Vivado Design Suite User Guide

Release Notes, Installation, and Licensing

UG973 (v2020.1) June 3, 2020

XILINX.

Revision History

The following table shows the revision history for this document.

Section	Revision Summary
06/03/2020 Version 2020.1	
Xilinx Unified Installer Updates	New details on the Xilinx Unified Installer.

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Release Notes

What's New

The What's New is available on the Xilinx® website at Vivado® 2020.1 What's New.

Known Issues

Vivado Design Suite Tools Known Issues can be found at AR#75186.

Important Information

Licensing

The Vivado 2017.3 and beyond releases introduce the following changes in licensing that are listed below:

- Starting with Vivado 2017.3, activation licensing is no longer supported. Existing activation licenses have been replaced with certificate based license that can be accessed from www.xilinx.com/getlicense.

- Flexera version for license management tool has been upgraded to 11.14.1. Vivado 2017.3 is the last release that will support Solaris operating system for Flex license management tools. Xilinx will continue to support Window and Linux operating systems for Flex license management tools.

- Anyone using floating license will require to upgrade licensing utilities to Flex 11.14.1. These new licensing utilities are available on the Xilinx Downloads Website.

Note: Flex version upgrade does not affect valid license files, in other words, existing valid license files will work with the Vivado 2017.3 release after you upgrade the licensing utilities.

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Vivado Naming Conventions

The following are the required naming conventions when working with the Vivado Design Suite. Failing to follow these naming conventions might introduce potential risk to the design or the tool, and cause unpredictable behavior in the design flow.

- Source files names must start with a letter (A-Z, a-z) and must contain only alphanumeric characters (A-Z, a-z, 0-9) and underscores (_).

- Output files names must start with a letter (A-Z, a-z) and must contain only alphanumeric characters (A-Z, a-z, 0-9) and underscores (_).

- Project names must start with a letter (A-Z, a-z) and must contain only alphanumeric characters (A-Z, a-z, 0-9) and underscores (_).

- Project directory names must start with a letter (A-Z, a-z) and should contain only alphanumeric characters (A-Z, a-z, 0-9), tilde (~) and underscores (_).

> **CAUTION!** *The Windows operating system has a 260 character limit for path lengths which can affect the Vivado tools. To avoid this issue, use the shortest possible names and directory locations when creating projects, defining IP or managed IP projects, or creating block designs.*

The following characters are not supported for project, file, or directory names:

- ! # $ % ^ & * ( ) ` ; < > ? , [ ] { } ' " |

- tab (\t)

- return (\r)

- new line (\n)

- / or \ (As part of the directory or file name rather than as a path delimiter)

The following character is not supported for directory names:

- . (dot as terminal character)

The following character is not supported for file or project names:

- @

    Note: In the Vivado IDE, the @ character is not supported for new file or project names. The Vivado IDE does allow an existing file on disk that uses the @ character to be added to a project. The Vivado IDE can open a project that includes the @ character in the project name. Using the Tcl Console, you can create a project with a name that contains the @ character.

> **IMPORTANT!** *Spaces in directory and file names are supported by the Windows operating system. However, you should avoid using spaces in order to preserve portability of the project or files between the Windows and Linux operating systems.*

The Vivado Design Suite supports the use of forward slashes (/) as path delimiters for both Windows and Linux platforms. Backslashes (\) are allowed as path delimiters on the Windows platform only.

Any characters not explicitly mentioned above are not supported for project, file, or directory names.

Vivado Design Suite Documentation Update

In the 2020.1 Vivado Design Suite Documentation release, not all documentation will be available at first customer ship. Use the **Update Catalog** button in DocNav to stay up-to-date with the 2020.1 documentation suite.

Requirements and Setup

Supported Operating Systems

Xilinx® supports the following operating systems on x86 and x86-64 processor architectures.

- Microsoft Windows 10.0 1809 Update; 10.0 1903 and 1909 Update (64-bit), English/ Japanese

- Red Hat Enterprise Workstation/Server 7.4 - 7.7, and 8.1 (64-bit)

- CentOS 7.4 - 7.7, and 8.1 (64-bit)

- SUSE Linux Enterprise 12.4 (64-bit)

- Amazon Linux 2 AL2 LTS (64-bit)

- Ubuntu Linux 16.04.5, 16.04.6, 18.04.1, 18.04.2, 18.04.3, and 18.04.4 LTS (64-bit)

Note: Please refer to *PetaLinux Tools Documentation: Reference Guide* (UG1144) for more information on Installation Requirements for supported Operating Systems with PetaLinux.

Supported Devices

The following sections list architecture support for commercial products in the Vivado® Design Suite WebPACK™ tool versus all other Vivado Design Suite editions. For non-commercial support all Xilinx Automotive devices are supported in the Vivado Design Suite WebPACK tool when available as production devices in the tools.

Note: Alveo™ cards are included as part of the WebPACK Tool.

Note: Starting in Vivado 2016.x onward, a license is no longer required for a WebPACK.

Table 1: **Architecture Support**

Device	Vivado WebPACK Tool	Vivado Design Suite (All Other Editions)
Zynq®	Zynq-7000 SoC Device • XC7Z010, XC7Z015, XC7Z020, XC7Z030, XC7Z007S, XC7Z012S, and XC7Z014S	Zynq-7000 SoC Device • All
Zynq® UltraScale+™ MPSoC	UltraScale+ MPSoC • XCZU2EG, XCZU2CG, XCZU3EG, XCZU3CG XCZU4EG, XCZU4CG, XCZU4EV, XCZU5EG, XCZU5CG, XCZU5EV, XCZU7EV, XCZU7EG, and XCZU7CG	UltraScale+ MPSoC • All
Zynq UltraScale+ RFSoC	UltraScale+ RFSoC • None	UltraScale+ RFSoC • All
Virtex FPGA	Virtex-7 FPGA • None Virtex UltraScale FPGA • None	Virtex-7 FPGA • All Virtex UltraScale FPGA • All Virtex UltraScale+ FPGA • All Virtex UltraScale+ HBM • All Virtex UltraScale+ 58G • All
Kintex FPGA	Kintex®-7 FPGA • XC7K70T, XC7K160T Kintex UltraScale FPGA • XCKU025, XCKU035 Kintex UltraScale+ FPGA • XCKU3P, XCKU5P	Kintex®-7 FPGA • All Kintex UltraScale FPGA • All Kintex UltraScale+ • All
Artix FPGA	Artix-7 FPGA • XC7A12T, XC7A15T, XC7A25T, XC7A35T, XC7A50T, XC7A75T, XC7A100T, XC7A200T	Artix-7 FPGA • All
Spartan-7	Spartan-7 • XC7S6, XC7S15 • XC7S25, XC7S50 • XC7S75, XC7S100	Spartan-7 • All
Alveo	UltraScale+ devices • XCU50 • XCU200 • XCU250 • XCU280 • XCU25 • XCU30	

Note: The UltraScale+ device is supported in Vitis and Vivado platform board design flows.

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Compatible Third-Party Tools

Table 2: **Compatible Third-Party Tools**

Third-Party Tool	Red Hat Linux	Red Hat 64-bit Linux	SUSE Linux	Windows 10 32-bit	Windows 10 64-bit	Ubuntu
Simulation						
Mentor Graphics ModelSim SE (2019.4)	N/A	Yes	N/A	N/A	Yes	N/A
Mentor Graphics Questa Advanced Simulator (2019.4)	N/A	Yes	N/A	N/A	Yes	N/A
Cadence Incisive Enterprise Simulator (IES) (15.20.079)	N/A	Yes	N/A	N/A	N/A	N/A
Cadence Xcelium Parallel Simulator (19.09.004)	N/A	Yes	N/A	N/A	N/A	N/A
Synopsys VCS (O-2018.09-SP2-1)	N/A	Yes	N/A	N/A	N/A	N/A
The MathWorks MATLAB® and Simulink® (R2019a, R2019b, and R2020a)	Yes	Yes	No	N/A	Yes	Yes
Aldec Active-HDL (10.5a)[1]	N/A	N/A	N/A	N/A	Yes	N/A
Aldec Riviera-PRO (2019.10)	N/A	Yes	Yes	Yes	Yes	N/A
Synthesis[2]						
Synopsys Synplify/Synplify Pro (M-2017.03-SP1)[3]	Yes	Yes	N/A	N/A	Yes	N/A
Mentor Graphics Precision RTL/Plus (2019.1.1)	Yes	Yes	Yes	Yes	Yes	N/A
Equivalence Checking						
Cadence Encounter Conformal (9.1)[4]	Yes	Yes	Yes	N/A	N/A	N/A
OneSpin 360 (2016_12)	Yes	Yes	Yes	N/A	N/A	N/A

Notes:

1. Support for Aldec simulators is offered by Aldec.
2. Most Vivado IP can only be synthesized by Vivado synthesis, because the RTL source can include encrypted files. To use this IP in a third-party synthesis flow, netlist can be exported from the Vivado tool in a suitable format for use in the third-party synthesis project.
3. Contact Synopsys for availability of Synplify Overlay or Service Pack.
4. Cadence Encounter Conformal Support is for RTL2Gate using Synopsys Synplify only.

Note: The versions listed in the above table are the minimum required versions to use with the Vivado tools. Previous versions are not tested. This release Vivado 2020.1, ModelSim PE/DE 32-bit support is discontinued.

System Requirements

This section provides information on system memory requirements, cable installation, and other requirements and recommendations.

The lab exercises require the installation of MATLAB 2014a (or later) and Vivado Design Suite 2014.2 (or later).

System Memory Recommendations

For memory recommendations for the Vivado Design Suite tools, see Memory Recommendations.

Operating Systems and Available Memory

The Microsoft Windows and Linux operating system (OS) architectures have limitations on the maximum memory available to a Xilinx program. Users targeting the largest devices and most complex designs might encounter this limitation. The Vivado Design Suite has optimized memory and enabled support for applications to increase RAM memory available to Xilinx tools.

Cable Installation Requirements

Platform Cable USB II is a high-performance cable that enables Xilinx design tools to program and configure target hardware.

Note: The Xilinx Parallel Cable IV is no longer supported for debugging or programming.

RECOMMENDED: *To install Platform Cable USB II, a system must have at least a USB 1.1 port. For maximum performance, Xilinx recommends using Platform Cable USB II with a USB 2.0 port.*

The cable is officially supported on the 64-bit versions of the following operating systems:

- Windows 10
- Red Hat Linux Enterprise
- CentOS
- SUSE Linux Enterprise 12

Additional platform-specific notes are as follows:

- Root privileges are required.
- SUSE Linux Enterprise 11: The fxload software package is required to ensure correct Platform Cable USB II operation. The fxload package is not automatically installed on SUSE Linux Enterprise 11 distributions, and must be installed by the user or System Administrator.

For additional information regarding Xilinx cables, see the *Platform Cable USB II Data Sheet* (DS593).

Equipment and Permissions

The following table lists related equipment, permissions, and network connections.

Table 3: **Equipment and Permissions Requirements**

Item	Requirement
Directory permissions	Write permissions must exist for all directories containing design files to be edited.
Monitor	16-bit color VGA with a minimum recommended resolution of 1024 by 768 pixels.
Ports	To program devices, you must have an available parallel or USB port appropriate for your Xilinx programming cable. Specifications for ports are listed in the documentation for your cable. *Note*: Installation of the cable driver software requires Windows 10. If you are not using one of these operating systems, the cables might not work properly.

Note: X Servers/ Remote Desktop Servers, such as Exceed, ReflectionX, and XWin32, are not supported.

Network Time Synchronization

When design files are located on a network machine, other than the machine with the installed software, the clock settings of both machines must be set the same. These times must be synchronized on a regular basis for continued proper functioning of the software.

Checking Required Libraries

There may be a requirement to install dependent libraries for certain Linux operating systems. Please refer to AR#66184 on the Xilinx website on how to check which libraries are required to run Vivado tools on Linux.

Obtain and Manage Licenses

Licensing Overview

Product Licensing Account Overview

When you purchase a design tool edition or IP product from Xilinx, you are purchasing a license to use and receive updates for that product for one year. The license to use Xilinx deign tools and IP products is managed through the use of product entitlements. A product entitlement is the determination of:

- Which product was purchased

- The number of seats purchased

- The license type (certificate based, floating, or node-locked)

- The product subscription period (product updates are provided throughout the year)

In addition to managing the product entitlements for your purchased design tools and IP, you can also access product entitlements for No Charge or Evaluation products.

- Full and No Charge licenses have a subscription period of one year

- Design tools evaluations are for 30 days

- IP evaluations are for 120 days

Generating a license from a product entitlement results in one or more license keys being generated by the website. When installed, the license keys enable the use of the design tools and IP that were purchased or are being evaluated. Your product entitlements and resulting license key files are managed in a product licensing account on the Xilinx website.

Product licensing accounts are specific to the individual listed on the Xilinx Software Purchase Order, who is either the end-user or administrator of the design tools. All purchases made can be managed in the same product licensing account if a single administrator is named. A company site can have multiple accounts managed by different administrators. The latter is helpful if a site has multiple design teams working on differing projects with different budget pools.

Note: A license can be generated for a product entitlement that has expired; however, it only enables product releases up to the subscription end date. Applying a product update made available after the subscription end date of your license will result in a licensing error the next time the tool is used.

LogiCORE™ IP License Generation in the Xilinx Design Tools

Any LogiCORE IP and design tools entitlements you have purchased appear in your list of entitled products when you log into the Product Licensing Site. Currently, all IP entitlements will generate certificate-based licenses. Licenses for Evaluation and No Charge IP are available on the site in a separate area. Licenses for all your certificate-based design tools and IP can now be generated in one pass. They are emailed to you in a single license file.

What Happens to Your License Key File

Each time a license is generated for a product entitlement, a FLEXnet increment line and corresponding package line is added to the license key file. When a license key file is modified to add seats for an existing or new product entitlement, additional increment or package lines are added to the license key file.

When a license key file is rehosted or is modified to delete seats or product entitlements, the corresponding increment lines are regenerated or removed from the modified license key file.

User Type and Actions

There are three user types for the Product Licensing Site: customer account administrator, end user, and no-charge user.

Customer Account Administrator

An example of a typical customer account administrator is a CAD tools manager. Every product licensing account must have at least one customer account administrator. A customer account administrator can manage more than one product licensing account.

The responsibilities as the customer account administrator include:

- Generating node-locked or floating licenses for Xilinx design tools and IP products.

- Adding and removing users from the product licensing account.

- Assigning administrative privileges to other users.

The original customer account administrator is the Ship To contact identified during the product ordering process. That person receives an email with instructions on how to download and license each purchased product. The customer account administrator must follow the link in the email, to ensure access to the purchased products.

End User

Adding end users to a product licensing account allows an engineer or design team member the flexibility to manage and generate license keys on their own. The end user can generate license keys for node-locked products entitlements within the account as well as evaluation and "no charge" license keys for design tools and IP products. A customer account administrator can also configure the end user account to allow an end user to generate floating licenses. An end user cannot:

- View or generate floating license keys by default. This privilege can be assigned to them by the customer account administrator.

- View the license keys generated by other users.

- Add or remove other users to or from the product licensing account.

No-Charge

No-Charge users can:

- Generate a 30-day free evaluation license key that enables Vivado System Edition.

- Generate a 30-day free evaluation license that enables Vivado HLS.

- Generate license keys for evaluation and no charge IP products.

All user types can download products electronically.

Note: A customer who is already licensed for a full version of a Xilinx Design Tools product edition can evaluate other Xilinx Design Tools product editions or IP. These product entitlements are made available in the same product licensing account.

Accessing the Xilinx Product Licensing Site

You can access the Xilinx Product Licensing Site in various ways depending upon the type of license being generated.

If you purchased products which use certificate-based licenses, follow the link included in your order confirmation email. It provides direct access to an account containing your product entitlements.

- To evaluate the Vivado Design Suite products, go to the Vivado Design Suite Evaluation and WebPACK page.

- To evaluate IP products, go to Intellectual Property page and follow the Evaluate link on the IP product page of interest.

- To access the Product Licensing Site directly, go to https://www.xilinx.com/getlicense. By accessing the site this way, you will be able to create certificate-based licenses as well as perform license account management functions.

Using the Xilinx Product Licensing Site

The Xilinx® Product Licensing site is an online service for licensing and administering evaluation and full copies of Xilinx design tools and intellectual property (IP) products.

Using the Xilinx Product Licensing site, you can do the following:

- Create certificate-based licenses
- Manage licenses
- Review license order information
- Manage users

Changing Xilinx User Account Information

It is important to keep your Xilinx User Account up to date. As you change companies, addresses or emails might change.

Modify Your Corporate Email Address

1. Go to www.xilinx.com.
2. Click **Sign In**.
3. Click **Edit Profile**.
4. Enter your new corporate email address in the Enter new Corporate email address box.
5. Click **Update** button for changes to take effect.

Certificate-Based Licensing

Xilinx enforces the Xilinx End-User License Agreement at run time in the Xilinx design tools using certificate-based licensing.

> **IMPORTANT!** *Starting with Vivado 2017.3 - Activation Licensing support has been removed. Existing activation licenses have been replaced with certificate-based license that can be accessed from* *www.xilinx.com/getlicense.*

A certificate, commonly referred to as a "license file (`.lic`)" is issued from the Xilinx Product Licensing Site. The certificate is matched to a given machine, server or licensing dongle using your entering host-id which uniquely identifies the machine. This license certificate must remain present on the machine and in the license search path, because the Vivado tools need access to this file to check for a valid license feature during run time.

Note: Flex-ID Dongle licensing for Xilinx Software is supported only on Windows platforms.

Certificate Licensing Terminology

- **Host ID:** An identifier, placed within certificate licenses, which binds the license to the computer using this identifier. Typical identifiers are: Hard-drive volume ID, Ethernet port MAC address, or USB Dongle ID.

- **Node-Locked License:** A node-locked license allows for the use of a single seat of a product entitlement on a specific machine.

- **Floating License:** A floating license resides on a network server and enables applications to check out a license when they are invoked. At any one time, the number of licenses for simultaneous users is restricted to the number of license seats purchased.

- **License Rehosting:** The act of changing the host ID of a generated license due to machine hardware changes, hard-drive failure or the moving of a license from one machine to another.

- **License Deletion:** The act of removing a license from a machine, and having the entitlement placed back into the Xilinx Product Licensing Account.

- **Affidavit of Destruction:** Click-through agreement by which you certify that the license file (.lic) for a rehosted or deleted license will be destroyed and no longer used.

Installation Download Options

Xilinx Design Tools users have multiple choices for download and installation.

All Editions and download options are available on the Xilinx Downloads Website.

Xilinx introduced Vivado Lab Edition, which features a dedicated and streamlined environment for programming and debugging devices in lab settings.

TIP: *No license is required to use Vivado Lab Edition tools.*

For users wishing to install one of the full Vivado Editions, there are three choices.

Vivado Design Suite - HLx Editions:

- Xilinx Unified Installer 2020.1: Windows Self Extracting Web Installer

- Xilinx Unified Installer 2020.1: Linux Self Extracting Web Installer

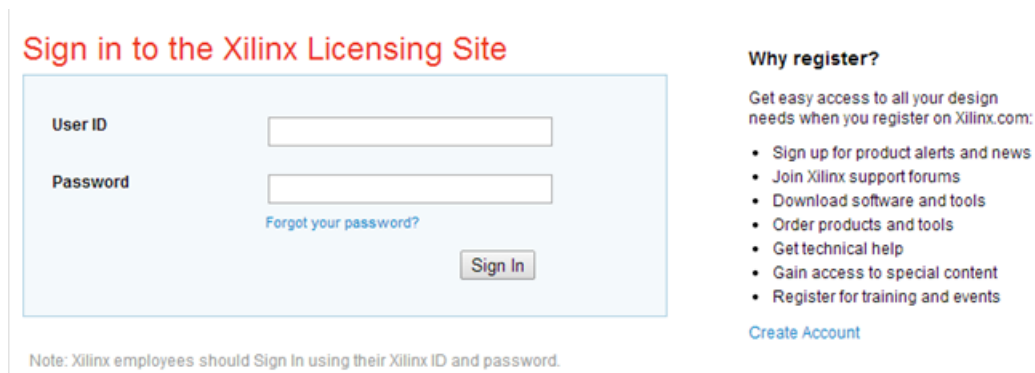- Vivado HLx 2020.1: All OS Installer Single-File Download

Create and Generate a License Key File

For certificate-based licenses, as long as you know the Flexera Host ID (Ethernet MAC ID, Drive Serial Number or Dongle ID) you want to lock your license to, you do not need to enter the Xilinx License Management site from one of our utilities.

Note: The step-by-step instructions below are for generating a floating certificate-based license as this process contains a superset of all other certificate-based license generation flows.

1. Go to Product Licensing.

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

- If you already have a Xilinx user account, enter your E-mail Address and password, and then confirm your contact information is current.

- If you do not have an account, click the **Create Account** link and register.

   The Product Licensing page is displayed.

2. Select a product licensing account from the Account drop-down list.

   Note: This selection is not available if you are entitled to evaluation or free products only.

3. (Optional) Enter product voucher codes for design tools or IP product licenses purchased with kits or for tools purchased from the Xilinx online store. If you have a product voucher card, you can enter the voucher code on the card into the associated text field and click **Redeem Now**.

Product vouchers for design tools and IP product licenses can be shipped with a Xilinx or partner development board or design kit. This places the corresponding design tools or IP product entitlement in the product entitlement table which you can use to generate a license key.

4. (Optional) Add evaluation or No Charge IP product entitlements to the product entitlement table.

   To add Evaluation and No Charge IP to the list of product entitlements, click the **Search Now** button in the Add Evaluation and No Charge IP Cores section of the page. This opens an IP product finder tool.
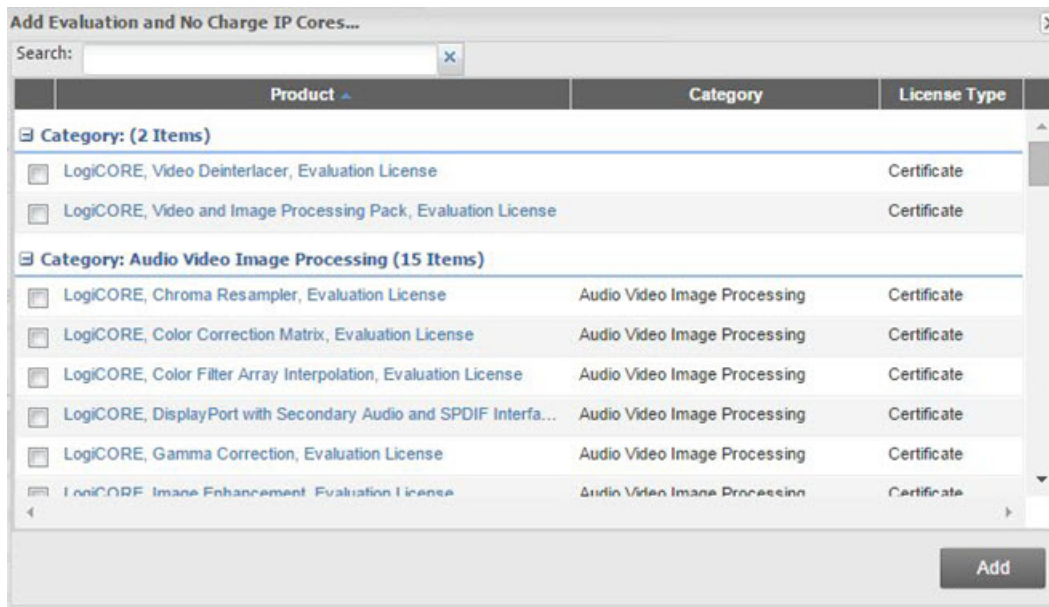
5. Make your product selections from the Certificate-Based entitlement table.

   The following types of product entitlements are available:

   - Full (purchased)
   - No Charge

     Note: Full and No Charge licenses have a subscription period of one year.

   - Evaluation

     Note: Design tool evaluation is for 30 days and IP evaluations are for 120 days.

     The Vivado Design Suite: 30-Day Evaluation License evaluation product entitlement provides access to all the capabilities in the Vivado Design Tools. This product entitlement is automatically included in your product licensing account.

   Products with a status of Current are within their warranty period. Products with a status of Expired have a warranty period end date that has passed. If seats are available, licenses can be generated for either Current or Expired product entitlements.

6. Select the number of seats required for each product license.

    This is for floating licenses only. All node-locked licenses are for one seat. The number of seats available for a product entitlement is automatically maintained by the system. The Requested Seats field is populated, by default, with zero, although you are allowed to enter any number up to the full number of seats remaining on the product entitlement. A product is removed from the product entitlement table once all seats have been generated.

    For design tools, available seats represents the number of seats available for licensing over the total number of seats purchased. For IP, seats are managed according to the terms of the site-wide license agreement.

7. Click the **Generate License** button corresponding with the type of license file you are generating.

    Note: Floating/server and node-locked/client licenses cannot be combined in the same license file. Selecting an entitlement that contains only one license type causes the Generate button for the other license type to become inactive.

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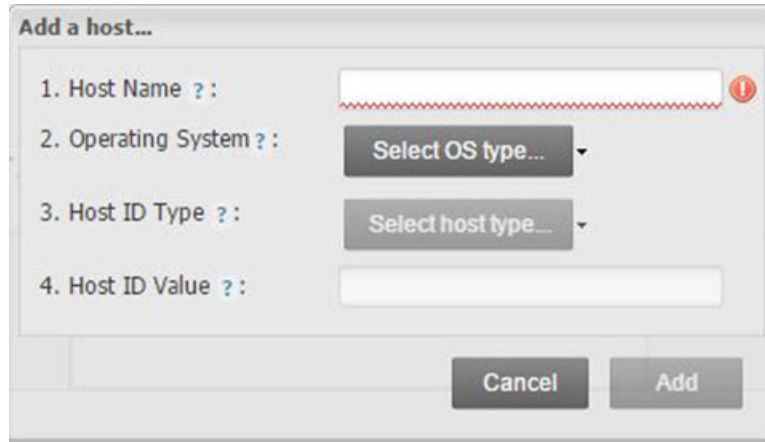

8. Enter system information.

For floating certificate-based licenses, the first field is redundancy. A triple-redundant server configuration, also known as a triad, provides a fail over for the license manager software. As long as two of the three servers are running, the license manager can continue to run. This does not apply to node-locked licenses. The system information is pre-populated in the Host ID drop-down menu if you arrived at the Product Licensing Site from a link within the Vivado License Manager.

a. If you do not have pre-populated system information, or if you want to add a different host, click **Select a Host** and then click **Add a Host**.

b. Enter information about the host.

The Host ID value uniquely identifies the machine to which your design tools or IP is licensed. You can choose a Host ID Type to be a MAC address, a hard drive serial number or a dongle ID.

Note: Not all host ID types are supported for all operating systems. The easiest way to obtain your host ID is to run Vivado License Manager on the machine that serves as the license host.

9. (Optional) Add a comment.

Adding a comment to the license key makes it easier for the administrator to track the allocation of the design tools and IP product entitlements among users.

10. Click **Next**.

11. Review your selections, and click **Next**.

12. Accept the licensing agreement.

    Note: If you license IP products, you must accept the terms of the associated IP product EULAs before the license file can be generated.

When you finish generating the licenses, you receive a confirmation message summarizing your licensing activity.
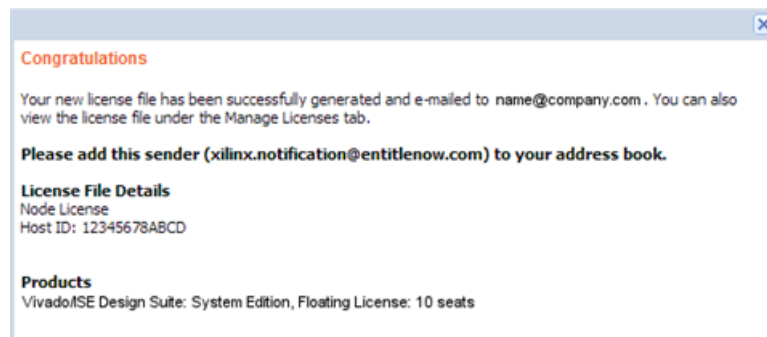
You will receive an email from `xilinx.notification@entitlenow.com` with the license file, which you must save to your machine.

TIP: *If you do not receive your license by email, you can download it directly from the Product Licensing.*

Installing Your License Key File

Install Certificate-Based Node-Locked License Key File

After generating a license file, you will receive an email from 'xilinx.notification@entitlenow.com'.

1. Save the license file (`.lic`) attached to the e-mail to a temporary directory on your local system.

2. Run the Vivado License Manager:

   - For Windows 10 or earlier: Select **Start → All Programs → Xilinx Design Tools → Vivado 2020.1 → Manage Xilinx Licenses**.

   - For Windows 8.1: Run the Manage Xilinx Licenses app from the full listing of Apps on your Start screen.

   - For Linux: Type `vlm` in a command-line shell.

3. On the left hand pane of Vivado License Manager, expand **Getting a License** and select **Load License**.

4. If you received a certificate license (`.lic`) file, click the **Copy License** button on the Load License screen.

5. Browse to your license file (`Xilinx.lic`) and click **Open**.

   This action copies the license file to the `%APPDATA%\XilinxLicense` (Windows) or `<Home>/.Xilinx` directory of your computer where it will be automatically found by the Xilinx tools.

6. Click **OK**.

Serving Certificate-Based Floating Licenses

For existing FLEXnet license servers serving certificate-based licenses, a common practice is to copy the contents of the license file, mailed from xilinx.notification@entitlenow.com, into the existing license file on your FLEXnet server.

Note: Restart the floating license server to ensure the new Xilinx licenses are enabled.

Serve New License Servers

1. Go to the [Xilinx Downloads Website](#).

2. In License Management Tools, select and download the applicable Xilinx FLEXnet license utilities for your server's operating system.

3. Unzip these utilities into a destination directory.

   RECOMMENDED: *Xilinx recommends you place this directory into your application search path*

4. After the FLEXnet utilities are installed, run the following commands to start the floating license server:

   - **For Linux, enter** `<Server Tool directory>/lnx64.o/lmgrd.sh -c <path_to_license>/<license file>.lic -l <path_to_license>/<log filename>1.log`.

   - **For Windows, enter** `<Server Tool directory>\win64.o\lmgrd -c <path_to_license>\<license filename>.lic - l <path_to_license> \<log filename>.log`.

Serve Client Machines Pointing to a Floating License

> **IMPORTANT!** *The following workflow is only applicable for Windows.*
>
> *For Linux operating systems, licensing environment variables cannot be set using the Vivado License Manager (VLM). The environment variable fields are read only, so they are grayed out and there are no Set buttons. The environment variable must be set using the appropriate OS shell and commands.*

1. Run the Vivado License Manager (VLM).

2. Under Manage License, click **Manage License Search Path**.

3. In the XILNXD_LICENSE_FILE field, enter the network path to the license server in the <port>@<server> format.

4. Click **Set**. The default Xilinx port number is 2100.

Managing Licenses

Managing Licenses with the Vivado License Manager

The Vivado License Manager (VLM) is intended to assist with license generation for Certificate-based licenses only.

Vivado License Manager is installed with Vivado Edition and many standalone tool installations. The following figure shows the VLM.

Figure 1: **Vivado License Manager**
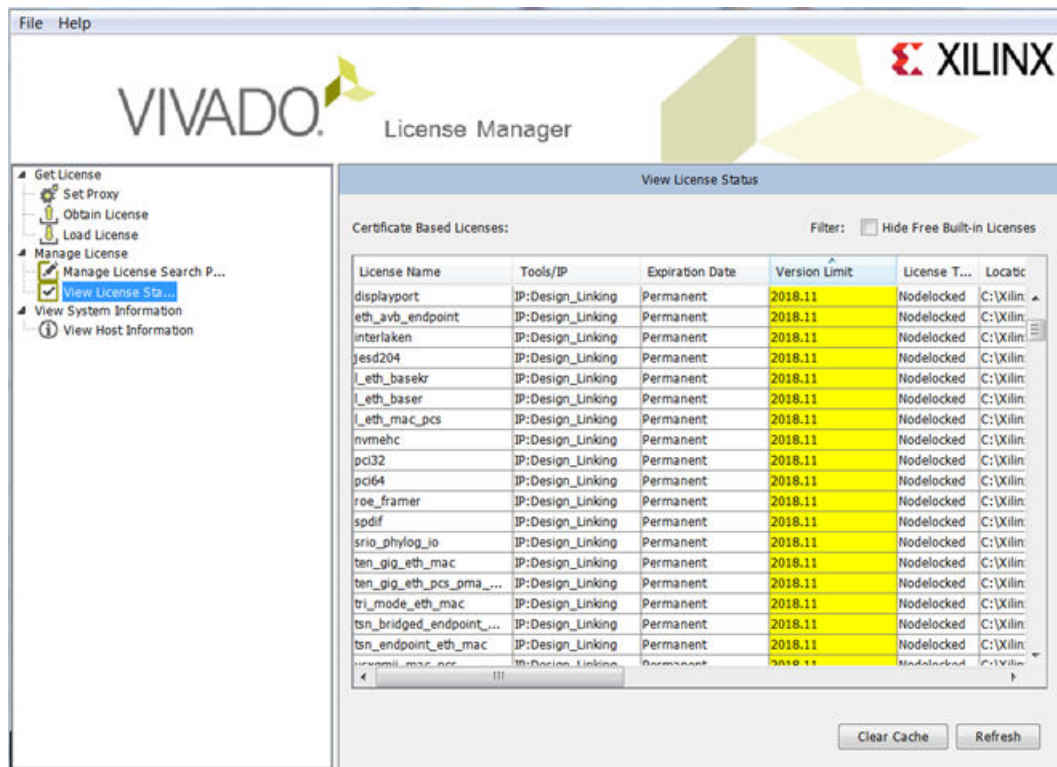
The typical tasks that Vivado License Manager is used for are:

- **Obtaining A License:** Choose from several license options and go to the Xilinx Product Licensing Site to complete the license generation process.

- **Viewing License Status:** See which licenses are visible to the local machine. This is a useful view for debugging licensing issues.

- **Loading Licenses Onto a Local Machine:** After a certificate license (.lic) file has been received, it can be placed into the appropriate location on the machine. For step-by-step instructions, see the Installing Your License key section for your license type below.

- **Viewing and Setting (Windows) License Search Locations:** Vivado tools will look in several default locations to try to find authorization to run. If your license is located elsewhere on the machine or on a floating license server, a path to that license must be specified.

RECOMMENDED: *It is recommended that the XILINXD_LICENSE_FILE environment variable be used to specify Xilinx license file locations. LM_LICENSE_FILE can also be used, but is mainly intended for non-Xilinx or legacy license path use.*

Managing Licenses on the Xilinx Product Licensing Site

The Xilinx Product Licensing site tracks the licenses that you have generated. To view all licenses you generated in your product licensing account, select the **Manage Licenses** tab.

Figure 2: **Manage Licenses**

Information regarding the licenses in your product licensing account are displayed in a split-section view. To view detailed information about the licenses in the detail view in the bottom table, click a row in the master view in the top table. The detail view table displays:

- A list of product entitlements enabled by file.

- Comments associated with the file.

The detail view table gives you the ability to:

- **Download ( ):**

- **Email ( ):**

- **View ( ):**

- **Delete ( ):**

- **Download (View EULA):**

- Download your license file if it does not arrive through email.

- Email the license file emailed to you or another user.

- View the actual license file.

- Delete the license file. After a file is deleted the entitlement will then become available on the Create New License page and can be regenerated for another host ID.

Send Feedback

- View the end user license agreement (IP only).

Modifying Licenses

To modify an existing certificated-based license, select the license file in the master view.

You can modify a certificated-based license by doing the following:

- Delete license files and place the entitlement back onto your account.
- Rehost or change node-locked or license server Host IDs.
- Add or remove seats to an existing license product entitlement.
- Add or remove product entitlements from a license key.

Delete Entire License File and Place Entitlement Back Onto Your Account

1. From the Manage Licenses Tab, select the license file you want to delete.

2. Click the **Delete** button (🗑) located below and to the left of the license file details.

3. Click **Accept** button to accept the Affidavit of Destruction.

All license seats in the entire license file are deleted, and the entitlements are returned to your account.

Reclaiming Deleted License Components

A product entitlement is deleted when one of the following occurs:

- Changing the license server host for a license key file.
- Removing seats from an existing licensed product entitlement.
- Deleting product entitlements from a license key file.

When you delete seats or remove products from your certificate-based license files, the entitlement is essentially "put back" or reallocated into your licensing account. You will find that the number of entitled seats in the Create New Licenses tab of your account is incremented by the same number of seats you deleted previously from existing license files.

Before the reallocation of entitlement occurs, you must first agree to an Affidavit of Destruction. This legal agreement is required to ensure the deactivated product entitlements are no longer being used.

The number of allocation operations is recorded for each user. Administrators are allowed to reallocate product entitlements five times per major release. End users are allowed to reallocate product entitlements three times per major release.

Rehost: Change Node-Locked or License Server Host ID for a License File

1. From the Manage Licenses Tab, select the license file you wish to rehost.

2. Click **Modify License**.

   The Modify License screen displays.

3. Go to **System Information**.

4. Change or add new Host ID and/or Host Name by using the drop-down list and text entry boxes respectively.

5. Click **Next** button twice and then click **Accept** to accept the Affidavit of Destruction.

Add or Remove Seats to an Exisiting License Product Entitlement

For floating licenses, you will be able to change the Requested Seats field and add seats up to the total number of seats available in your entitlement.

1. From the Manage Licenses tab, select the license file to which you wish to add or remove seats.

2. Click **Modify License**.

   The Modify License screen appears.

3. Go to **Product Selection**.

4. Click **Next** twice.

   If you removed seats, accept the Affidavit of Destruction.

   Note: No Affidavit of Destruction is required for adding seats.

Add or Remove Product Entitlements from a License Key File

1. From the Manage Licenses tab, select the license file to which you wish to add or remove features/entitlements.

2. Click **Modify License**.

   The Modify License screen appears.

3. Go to **Product Selection**.

4. Check boxes of any entitlements you want to add or remove from this license file.

5. Click **Next** button twice.

   If you removed features, accept the Affidavit of Destruction.

   Note: No Affidavit of Destruction is required for adding features.
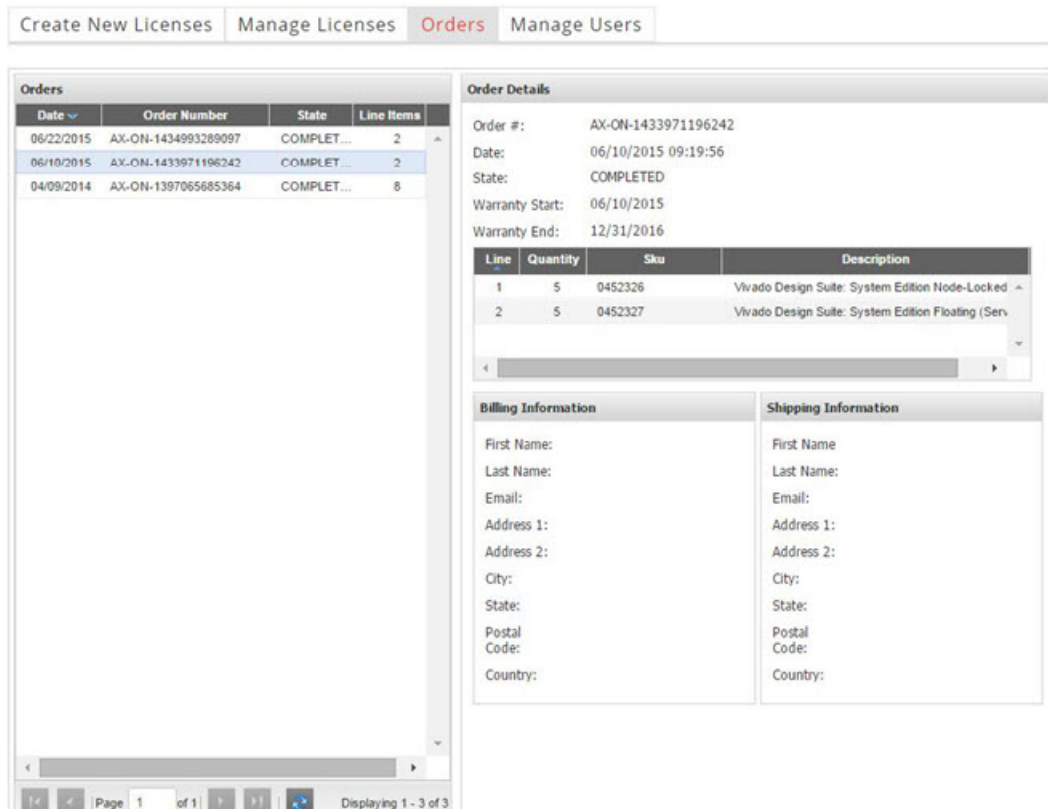
   Modifying a key file uses the same input form as when the license key file was created, except that additional product entitlements of the same license type (floating or node-locked) are made available for adding to the license file.

Understanding Your Tool and IP Orders

The Orders tab displays information regarding the purchasing orders that created the entitlements you see in this account.

- Xilinx order numbers are listed on the left panel of the screen.

- Order details populate on the right panel of the screen when you highlight a specific order.

- You might only select one order at a time.

- The order's shipping address information is visible even when product is delivered electronically.

Figure 3: **Orders**

Managing User Access to the Product Licensing Account

The Manage Users tab displays information regarding the user access to the product licensing account. From this tab, you can add or remove users. The responsibility of administering a product licensing account can be transferred or shared with another user.

Figure 4: **Manage Users**
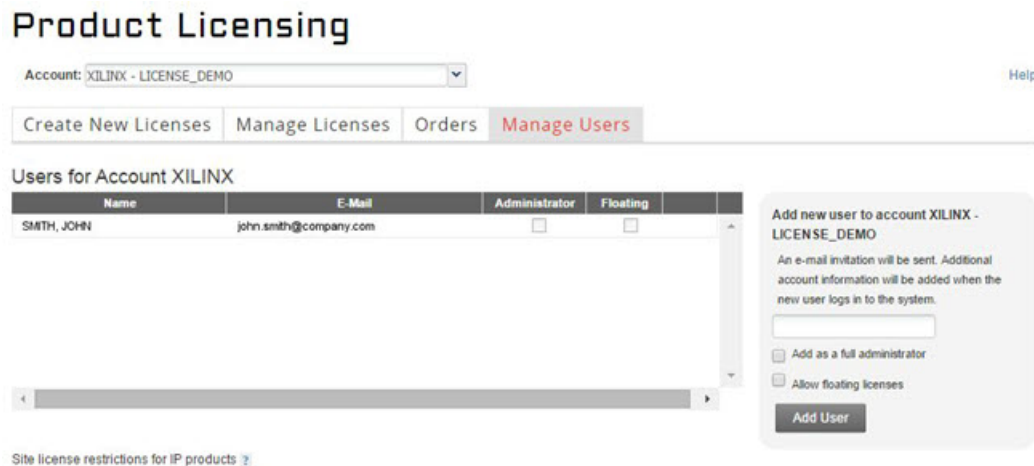
Add Users

1. Select the **Manage Users** tab.

2. To add a user to your product licensing account, do the following:

    a. Enter the corporate email address of the new user.

       Note: The email address you provide must be the same email address the user supplied or supplies when creating their Xilinx account. If not, you might not be properly recognized when logging in.

       If added users have already logged into the Product Licensing Site, their name appears in the user list. If they have never been to the site, the words Not Yet Registered appears in the space for their name. After they register, their name is filled in.

    b. To grant the new user customer account administrative privileges, select **Add as a full administrator**.

    c. To grant the new user the ability to generate Floating License, select **Allow Floating Licenses**. This option does grant full administrative privileges.

       If you check Allow Floating Licenses only, the restriction on node-locked keys is lifted, but the others remain. You cannot check both boxes because it is not allowed. Full administrators already have floating license generation capability.

    In some instances, a customer account administrator might wish to have design team members administer license key files for their own use. By leaving both Add as full administrator and Allow Floating Licenses check boxes unchecked, you grant the user the following restricted privileges:

    *   User can generate node-locked license keys only.

    *   User can view and modify only those license key files they generated for themselves.

    *   User cannot manage users.

Remove Users

1. Select the **Manage Users** tab.

2. To remove administrative or floating license generation privileges from a user, uncheck the Administrator or Floating check box for that user.

3. To remove a user from a product licensing account, click the **Delete** button for that user.

Download and Installation

This section explains how to download and install the Vivado® Design Suite tools, which includes the Vivado Integrated Design Environment (IDE), High Level Synthesis tool, and System Generator for DSP and Model Composer.

Xilinx Unified Installer

Xilinx Unified installer allows users to install multiple Xilinx tools using single installer. Users can install Vivado Design Environment, Vitis, Lab Edition, Hardware Server, On-premise install for cloud deployment, Bootgen and Documentation Navigator using single installer.

Figure 5: **Product Installation**
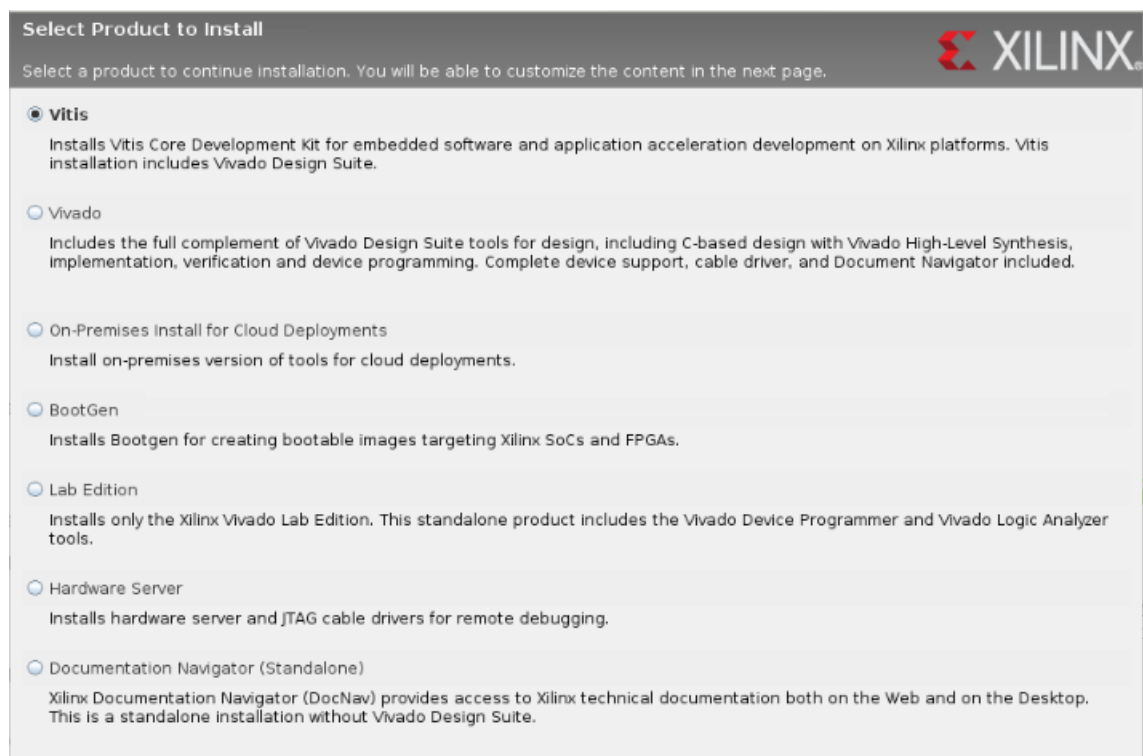
Xilinx Unified Installer is available to download on the Xilinx Downloads Website.

Download the Installation File

For the optimum download experience:

- Allow pop-up from https://www.o-ms.com/.

- Set security settings to allow for secure and non-secure items to be displayed on the same page.

1. Go to the Xilinx Downloads Website.

2. Click an installation file to download it.

    - To download a full edition of the Vivado Design Suite, choose from the following options:

        ○ Xilinx Unified Installer 2020.1: Windows Self Extracting Web Installer

        ○ Xilinx Unified Installer 2020.1: Linux Self Extracting Web Installer

        ○ Vivado HLx 2020.1: All OS Installer Single-File Download

        Note: The Full Edition installers work only on 64-bit machines.

    - To download the Vivado Lab Edition tools, select a version of 2017.1 or newer, and download the file associated with the Vivado Lab Edition.

Related Information
Installation Download Options

Download Verification

After downloading the installation file, you can complete download verification to prove the authenticity and integrity of the downloaded installation file with a fair degree of certainty. This step is completely optional but highly recommended. You can skip this step and continue with the installation.

- Authentication validates that downloaded file was created by the signee, in this case signee is Xilinx Inc. In other words, it shows that downloaded file is not forged by a third party.

- Integrity validates that contents of downloaded file are not tampered by third party. In summary, download verification allows users to validate if downloaded file indeed is prepared by Xilinx and if the contents of the downloaded file have been altered or not.

The **Digest**, **Signature** and **Public Key** options are provided on download page for the purpose of download verification.

There are two ways to verify the authenticity and integrity of downloaded files. You can choose one or both of the following methods to ensure the authenticity and integrity of downloaded files.

- Verify the Signature

- Verify the Digest

For both of the above methods, before you can verify and authenticate the downloaded file, you must download, import, and trust the public key.

Download, Import, and Trust the Xilinx Public Key

1. Download the Xilinx public key.

   a. Go to the Xilinx Downloads Website.

   b. In Download Verification, click **Public Key**.
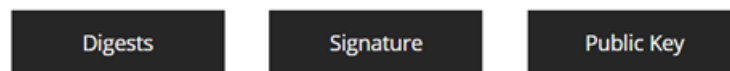
   This downloads `xilinx-master-signing-key.asc`.

   c. Confirm the download and import of the Xilinx public key.

2. To import the key, enter the following command:

   ```
   gpg --import ./xilinx-master-signing-key.asc
   ```


3. Set the trust level to *ultimate*. This will allow verification of the key signed by Xilinx.

   a. First, enter the following command to list the public keys:

   ```
   gpg --list-keys
   ```

Send Feedback

```
myuser@mymachine:$ gpg --list-keys
/home/myuser/.gnupg/pubring.kbx
------------------------------
pub    rsa4096/0x85D4B4BB1D692FDB 2018-04-10 [SC]
       Key fingerprint = 745F 4D5B 2402 441F 410F  BD0D 85D4 B4BB 1D69 2FDB
uid                    [ unknown] Xilinx, Inc. (Xilinx Software signing key) <software@xilinx.com>
sub    rsa4096/0xE80A66CA2B176EF9 2018-04-10 [S]
sub    rsa4096/0xF991913DFE46B839 2018-04-10 [E]
sub    rsa4096/0xC93822D0B9087126 2018-04-10 [A]
myuser@mymachine:$
```

b. To specify the key to edit, enter the following command:

```
gpg --edit-key 0x85D4B4BB1D692FDB
```

```
myuser@mymachine:$ gpg --edit-key 0x85D4B4BB1D692FDB
gpg (GnuPG) 2.1.15; Copyright (C) 2016 Free Software Foundation, Inc.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

pub  rsa4096/0x85D4B4BB1D692FDB
     created: 2018-04-10  expires: never       usage: SC
     trust: unknown       validity: unknown
sub  rsa4096/0xE80A66CA2B176EF9
     created: 2018-04-10  expires: never       usage: S
sub  rsa4096/0xF991913DFE46B839
     created: 2018-04-10  expires: never       usage: E
sub  rsa4096/0xC93822D0B9087126
     created: 2018-04-10  expires: never       usage: A
[ unknown] (1). Xilinx, Inc. (Xilinx Software signing key) <software@xilinx.com>
```

c. Enter the following command to set the trust level for the legitimate key: `trust`.

```
gpg> trust
pub   rsa4096/0x85D4B4BB1D692FDB
      created: 2018-04-10  expires: never        usage: SC
      trust: unknown        validity: unknown
sub   rsa4096/0xE80A66CA2B176EF9
      created: 2018-04-10  expires: never        usage: S
sub   rsa4096/0xF991913DFE46B839
      created: 2018-04-10  expires: never        usage: E
sub   rsa4096/0xC93822D0B9087126
      created: 2018-04-10  expires: never        usage: A
[ unknown] (1). Xilinx, Inc. (Xilinx Software signing key) <software@xilinx.com>

Please decide how far you trust this user to correctly verify other users' keys
(by looking at passports, checking fingerprints from different sources, etc.)

  1 = I don't know or won't say
  2 = I do NOT trust
  3 = I trust marginally
  4 = I trust fully
  5 = I trust ultimately
  m = back to the main menu
```

d. Enter 5 at the prompt.

```
Your decision? 5
Do you really want to set this key to ultimate trust? (y/N) y

pub   rsa4096/0x85D4B4BB1D692FDB
      created: 2018-04-10  expires: never        usage: SC
      trust: ultimate       validity: unknown
sub   rsa4096/0xE80A66CA2B176EF9
      created: 2018-04-10  expires: never        usage: S
sub   rsa4096/0xF991913DFE46B839
      created: 2018-04-10  expires: never        usage: E
sub   rsa4096/0xC93822D0B9087126
      created: 2018-04-10  expires: never        usage: A
[ unknown] (1). Xilinx, Inc. (Xilinx Software signing key) <software@xilinx.com>
Please note that the shown key validity is not necessarily correct
unless you restart the program.

gpg> q
myuser@mymachine:$
```

Now that you have downloaded, imported and trusted the Xilinx public key – you can ensure the authenticity and integrity of the downloaded file by verifying the signature or verifying the digest.

Note: You can pick one or both of methods to ensure the authenticity and integrity of downloaded file.

Verify the Signature

In order to verify the downloaded file that matches its signature, download the signature file.

1. Go to the Xilinx Downloads Website.

2. In the Download Verification area, select **Signature** for the applicable download type.

3. Download and save the signature file.

4. Run the following command to verify the signature:

```
gpg -v --verify Xilinx_Unified_20XX.Y_MMDD_HHMM_Lin64.bin.sig
Xilinx_Unified_20XX.Y_MMDD_HHMM_Lin64.bin
```

```
myuser@mymachine gpg -v --verify Xilinx_Unified_2019.2_1024_1831_Lin64.bin.sig Xilinx_Unified_2019.2_1024_1831_Lin64.bin
gpg: Signature made Wed 30 Oct 2019 10:20:52 AM PDT using RSA key ID 971AD24F
gpg: using subkey 971AD24F instead of primary key 55D2B701
gpg: using PGP trust model
gpg: checking the trustdb
gpg: 2 keys cached (8 signatures)
gpg: 2 keys processed (1 validity counts cleared)
gpg: 3 marginal(s) needed, 1 complete(s) needed, PGP trust model
gpg: depth: 0  valid:   2  signed:   0  trust: 0-, 0q, 0n, 0m, 0f, 2u
gpg: Good signature from "Xilinx, Inc. (Xilinx Software signing key)"
gpg: binary signature, digest algorithm SHA512
```

Verify the Digest

This is an alternative verification method to ensure the authenticity and integrity of the downloaded file. This method uses the "digest" or "hash values" which is the output of various cryptographic hash functions. The current digest file support MD5, SHA1, SHA256, SHA512 hashing algorithms.

1. Go to Xilinx Downloads Website.

2. In the Download Verification area, select **Digest** for the applicable download type.

3. Download and save the digest file.

4. After the digest file has been downloaded and stored, you need to first authenticate the digest file to make sure that it is indeed coming from Xilinx Inc.

   a. Run the following command to verify the signature that ensures that digest file is indeed coming from Xilinx Inc.

   ```
   Xilinx_Unified_20XX.Y_MMDD_HHMM_Lin64.bin.digests
   ```

```
myuser@mymachine ~gpg -v --verify Xilinx_Unified_2019.2_1106_2127_Lin64.bin.digests
Hash: SHA512
gpg: armor header:
gpg: original file name=''
gpg: Signature made Thu 07 Nov 2019 07:06:53 AM PST using RSA key ID 971AD24F
gpg: using subkey 971AD24F instead of primary key 55D2B701
gpg: using PGP trust model
gpg: checking the trustdb
gpg: 1 keys cached (4 signatures)
gpg: 1 keys processed (0 validity counts cleared)
gpg: 3 marginal(s) needed, 1 complete(s) needed, PGP trust model
gpg: depth: 0  valid:   1  signed:   0  trust: 0-, 0q, 0n, 0m, 0f, 1u
gpg: Good signature from "Xilinx, Inc. (Xilinx Software signing key)"
gpg: textmode signature, digest algorithm SHA512
myuser@mymachine ~
```

5. After the authentication is done, verify the digest either by using hashing executable or OpenSSL.

- To verify the digest using hashing executable – `sha256`, run the following command:

```
sha256sum -c Xilinx_Unified_20XX.Y_MMDD_HHMM_Lin64.bin.digests
```

```
myuser@mymachine ~sha256sum -c Xilinx_Unified_2019.2_1106_2127_Lin64.bin.digests
Xilinx_Unified_2019.2_1106_2127_Lin64.bin: OK
sha256sum: WARNING: 22 lines are improperly formatted
```

Note: You can use other hashing executables as well such as `md5sum`, `sha1sum`, and `sha512sum`.

- To verify the digest using OpenSSL, run the following command:

```
openssl dgst -sha256 Xilinx_Unified_20XX.Y_MMDD_HHMM_Lin64.bin
```

Output of the command is a computed hash value that you need to compare to the contents of the digest file.

```
myuser@mymachine ~openssl dgst -sha256 Xilinx_Unified_2019.2_1106_2127_Lin64.bin
SHA256(Xilinx_Unified_2019.2_1106_2127_Lin64.bin)= d8681cd68d5759fbe95f180047ba544175348
3ff1b5aba0c468316ef0b66f212
myuser@mymachine ~
```

Installing the Vivado Design Suite Tools

This section explains the installation process for all platforms for the Vivado Design Suite.

Installation Flow

Lab Edition, Full Product Download, or DVD

If you downloaded the Lab Edition or full product installation, decompress the file, and then run `xsetup` (for Linux) or `xsetup.exe` (for Windows) to launch the installation.

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

Lightweight Installer Download

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

Note: On Linux the file is a `.bin` file and can be launched by running `./<name of the file>.bin`. Please ensure that you have changed the file permissions to execute.

After entering your login credentials, you can select between a traditional web-based installation or a full install image download.

- **Download and Install Now:** 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.

- **Download Image (Install Separately):** 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. You also have an option to either download the full installer or download only selected products. There are no further options to choose with the Full Image selection, and installation needs to be done separately by running the xsetup application from the download directory.

Figure 6: **Xilinx Unified Installer - Select Install Type**
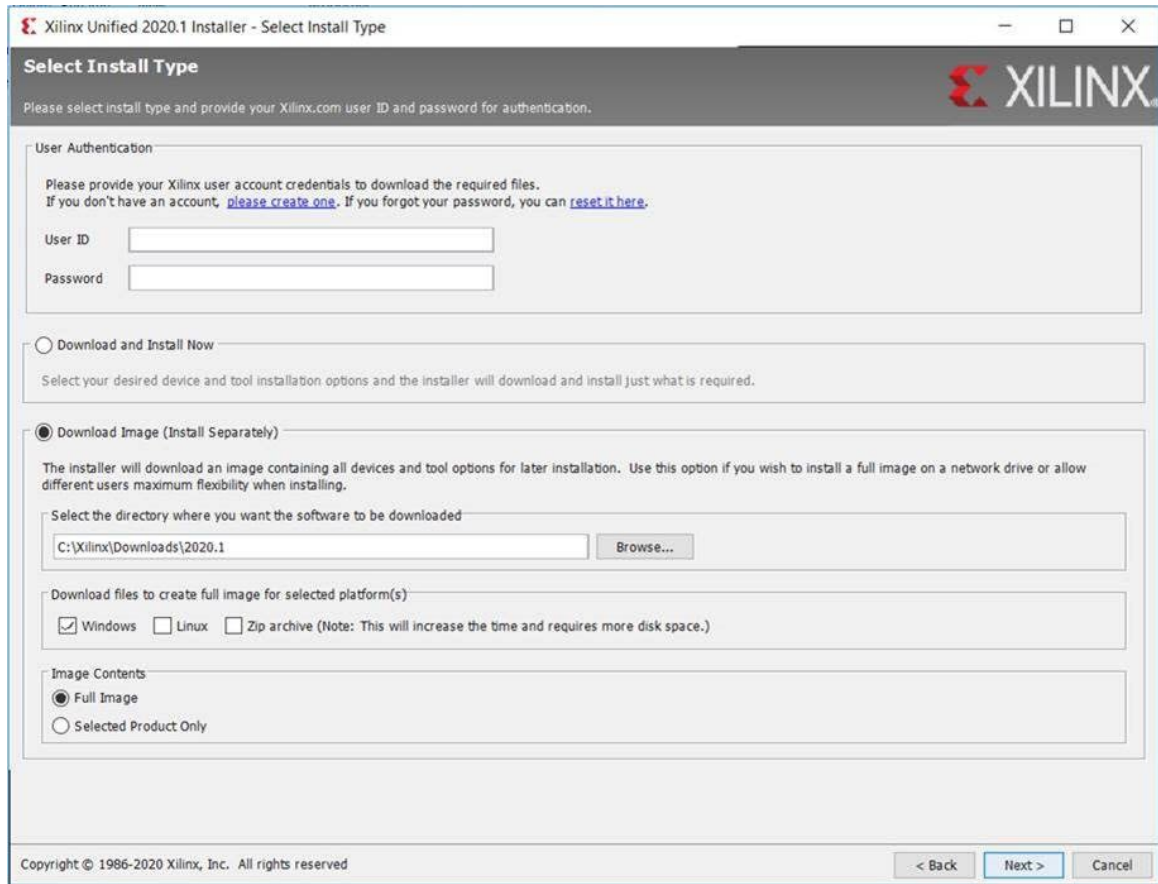
Prepare to Install the Tools

You *must* perform these actions prior to installation.

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

1. Check the links described in Important Information for any installation issues pertaining to your system or configuration.

2. Ensure your system meets the requirements described in Chapter 2: Requirements and Setup.

3. Close all open programs.

Run the Installation File

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

1. Run the installation file, which opens the Unified 2020.1 Installer.

2. Click **Next**.

Send Feedback

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. Select a product to install.
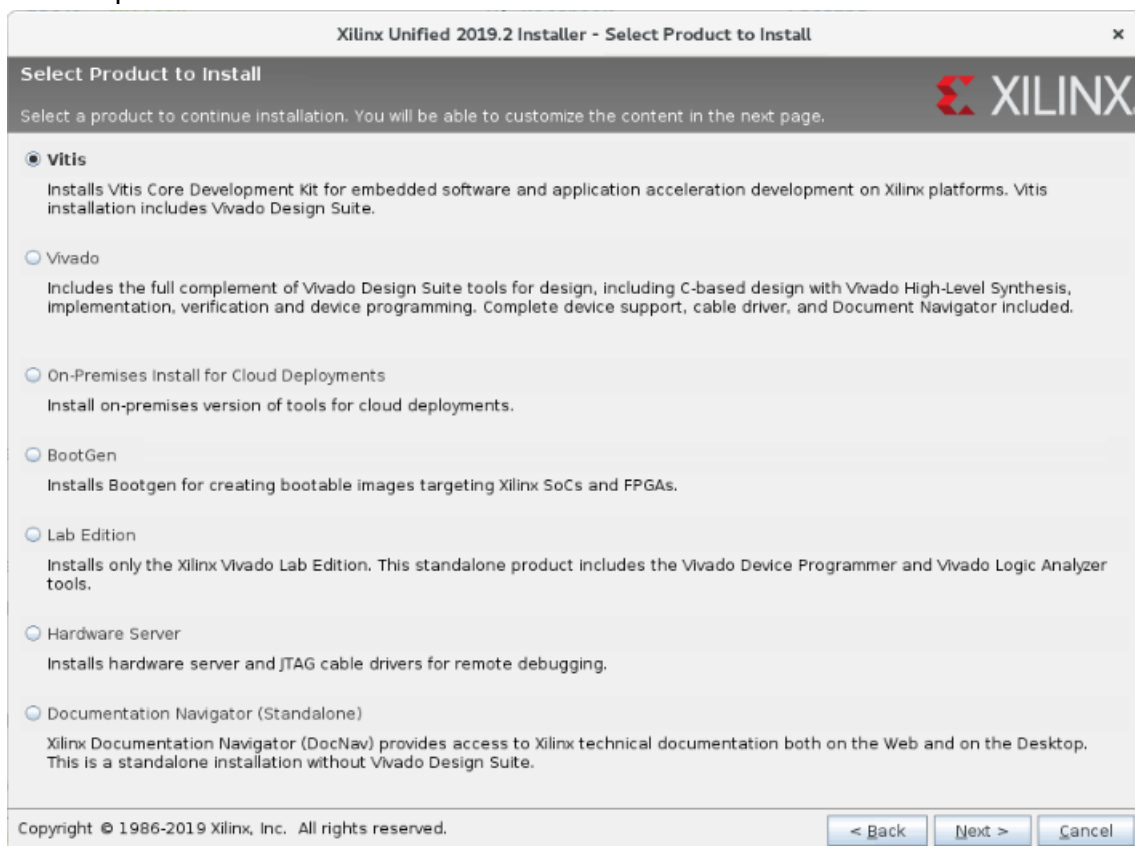
8. Select the edition or standalone tool to install.
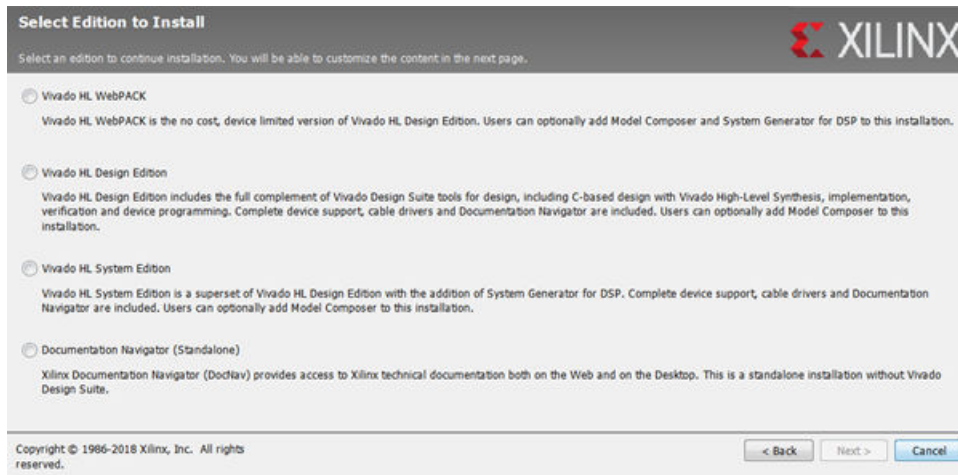
9. Customize the installation by choosing the design tools, device families, and installation options. Selecting only what you need helps minimize the download and installation for each product.

   To add to this installation later:

   - For Windows, click the Start menu, and select **Xilinx Design Tools**→**Vivado <version>**→ **Add Design Tools or Devices**.

   - For Linux, launch **Vivado**→**Help**→**Add Design Tools or Devices.**

     Note: Tools and devices can also be added from the Xilinx Information Center (XIC).
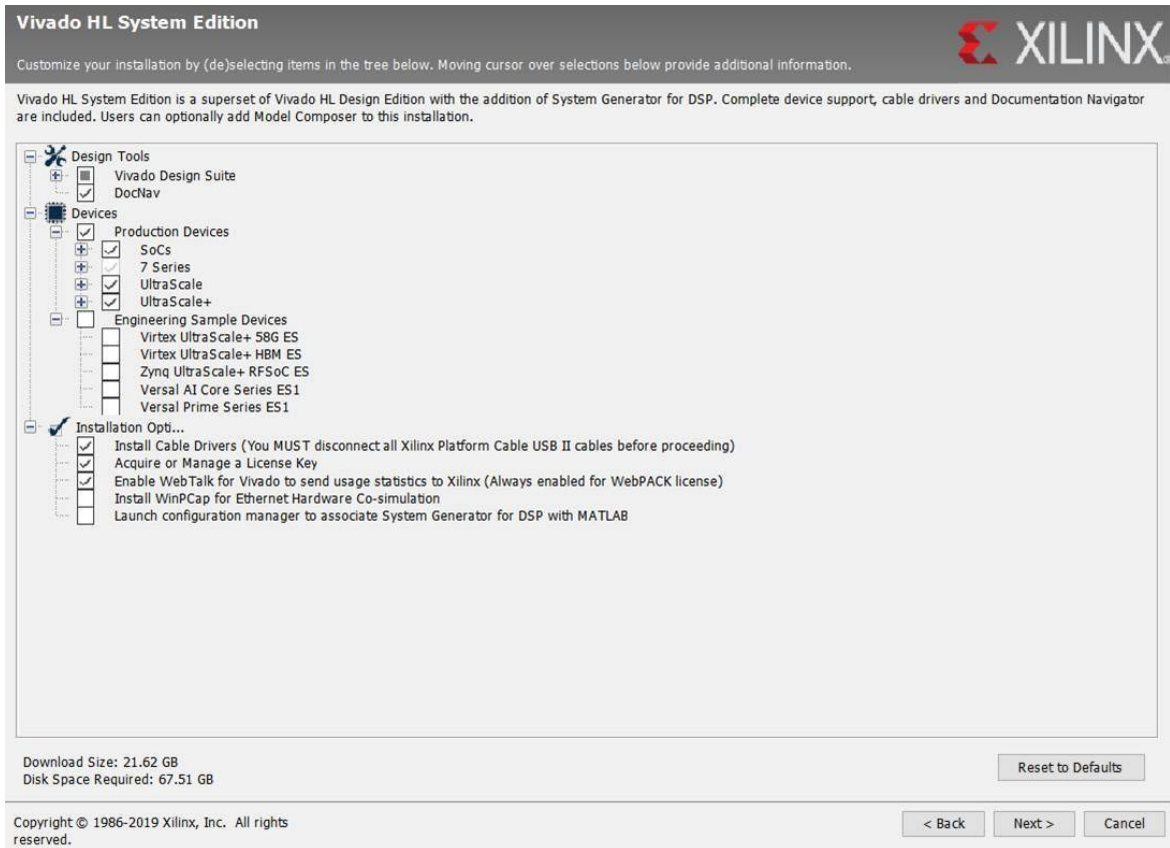
10. Click **Next**.

11. Select the installation directory.
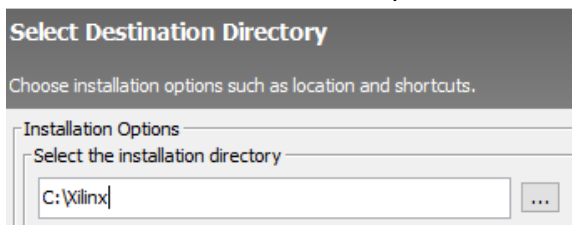
⚠ **CAUTION!** *The installation directory path must not contain any spaces.*

12. (Optional) Select shortcut and file association options.

13. Click **Next**.

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

- Devices

- Design tools

- Installation options

- Installation locations

- Download locations

- Disk space requirements

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

Adding Additional Tools and Devices

You can incrementally add additional tools, devices or even upgrade Vivado editions post-install. This is useful for users that have chosen to install a subset of devices and/or tools.

To add new tools or devices:

- For Windows clients, click the Start menu, and select **Xilinx Design Tools → Vivado \<version\> → Add Design Tools or Devices**.

- For Linux clients, select **Vivado → Help → Add Design Tools or Devices**.

If you have installed the Vivado WebPACK or Design Edition, you are presented with the option to upgrade the edition.

Figure 7: **Vivado Design Suite Installation - Select Edition**
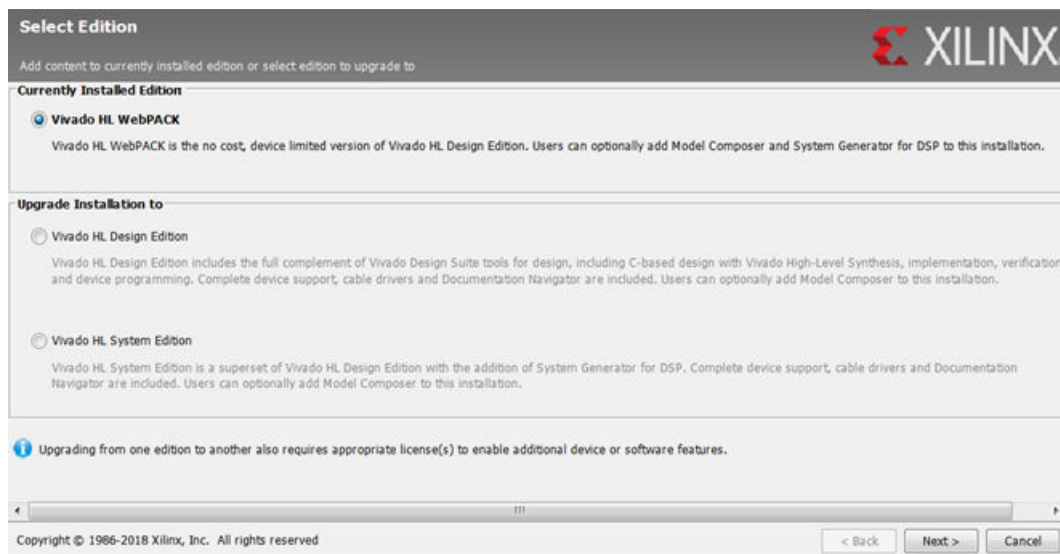
Based on the above selection, you are presented with all available tools and devices that can be added to the current installation.

You can also add tools or devices from the Xilinx Information Center (XIC).

Resolve Internet Connection Issues

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

Figure 8: **Internet Connectivity Message Example**

If there are connectivity issues, verify the following:

1. If you are using alternate proxy settings to the ones referred to, click the **Change Proxy Settings** button to specify the settings.

2. Check whether your company firewall requires a proxy authentication with a user name and password. If so, click the **Change Proxy Settings** button in the dialog box above.
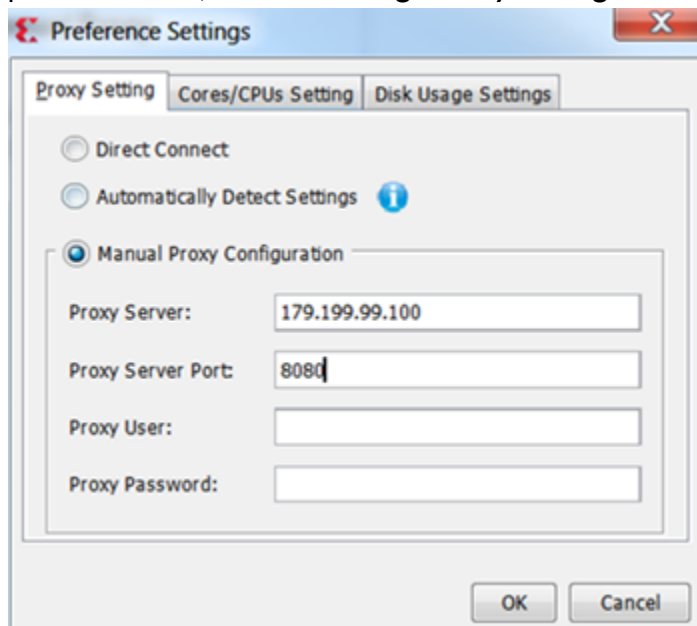
3. For Linux users, if either the **Use System settings** or the **Auto detect settings** option is selected in the Firefox browser, then you must manually set the proxy in the installer.

Core/CPUs Setting and Disk Usage Settings

1. Core/CPUs Setting and Disk Usage Settings:

   - CPU bandwidth can be modified for the download and installation in the CPU/Core settings under Preferences.

Figure 9: **Cores/CPUs Setting**
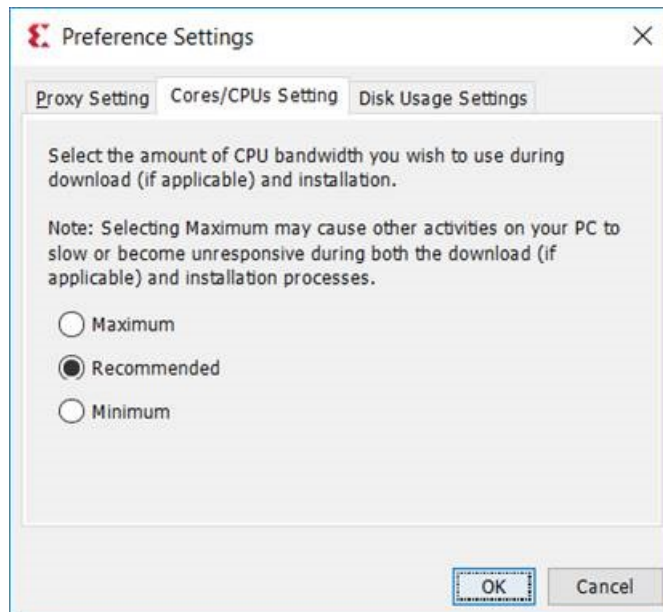
   - Disk Usage will be optimized by default during the installation. Disk usage settings can be modified in Preferences.

Figure 10: **Disk Usage Settings**
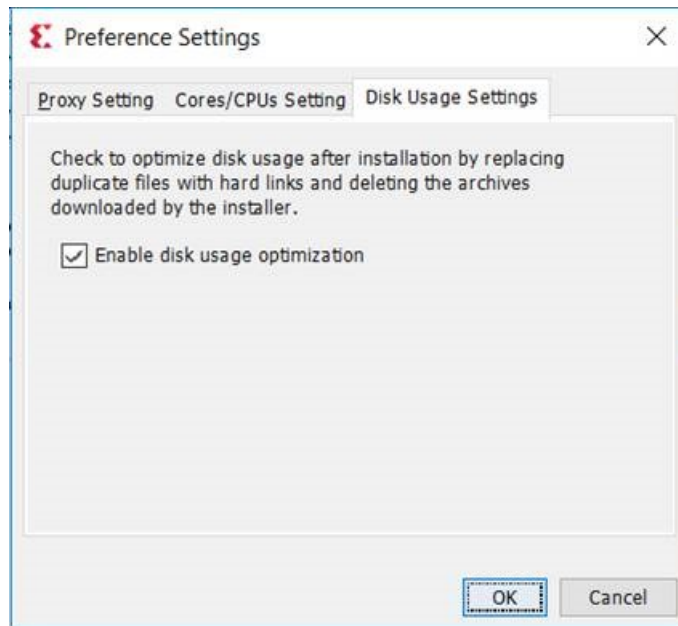
Installing Cable Drivers

On Windows, Install Cable Drivers is an optional selection in the installer.

For Linux, because root or sudo access is required to install drivers, this option has been removed from the Linux installer beginning in Vivado 2015.4. The general Vivado installer can now be run on Linux without root or sudo privileges. To install cable drivers on Linux, there is now a script that must be run as root or sudo post-installation.

- **Script Location:** `<Vivado Install Dir>/data/xicom/cable_drivers/lin64/install_script/install_drivers/`

- **Script Name:** `install_drivers`

Install Cable Drivers

1. To install the Windows driver, do the following:

   a. Run the following commands in an Administrator command prompt.

   ```
   cd %VIVADO_INSTALL_DIR%\data\xicom\cable_drivers\nt64
   install_drivers_wrapper.bat %log_dir% %log_dir%
   ```

   Note:

   - Set or replace `%VIVADO_INSTALL_DIR%` with the location of your install directory.

   - Replace `%log_dir%` with the location of the log directory.

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Note: If `%log_dir%` is not specified, a file named `install_drivers_wrapper.log` will be placed under `%VIVADO_INSTALL_DIR%`.

2. To install the Linux driver, do the following:

    a. Enter the following commands as root:

        ```
        ${vivado_install_dir}/data/xicom/cable_drivers/lin64/install_script/
        install_drivers/install_drivers
        ```

        Note: Replace `${vivado_install_dir}` with the location of your Vivado install location.

Using Download Image (Install Separately) Option

The Download Image (Install Separately) option can be used to download the installer image and then install at a later date.
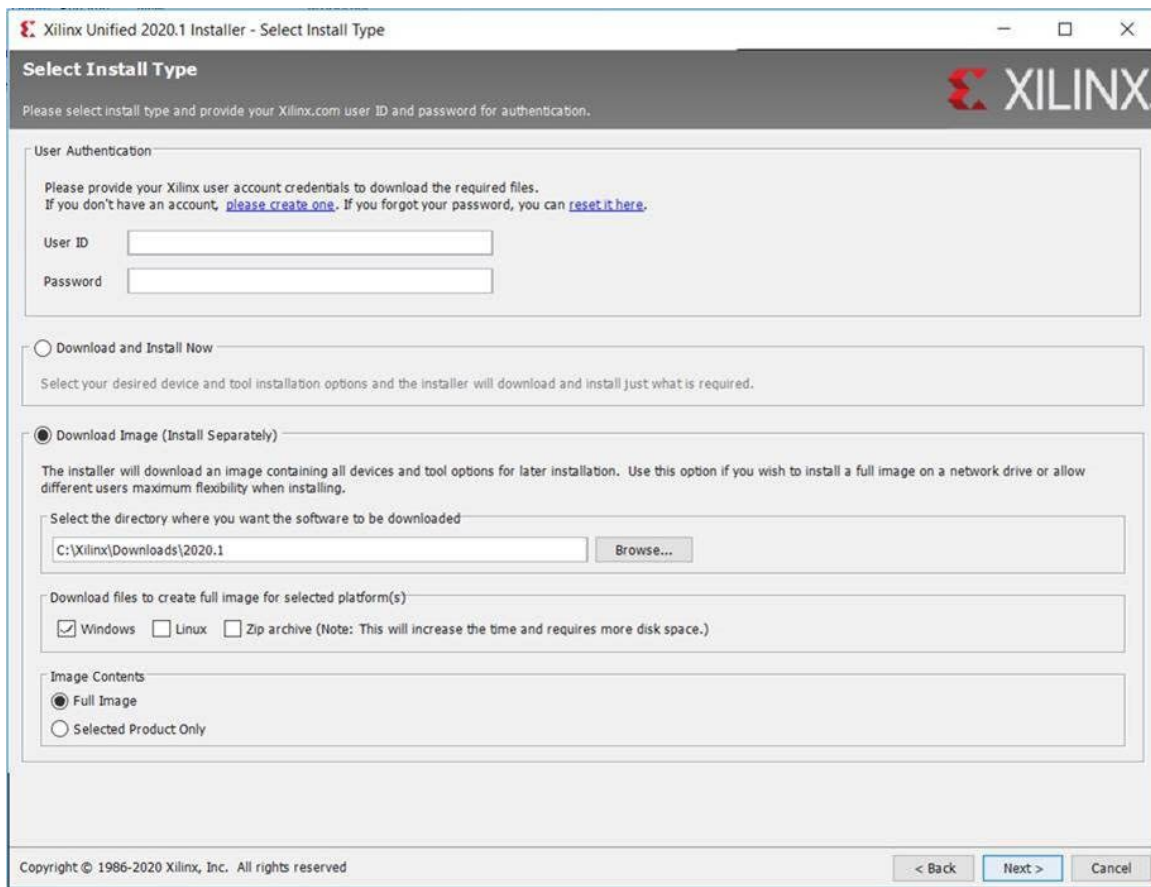
1. Provide the destination path (which does not have any other files) and choose the platform for which the installer is desired. Zip archive can be selected to have a zip file of the same installer.

2. Select the image contents.

    -   **Full Image**: Download the entire installer.

    -   **Selected Product Only**: Download only the files necessary for the selected tools/devices.

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Uninstall Cable Drivers

1. To uninstall the cable driver on a Windows client, run the following commands in an Administrator command prompt:

```
cd %VIVADO_INSTALL_DIR%\data\xicom\cable_drivers\nt64 wdreg -inf %cd%
\xusbdrvr.inf uninstall net stop XilinxPC4Driver del %WINDIR%
\system32\drivers\windrvr6.sys del %WINDIR%\system32\drivers\xusb*.sys
del %WINDIR%\system32\drivers\xpc4drvr.sys
```

   Note: Set or replace `%VIVADO_INSTALL_DIR%` with the location of your install directory.

2. To uninstall the products on a Linux client, run the following commands as root:

```
rm -f /etc/udev/rules.d/52-xilinx-digilent-usb.rules rm -f /etc/udev/
rules.d/52-xilinx-ftdi-usb.rules rm -f /etc/udev/rules.d/52-xilinx-
pcusb.rules
```

Uninstalling the Vivado Design Suite Tool

> **IMPORTANT!** *Before uninstalling, make sure to have moved any project files you want to keep outside your Xilinx installation directory structure, or they will be deleted.*

Xilinx Information Center and Documentation Navigator are not removed during uninstallation. Both are intended to be standalone applications common to multiple versions of Xilinx tools.

If the applications are no longer required, they must be installed separately through the corresponding entry in the Start Menu program group, or for Windows, use the Uninstall or change a program control panel option.

Uninstall the Vivado Design Suite Tool

> **IMPORTANT!** *Before uninstalling, make sure to have moved any project files you want to keep outside your Xilinx installation directory structure, or they are deleted.*

1. To uninstall any Xilinx product, select the Uninstall item from that product's Start Menu folder.

   For instance, to uninstall Vivado Design Suite: Edition, select **Start → All Programs → Xilinx Design Tools → Uninstall 2020.1**.

   If you do not have a program group entry, use the command line option to uninstall:

   `<install_path>\.xinstall\Vivado_2020.1\xsetup.exe -Uninstall`

   Alternatively, use the corresponding entry in the **Uninstall or change a program** control panel option.

2. To uninstall any Xilinx product on a Linux client, select **Applications → Xilinx Design Tools → Uninstall 2020.1**.

Network Installations

Installing to a network location provides a way for client machines to access the design tools by pointing to it on the network drive. To run the design tools on the network, the client machines must be set up correctly to ensure the environment variables, registry, and program groups all point to the network. The following sections describe the procedure for network setups.

Install the Vivado Design Tools on a Linux Client Network

You must source `settings64.(c)sh` from the area in which the design tools are installed. This sets up the environment to point to this installed location.

1. To run the design tools from a remotely installed location, run an X Windows display manager, and include a DISPLAY environment variable.

2. Define DISPLAY as the name of your display.

   DISPLAY is typically unix:0.0. For example, the following syntax allows you to run the tools on the host named bigben and to display the graphics on the local monitor of the machine called mynode.

   ```
   setenv DISPLAY mynode:0.0

   xhost = bigbenPC Clients
   ```

Install the Vivado Design Tools on a Microsoft Windows Client Network

1. Install design tools to a PC network server.

   Make sure your users know the location of the design tools and have access to the installation directory, and they have Administrator privileges for the following steps.

2. From the local client machine, browse to the following directory: `network_install_location\.xinstall\Vivado_<version>` and run the program `networkShortcutSetup.exe`.

   Running this program sets up the Windows settings batch files and Program Group or Desktop shortcuts to run the Xilinx tools from the remote location.

3. From the client machine, launch the Vivado Design Suite tools by clicking the Program Group or Desktop shortcuts, or by running the applications on the network drive.

Install to a Mounted Network Drive

Xilinx design tools are designed to be installed in a directory under ROOT (typically C:\Xilinx). The installer normally presents this option when installing to a local driver.

To work around this issue, either specify a UNC path (for example, `\\network_loc\Xilinx\`) or define your target installation directory as `\Xilinx` under the network mount point (For example: `N:\Xilinx`).

Windows 7 default security levels do not allow you to select remote mapped drives. To install Xilinx Design Tools on remote mapped drives, you must change your account control settings using the following steps:

1. Open the Windows Control Panel, from the Windows Start menu, and select **User Accounts**. If your Control Panel uses Category View, click **User Accounts** on two successive screens.

2. Click **Change User Account Control settings** and allow the program to make changes.

3. Click and slide the slide-bar down to the second to lowest setting (as seen in the following figure).

4. Click **OK**.
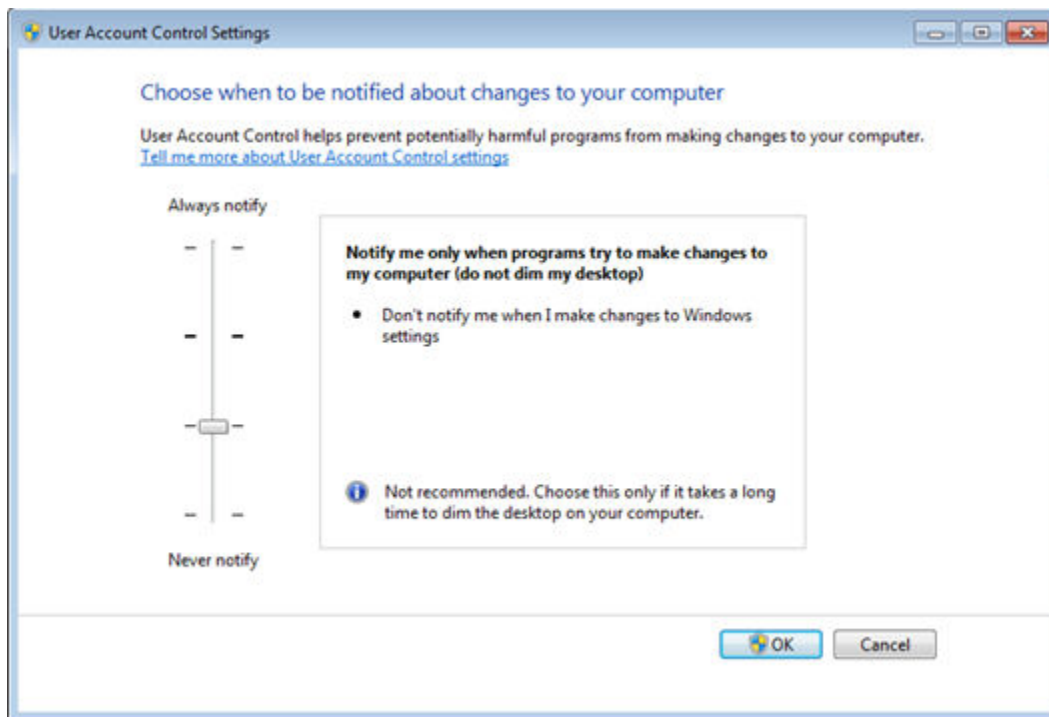
> **RECOMMENDED:** *Xilinx recommends that you revisit this procedure to restore your settings to their previous state after installation.*

> **Note:** You are not able to browse to the remote mapped drives using the Xilinx installer. You need to manually type in your installation path which contains a mapped network drive.

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.

For Windows, open the command window with administrator privileges, and run `xsetup.bat`, found in the `\bin` directory, and not `xsetup.exe` with the options below.

Generate a Configuration File

1. Run `xsetup -b ConfigGen`.

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

   ```
   Select a Product from the list:
   1. Vitis
   2. Vivado
   3. On-Premises Install for Cloud Deployments
   4. BootGen
   5. Lab Edition
   6. Hardware Server
   7. Documentation Navigator (Standalone)

   Please choose:
   ```

   Type `2`, and then press **Enter**.

   Select an edition, and then press **Enter**.

   ```
   Please choose: 2

   Select an Edition from the list:
   1. Vivado HL WebPACK
   2. Vivado HL Design Edition
   3. Vivado HL System Edition

   Please choose:
   ```

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 VivadoVivado HL System Edition configuration file:

```
#### Vivado HL System Edition Install Configuration ####
Edition=Vivado HL System Edition

Product=Vivado

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

# Choose the Products/Devices the you would like to install.
Modules=Zynq UltraScale+ MPSoC:1,DocNav:1,Virtex UltraScale+
HBM:1,Virtex UltraScale+ 58G:1,Virtex UltraScale+ 58G
ES:0,Kintex-7:1,Virtex UltraScale+:1,Zynq-7000:1,Kintex UltraScale
+:1,Engineering Sample Devices:0,Model Composer:0,Spartan-7:1,Kintex
UltraScale:1,System Generator for DSP:1,Virtex UltraScale:1,Zynq
UltraScale+ RFSoC:1,Versal AI Core Series ACAP ES1:0,Virtex-7:1,Versal
Prime Series ACAP ES1:0,Artix-7:1,Virtex UltraScale+ HBM ES:0,Zynq
UltraScale+ RFSoC ES:0

# 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
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

# Choose whether disk usage will be optimized (reduced) after
installation
EnableDiskUsageOptimization=1
```

```
Storage Licensing:1,Generating installed device list:1,Install VC++
runtime libraries for 64-bit OS:1,Install Cable Drivers:0,Acquire or
Manage a License Key:0,run:xic: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.

Running the Installer

After editing your configuration file to reflect your installation preferences, you can run the installer. As part of the command line installer, 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 Using Single-File Download

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 "Vitis Unified Software Platform" --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`.

Batch Mode Installation Using Web Installer

Command line based Web-Installer is a great way to enhance the productivity for installing Xilinx Vivado tools. It includes all the features as GUI Web-Installer and it allows you to fully script your installation process. Command line based Web-Installer uses secure token exchange mechanism to validate the user accounts.

Extract Web Installer Batch Mode Client

Use following command to extract the batch mode client on your machine.

```
<Download Dir>/Xilinx_Unified_201X.Y_MMDD_HHMM_Lin64.bin --keep --noexec --
target <WI Client Dir>
```

Example Command:

Note: For Windows, open the command window with administrator privileges and run the xsetup.bat file, found in the \bin directory, and not xsetup.exe.

Acquire Authentication Token

To minimize the user interaction, we will use secure token mechanism to authenticate the users.

First, we need to acquire an authentication token (stored in a text file) that will be used by the web installer to authenticate the user before downloading/installing the tool.

This authentication token will need to be acquired (generated) at least once and will expire after 7 days. You need to generate/acquire new token after it is expired.

- Use following command to generate authentication token:

- It will ask for Xilinx Account user ID and password before generating authentication token.

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Web Installer Download and Install

Use following command to download and install using command line web installer.

```
./xsetup -b Install -a XilinxEULA,3rdPartyEULA,WebTalkTerms -c
<path_to_configuration_file>
```

Example Command:

Updates:

Updates to your existing install can only be installed using a full image (SFD) or via the notification in XIC. We currently do not support updates to existing installer via Web Installer.

Obtaining Quarterly Releases

Xilinx periodically releases tools and tools updates which contains device support updates, new features and bug fixes. The following sections describe how to obtain updates through the Xilinx Information Center.

Xilinx Information Center

Xilinx Information Center (XIC) is the next generation replacement of XilinxNotify. This functionality resides in the task bar (Windows) and periodically checks for new releases and updates from Xilinx. Users can view and dismiss notifications as well as update installations.

In addition, XIC now includes a cockpit from which you can manage all of your Xilinx tool installations. Update, check licenses or uninstall all from the new Manage Installs tab as shown in the following figure.

Figure 11: **Xilinx Information Center (XIC)**

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WebTalk

The WebTalk feature helps Xilinx® understand how you use Xilinx FPGA devices, software, and intellectual property (IP). The information collected and transmitted by WebTalk allows Xilinx to improve the features most important to you as part of our ongoing effort to provide products that meet your current and future needs. When enabled, WebTalk provides information on your use of the Vivado® Design Suite tools, Vitis, and PetaLinux.

WebTalk Participation

Your participation in WebTalk is voluntary except when a paid license is not found.

In these cases, WebTalk data collection and transmission always occurs, regardless of your preference settings. For all other cases, data is not transmitted if you disable WebTalk.

The following table summarizes WebTalk behavior for data transmission to Xilinx from your post-route design, based on your Xilinx license, WebTalk install preference, and user preference settings.

Table 4: **WebTalk Behavior for Bitstream Generation or Route Design Flow**

License	WebTalk Install Preference Selected as "Enabled"	WebTalk User Preference Selected as "Enabled"	Send WebTalk Data to Xilinx
WebPACK	X	X	Yes
Edition License	No	X	No
Edition License	Yes	No	No
Edition License	Yes	Yes	Yes

Note: If the device is a WebPACK device, the Tools first look for a WebPACK license.

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Setting WebTalk Install Preference

You can enable or disable WebTalk globally during or after installation as described below. During installation you can enable or disable WebTalk installation options by checking or unchecking the **Enable WebTalk to send software, IP and device usage statistics to Xilinx (Always enabled for WebPACK license)** checkbox.

Figure 12: **WebTalk Install Options**
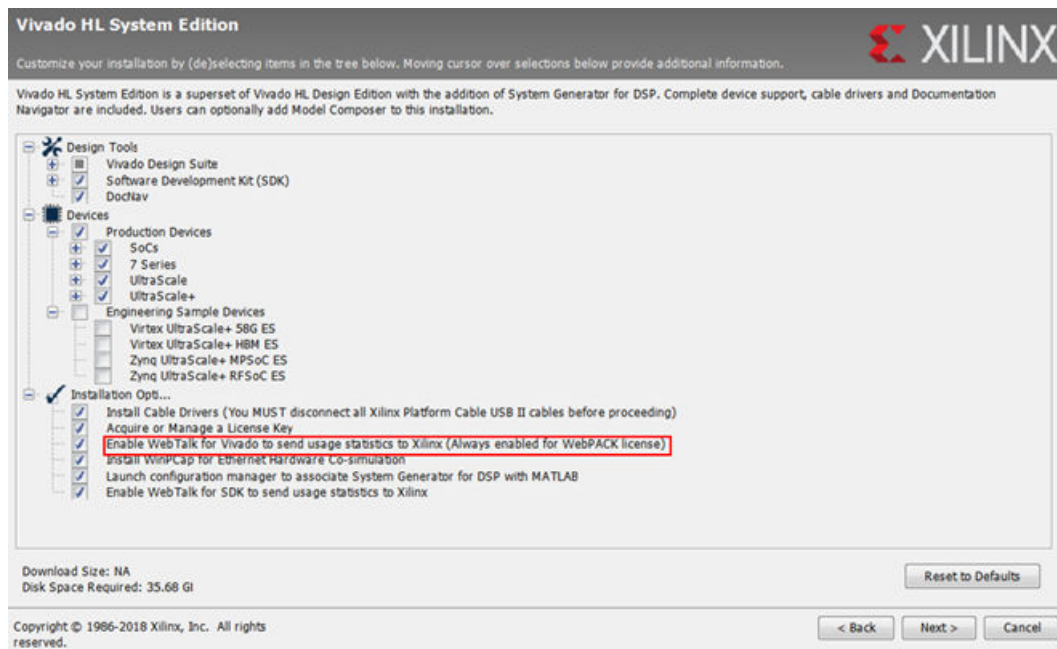
You can enable or disable WebTalk installation options using the Tcl command `config_webtalk`:

```
config_webtalk -install on|off
```

- **on:** Turns WebTalk on for the installation.

- **off:** Turns WebTalk off for the installation.

Install settings are saved in the following locations:

- **Windows:** `<install dir>/vivado/data/webtalk/webtalksettings`

- **Linux:** `<install dir>/vivado/data/webtalk/webtalksettings`

Note: You need administrator privileges to write to the install location.

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Setting WebTalk User Preferences

You can enable or disable WebTalk user options by selecting **Tools → Settings**. In the Settings dialog box, click the WebTalk category as shown in the following figure.

Figure 13: **WebTalk User Preferences**
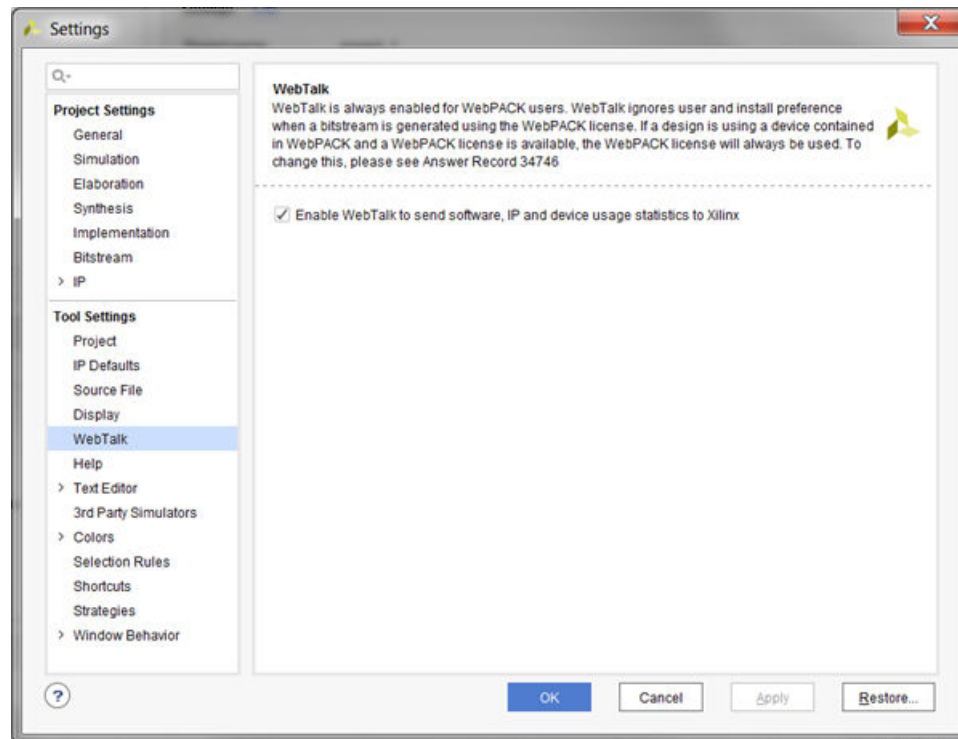
After installation, you can enable or disable WebTalk user options using the `config_webtalk` Tcl command:

`config_webtalk -user on|off`

- **on:** Turns WebTalk on for the current user.

- **off:** Turns WebTalk off for the current user.

User settings are saved in the following location:

- **Windows:** `<%APPDATA%>\Xilinx\Common\<version>\webtalk`

  where:

  <%APPDATA%> is:

  `C:\Users\<user>\AppData\Roaming`

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- **Linux:** `<%APPDATA%>/.Xilinx/Common/<version>/webtalk`

  where:

  <%APPDATA%> is:

  `/home/<user>`

Checking WebTalk Install and User Preferences

You can also use the `config_webtalk` Tcl command to check the current status of WebTalk settings. The command line option `-info` reports the values for the install setting and the user setting:

`config_webtalk -info`

Types of Data Collected

WebTalk does not collect your design netlist or any other proprietary information that can be used to reverse engineer your design. The data Xilinx collects through WebTalk includes:

- Software version

- Platform information

  For example, operating system, speed and number of processors, and main memory.

- Unique project ID

- Authorization code

- Date of generation

- Targeted device and family information

For more information on the type of data that is collected, see the Xilinx Design Tools WebTalk page. To see the specific WebTalk data collected for your design, open the `usage_statistics_webtalk.xm` file in the project directory. You can also open the `usage_statistics_webtalk.html` file for easy viewing of the data transmitted to Xilinx. Additionally, additional data collection files for sub-flows in the Xilinx tools are also generated which include:

- `usage_statistics_ext_xsim.xml`

- `usage_statistices_ext_labtools.xml`

- `usage_statistics_ext_vitis.xml`

- `usage_statistics_ext_petalinux.xml` (along with corresponding HTML files)

Transmission of Data

WebTalk is invoked after bitstream or route design compilation. WebTalk bundles the collected data in an `usage_statistics_webtalk.xml` file and sends this file to Xilinx by https (hypertext transfer protocol secure) post. Every new compilation for a given design overwrites the previous `usage_statistics_webtalk.xml` file. WebTalk also writes an HTML file equivalent `usage_statistics_webtalk.html` file for easy viewing of the data transmitted to Xilinx. WebTalk also writes to the `vivado.log` (or `runme.log`) file that contains additional information about whether the file was successfully transmitted to Xilinx.

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. To open 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 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

These documents provide supplemental material useful with this guide:

Send Feedback

1. *UltraFast Design Methodology Guide for the Vivado Design Suite* (UG949)

2. *UltraFast High-Level Productivity Design Methodology Guide* (UG1197)

3. *UltraFast Embedded Design Methodology Guide* (UG1046)

4. *Vivado Design Suite User Guide: Logic Simulation* (UG900)

5. *Vivado Design Suite User Guide: High-Level Synthesis* (UG902)

6. *Vivado Design Suite User Guide: Dynamic Function eXchange* (UG909)

7. *Vivado Design Suite Tutorial: Dynamic Function eXchange* (UG947)

8. *Vivado Design Suite User Guide: Hierarchical Design* (UG905)

9. *Vivado Design Suite User Guide: Model-Based DSP Design Using System Generator* (UG897)

10. *Vivado Design Suite User Guide: Implementation* (UG904)

11. *Vivado Design Suite User Guide: Power Analysis and Optimization* (UG907)

12. IP Release Notes Guide (XTP025)

13. Platform Cable USB II Data Sheet (DS593)

14. Xilinx Design Tools WebTalk page

15. Vivado QuickTake Video Tutorials

16. Vivado Design Suite Documentation

17. PS and PL-Based 1G/10G Ethernet Solution (XAPP1305)

18. Secure Boot of Zynq-7000 SoC (XAPP1175)

19. *Model Composer User Guide* (UG1262)

20. *PetaLinux Tools Documentation: Reference Guide* (UG1144)

Training Resources

Xilinx provides a variety of training courses and QuickTake videos to help you learn more about the concepts presented in this document. Use these links to explore related training resources:

1. Designing FPGAs Using the Vivado Design Suite

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