day evaluation license, so you should be able to see it in your available license list.

2. In the account drop-down menu, select **XILINX - SDSoC Environment** or **SDAccel Environment**.

Note: This only shows up if you have purchased or redeemed an SDSoC or SDAccel license.



TIP: If you are interested in SDSoC, you should also see a "SDSoC 60-day evaluation license" for the first time use.

- From the Certificate Based Licenses menu, select **SDSoC Environment, Node-Locked License** or **SDAccel Environment, Node-Locked License**.

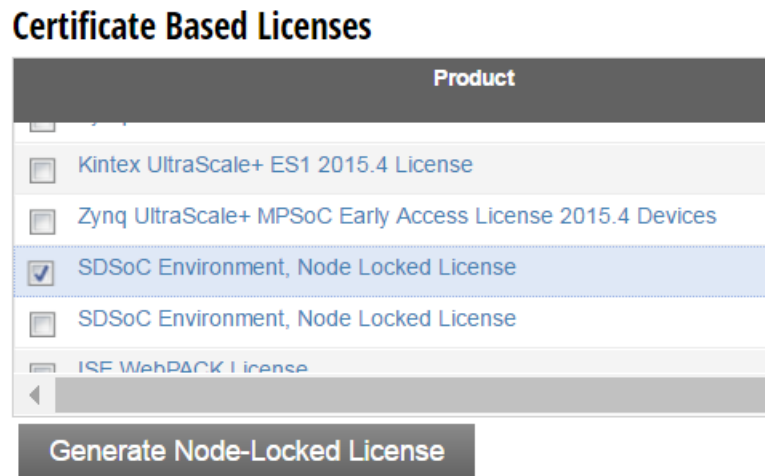


Figure 3-2: Certificate Based Licenses Menu

- Click **Generate node-locked license**.
- Enter a Host ID in the **License Generation** screen and click **Next**.
- Verify that the Host ID for the license is correct and click **Next**.
- Accept the licensing agreement by clicking **Accept**.

You will receive an email from xilinx.notification@entitlenow.com with the license file.

- Set the `XILINXD_LICENSE_FILE` environment variable to point to the location of the license file on your system.

Installing the SDx Environments

This chapter explains the installation process for either the SDSoC environment or the SDAccel environment.

Preparing to Install the Tools



IMPORTANT: Before starting installation, you must complete the following steps.

- Make sure your system meets the requirements described in [Hardware Requirements](#) and [Software Requirements](#).
- Disable anti-virus software to reduce installation time.
- Close all open programs before you begin installation.

Installing SDSoC and SDAccel

You have two options for installation of SDSoC and SDAccel:

- Using the web installer (recommended).



TIP: Using the web installer you can pick and choose what you would like to install upfront and that is the only data that will need to get downloaded for installation. Also, in the case of a network failure, you can resume from where you last stopped, instead of starting from the beginning again.

- Downloading and Installing the Full Installation File

Both installation types are available on the [Xilinx Downloads Website](#).



IMPORTANT: There are separate installers for SDSoC and SDAccel. When you launch the installer for the product you want to use, the devices are preselected for you.

If you downloaded the full product installation, decompress the file and run xsetup (for Linux) or xsetup.exe (for Windows – not available for SDAccel) to launch the installation.

If you downloaded the web installer client, launch the downloaded file. You are prompted to log in and use your regular Xilinx login credentials to continue with the installation process.



RECOMMENDED: Xilinx recommends the use of 7-zip or WinZip (v.15.0 or newer) to decompress the downloaded tar.gz file.

- The **Download and Install Now** choice allows you to select specific tools and device families on following screens, downloads only the files required to install those selections, and then installs them for you. After entering your login credentials, you can select between a traditional web-based installation or a full image download.
- The **Download Full Image** requires you to select a download destination and to choose whether you want a Windows only, Linux only, or an install that supports both operating systems. There are no further options to choose with the **Download Full Image** selection, and installation needs to be done separately by running the xsetup application from the download directory.

Verifying Connectivity

The installer connects to the Internet through the system proxy settings in Windows. These settings can be found under **Control Panel > Network and Internet > Internet Options**. For Linux users, the installer uses Firefox browser proxy settings (when explicitly set) to determine connectivity.



Figure 4-1: Vivado Design Suite Installation - 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.

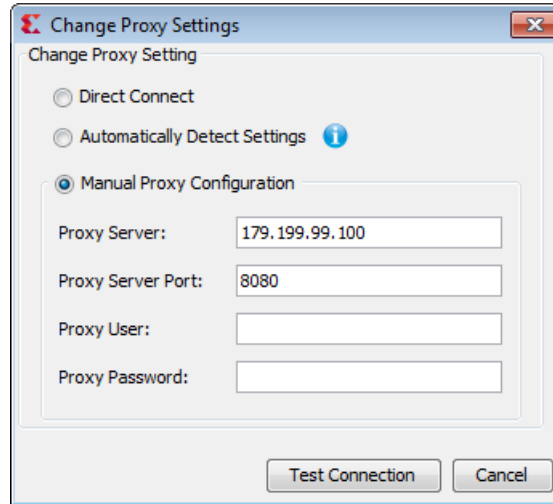


Figure 4-2: Vivado Design Suite Installation - Change Proxy Settings

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. For Linux users, if either the **Use System settings** or the **Auto detect settings** option is selected in the Firefox browser, you must manually set the proxy in installer.

Accepting License Agreements

Carefully read the license agreements before continuing with the installation. If you do not agree to the terms and conditions, cancel the installation and contact Xilinx.

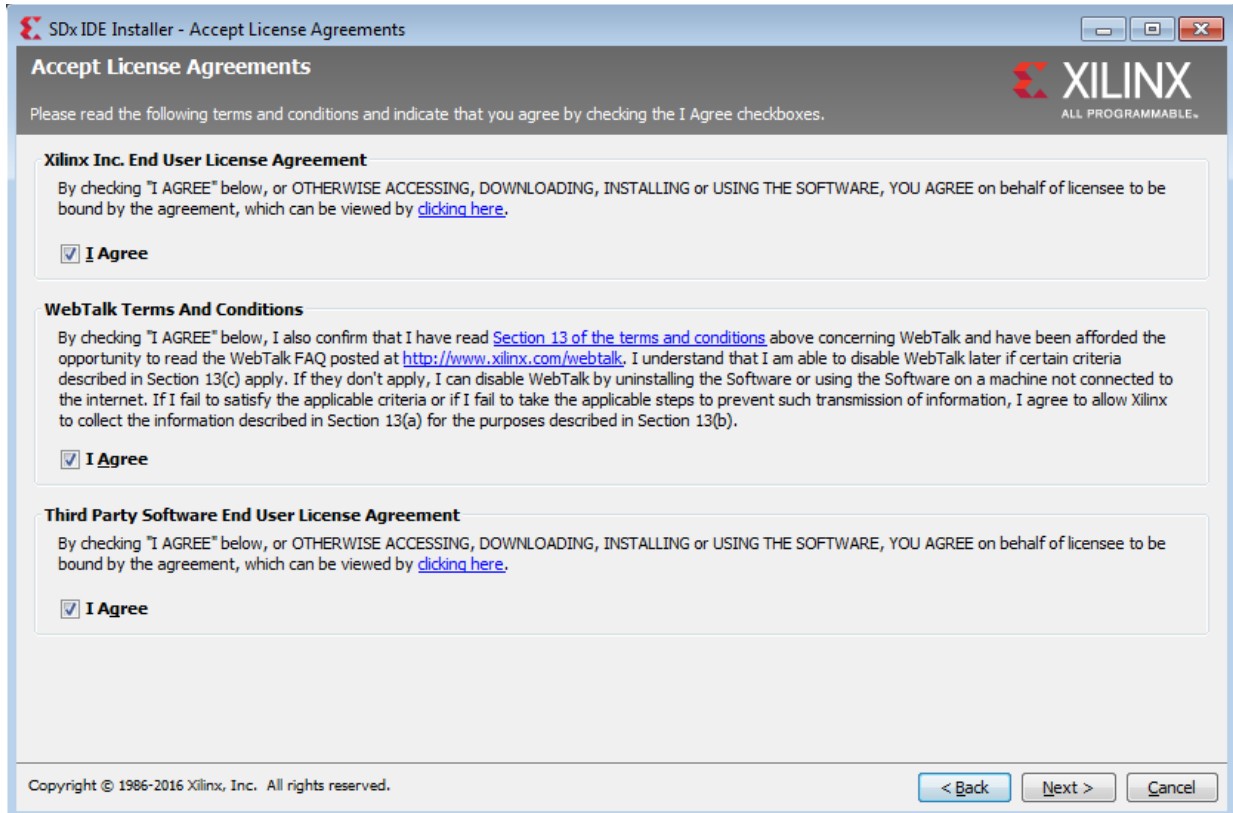


Figure 4-3: License Agreements

Selecting Tool and Device Options

Customize the installation by choosing the design tools, device families and installation options. Selecting only what you need helps to minimize the time taken to download and install the product. You will be able to add to this installation later by clicking **Add Design Tools or Devices** from either the operating system Start Menu or the **Vivado > Help** menu.



TIP: When you launch the installer for the product you want to use, the devices are preselected for you.

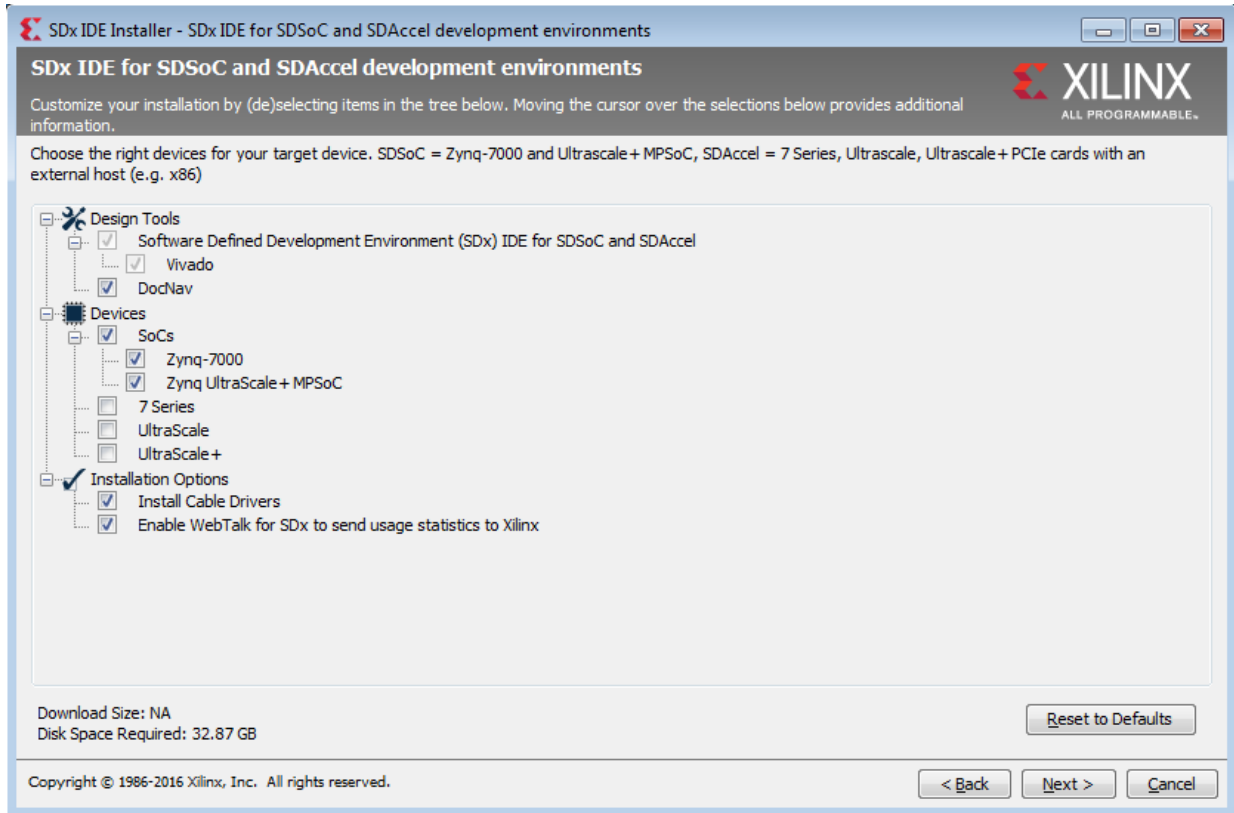


Figure 4-4: Design Tools and Device Options

Setting Destination Directory and Installation Options

Define the installation directory for the software, as shown in the following figure.



IMPORTANT: *The installation directory name must not contain any spaces in any part of the directory path.*

You can customize the creation of the program group entries (Start Menu) and the creation of desktop shortcuts. The shortcut creation and file association options can be applied to the current user or all users.

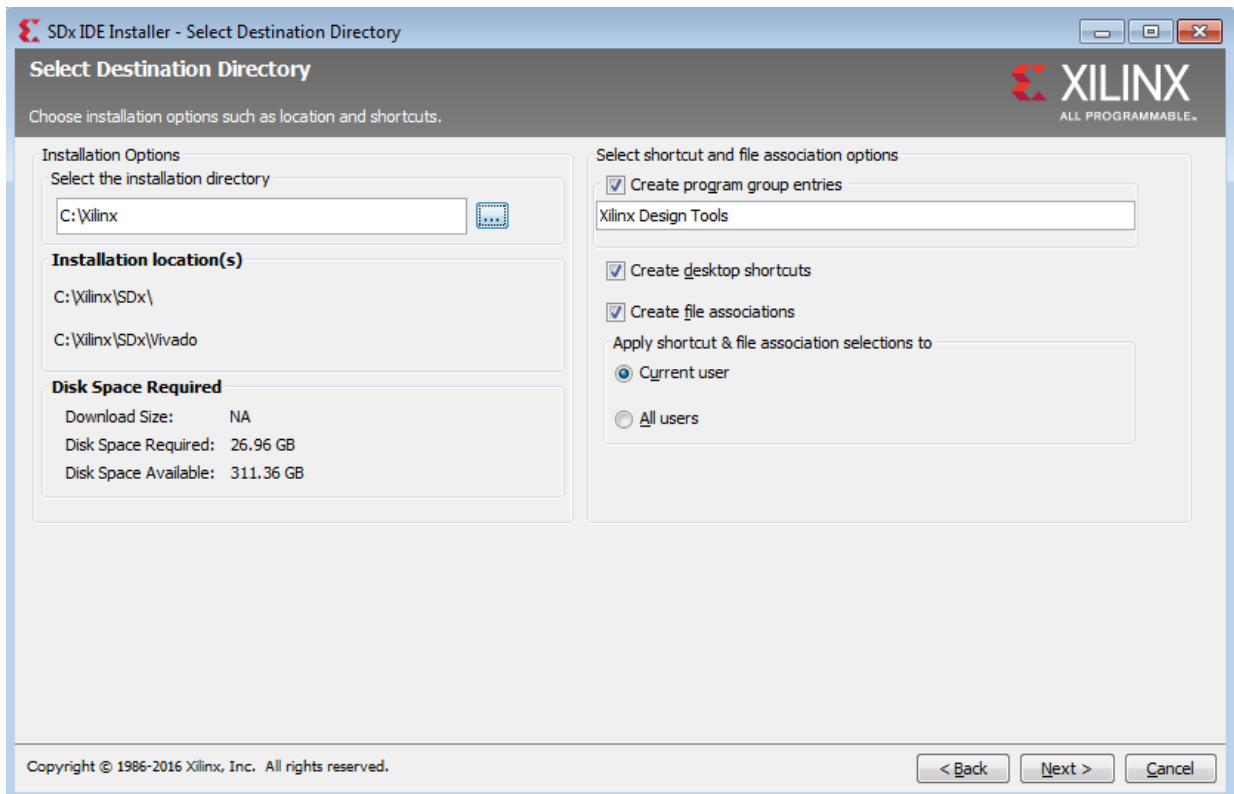


Figure 4-5: Destination Directory and Installation Options

Reviewing the Installation Details

Review the installation details shown in the Installation Summary screen.

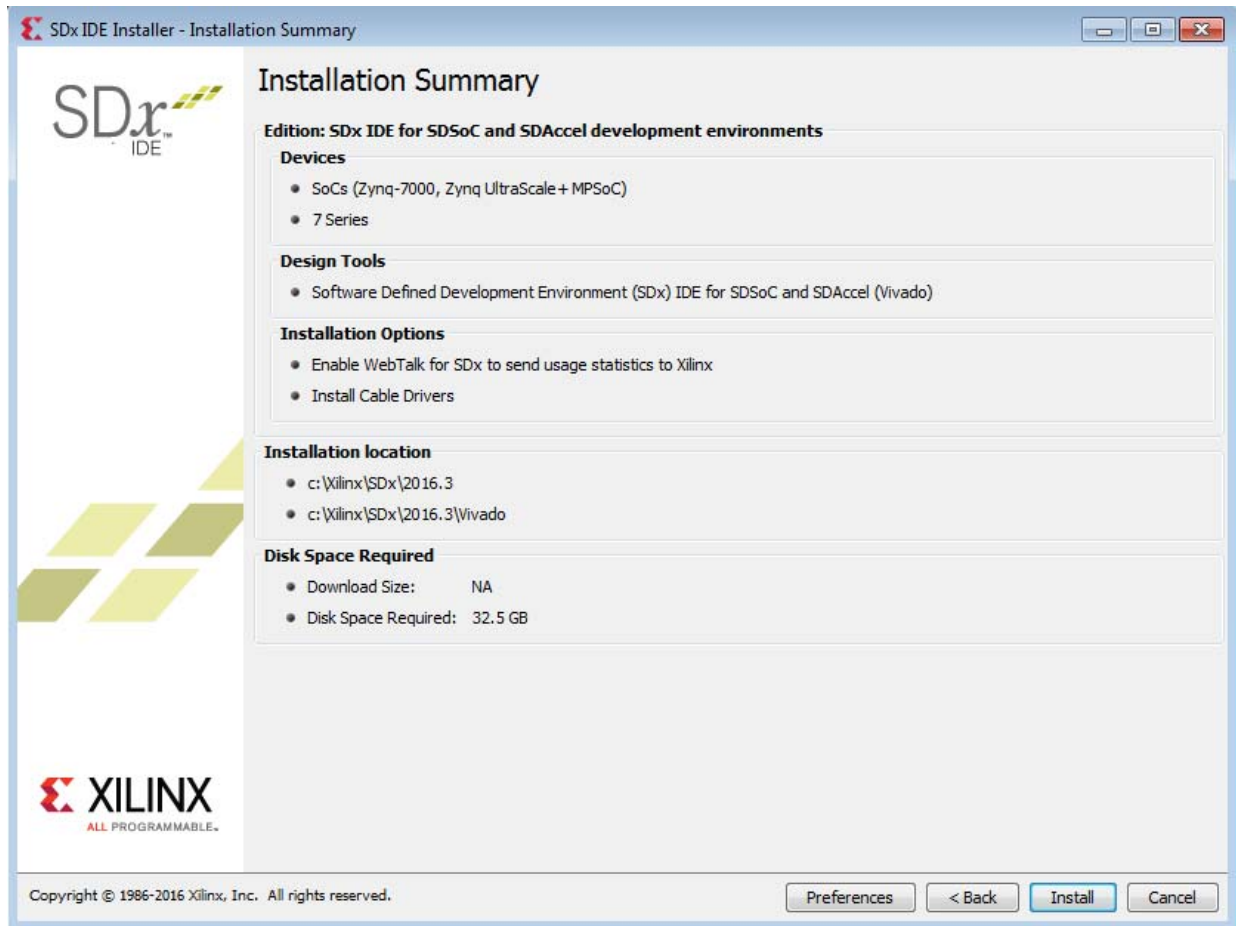


Figure 4-6: Installation Summary

When you click **Install**, the installation process takes several minutes to complete.

Setting Up the Environment to Run SDx

To set up the environment to run SDx, source the file below so that `sdx` command is in the PATH:

```
C Shell: source <SDX_INSTALL_DIR>/settings64.csh
Bash: source <SDX_INSTALL_DIR>/settings64.sh
```

Additional Resources and Legal Notices

Xilinx Resources

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

Solution Centers

See the [Xilinx Solution Centers](#) for support on devices, software tools, and intellectual property at all stages of the design cycle. Topics include design assistance, advisories, and troubleshooting tips.

Documentation Navigator and Design Hubs

Xilinx Documentation Navigator provides access to Xilinx documents, videos, and support resources, which you can filter and search to find information. To open the Xilinx Documentation Navigator (DocNav):

- From the Vivado IDE, select **Help > Documentation and Tutorials**.
- 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 the Xilinx Documentation Navigator, click the **Design Hubs View** tab.
- On the Xilinx website, see the [Design Hubs](#) page.

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

References

1. *SDAccel Environment Tutorial: Introduction*, ([UG1021](#))
2. *SDAccel Environment User Guide*, ([UG1023](#))
3. *SDAccel Environment Optimization Guide*, ([UG1207](#))
4. *SDSoC Environment Platform Development Guide*, ([UG1146](#))
5. *Platform Cable USB II Data Sheet*, ([DS593](#))
6. Xilinx® licensing website: <https://www.xilinx.com/getproduct>
7. SDSoC Developer Zone:
<https://www.xilinx.com/products/design-tools/software-zone/sdsoc.html>.
8. SDAccel Developer Zone:
<http://www.xilinx.com/products/design-tools/software-zone/sdaccel.html>

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