COMP4601 Vivado/Vitis 2020.1 Installation Guide for Windows 10

The Vivado/Vitis tools from Xilinx are available for Windows and Linux. Historically, driver support (amongst other issues) have been better resolved in the Windows version. In COMP4601 we can only support the Windows install of the 2020.1 toolset. If you don't have a machine configured with Windows 10¹, we suggest using a virtual machine, such as vmware, which you are entitled to use through the School's license – see https://taggi.cse.unsw.edu.au/FAQ/Getting_Software/

The following guide assumes that you have an up-to-date version of Windows 10 installed on your machine. The installation, as outlined here, requires 76GB disk space during installation, and 44GB are needed to store the installation.

If you experience difficulties in following the instructions provided here, please email both Oliver (o.diessel@unsw.edu.au) and Junning (junning.fan@student.unsw.edu.au) to let us know about it.

A. Download Vivado 2020.1

- Navigate to the 2020.1 Xilinx Vivado Archive download page (https://www.xilinx.com/support/download/index.html/content/xilinx/en/downloadNav/viva do-design-tools/archive.html).
- 2. For Windows 10, download "Xilinx Unified Installer 2020.1: Windows Self Extracting Web Installer" under "Vivado Design Suite HLx Editions 2020.1 Full Product Installation" section.

'ivado	Design Suite - HLx Editions - 2020.1 Full Product Insta	allation
Impor	ant Information	
Vivado	Design Suite 2020.1 is now available:	
 At Ac No Re Pc 	ility to select the full image or selected products as part of Web installed idress map enhancements provide Realtime error highlighting and cross ested DFX further extends the flexibility of DFX solutions port QoR Suggestions predicts up to 3 custom strategies for Improved p wer Rail based reporting now available	r probing performance
We stro significa	ngly recommend to use the web installers as it reduces download time a nnt disk space.	and saves
Please	see Installer Information for details.	
Note:		
 Do br Be pr Fil 	wnload verification is only supported with Google Chrome and Microsof owsers. ginning this release, the Single File Download and the Webinstaller supp oducts. Vivado Lab Solutions and Document Navigator are included in b e Download and Webinstaller packages.	ft Edge web ports all oth the Single
Xilinx	Unified Installer 2020.1: Windows Self Extracting Web Installer (EXE - 66.73 MB)	
Downl	oad Verification (1)	
_		www.exe

¹ Windows 11 should support Vivado HLS 2020.1 equally well. Some minor but obvious changes to the instructions below may need to be made for a Windows 11 installation.

Alternatively, you can download " Vivado HLx 2020.1: All OS installer Single-File Download", this is an offline installer to try if you have connection issue when using the Web installer.

- 3. Downloading content from Xilinx requires you to have a Xilinx account, register your account as directed by the website.
- 4. Once you have logged in, fill the U.S. Government Export Approval form, then click the download button.

B. Install Vivado 2020.1

1. Login to the Xilinx Unified 2020.1 Installer, select Download and Install Now.

Xilinx Unified 2020.1 Installer - Select Install Type		-	-		×
Select Install Type	5		ΥII	IN	IX
Please select install type and provide your Xilinx.com user ID and password for authentication.	•	^ /	\sim	_	
User Authentication					
Please provide your Xilinx user account credentials to download the required files. If you don't have an account, please create one. If you forgot your password, you can reset it here.					
User ID					
Password					
© Download and Install Now					
Select your desired device and tool installation options and the installer will download and install just what is required.					
O Download Image (Install Separately)					
The installer will download an image containing all devices and tool options for later installation. Use this option if you wish to install a different users maximum flexibility when installing.	a full image on	a netv	vork dri	ve or al	ow
Copyright © 1986-2021 Xilinx, Inc. All rights reserved.	< Back	Ne	ext >	Ca	ncel

2. Continue, Agree terms. In the select product to install page, **select Vitis** to install. <u>This option</u> will install Vitis, Vivado and Vivado HLS.

Xilimx Unified 2020.1 Installer - Select Product to Install		_		\times
Select Product to Install	•	VII	IN	IV
Select a product to continue installation. You will be able to customize the content in the next page.	₹_	XIL	_111\	١Å
🖲 Vitis 🔶				
Installs Vitis Core Development Kit for embedded software and application acceleration development on Xilinx platforms. Vitis install	ation includes Viva	do Design	Suite.	
○ Vivado				
Includes the full complement of Vivado Design Suite tools for design, including C-based design with Vivado High-Level Synthesis, im programming. Complete device support, cable driver, and Document Navigator included.	plementation, ver	fication and	d device	1
On-Premises Install for Cloud Deployments				
Install on-premises version of tools for cloud deployments.				
O BootGen				
Installs Bootgen for creating bootable images targeting Xilinx SoCs and FPGAs.				
C Lab Edition				
Installs only the Xilinx Vivado Lab Edition. This standalone product includes the Vivado Device Programmer and Vivado Logic Analyze	er tools.			
O Hardware Server				
Installs hardware server and JTAG cable drivers for remote debugging.				
O Documentation Navigator (Standalone)				
Xiinx Documentation Navigator (DocNav) provides access to Xiinx technical documentation both on the Web and on the Desktop. T Vivado Design Suite.	This is a standalon	e installatio	n witho	ut
Consider & 1000 2021 View Tax All views around	- P - t	Nexts	0	
Capyright © 1986-2021 XiinX, Inc. All rights reserved.	< <u>B</u> ack	Next >	Car	icel

3. On the next page, tick to install Zynq-7000 and Zynq Ultrascale + MPSoC devices as shown below (note that the Zynq Ultrascale + MPSoC devices should also be selected).

🐔 Xilinx Unified 2020.1 Installer - Vitis Unified Software Platform	-		×
Vitis Unified Software Platform	XI	I IN	JX
Customize your installation by (de)selecting items in the tree below. Moving cursor over selections below provide additional information.			N/\s
The Vitis unified software platform enables the development of embedded software and accelerated applications on heterogeneous Xilinx platforms induct Versal ACAPa. It provides a unified programming model for accelerating Edge. (Doud, and Hybrid computing applications. This installation is a superset the Design Stute as well. Users can optionally add Model Composer to this installation.	ling FPG.	As, SoCs.	, and ado
Download Size: 13.86 GB Disk Space Required: 65.73 GB	Reset t	o Default	s
Copyright © 1986-2021 Xilinx, Inc. All rights reserved.	Next >	Ca	ancel

4. Select the installation directory, remember the path to this directory for system environment variable configuration later. Click next, and choose to create the path. (Note that if this path is NOT empty, the installer will refuse to continue. You'll have to manually delete the contents of this directory.)

Xilinx Unified 2020.1 Installer - Select Destination Directory			-		×
Select Destination Directory Choose installation options such as location and shortcuts.		3	XI	LII	N)
Installation Options Select the installation directory C: [Vilinx] Installation location(s) C: [Vilinx Vilis]2020.1 C: [Vilinx Vilis]2020.1 C: [Vilinx Vilis]2020.1 C: [Vilinx Downloads[Vilis]2020.1 Disk Space Required Download Size: 17.25 GB Disk Space Required Disk Space Available: 108.96 GB Disk Space Available: 108.96 GB	Select shortout and file association options				
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5. Check the installation summary. Then click install, wait for the download to complete.

Xilinx Unified 2020.1 Ins	taller - Installation Summary	-		×
UNIFIED	Installation Summary			
Xilinx Installer	Edition: Vitis Unified Software Platform Devices Devices for Custom Platforms (SoCs)			
	Design Tools Vitis Unified Software Platform (Vitis, Vivado) DodNav			
	Installation Options			
	Install Cable Drivers (You MUST disconnect all Xilinx Platform Cable USB II cables before proceeding)			
	Installation location			
	 C:\/ilinx\/\/itis\2020.1 			
	 C: [Villnx](Vivado)2020.1 			
	C:\/\illnx\/DocNav			
	Download location C:\Viimx\Downloads\Vitis_2020.1			
	Disk Space Required			
	Download Size: 13.86 GB			
	Disk Space Required: 65.73 GB			
	Final Disk Usage: 38.81 GB			
E XILINX.				
Copyright © 1986-2021 Xilinx,	Inc. All rights reserved. Preferences < Back	Instal	Q	ancel

- C. Add the Vivado and Vitis binary directories to the system environment variable list
 - 1. Search for the term "change the system environment variables" in Start.



2. Click "Environment Variables" in the System Properties window.

System Properties			
Computer Name Ha	ardware Advanced	System Protection	n Remote
You must be logged	d on as an Administr	ator to make most of	these changes.
Performance			
Visual effects, pro	cessor scheduling,	memory usage and v	irtual memory
			<u>S</u> ettings
User Profiles			
Desktop settings	related to your sign-i	'n	
		l	Settings
Start-up and Reco	overy		
System start-up, s	ystem failure and de	bugging information	
		.	Settings
			oo <u>u</u> ngo
		Environ	nent Variables

3. In the System variables section, highlight PATH, click edit.

and the second sec	Value		
OneDrive	C:\Users\4601\OneDrive		
Path	C:\Users\4601\AppData\Local\Microsoft\V	/indowsApps;	
TEMP	C:\Users\4601\AppData\Local\Temp		
TMP	C:\Users\4601\AppData\Local\Temp		
	<u>N</u> ew	Edit	Delete
stem variables			
rstem variables Variable	Value		
rstem variables Variable ComSpec	Value C:\Windows\system32\cmd.exe		
rstem variables Variable ComSpec DriverData	Value C:\Windows\system32\cmd.exe C:\Windows\System32\Driver\DriverData		
vstem variables Variable ComSpec DriverData NUMBER_OF_PROCESSORS	Value C:\Windows\system32\cmd.exe C:\Windows\System32\Drivers\DriverData 4		
vstem variables Variable ComSpec DriverData NUMBER_OF_PROCESSORS OS	Value C:\Windows\system32\cmd.exe C:\Windows\System32\Drivers\DriverData 4 Windows_NT		
vstem variables Variable ComSpec DriverData NUMBER_OF_PROCESSORS OS Path	Value C:\Windows\system32\cmd.exe C:\Windows\System32\Drivers\DriverData 4 Windows_NT C:\Windows\system32;C:\Windows;C:\Wir	ndows\System3	2\Wberri,
vstem variables Variable ComSpec DriverData NUMBER_OF_PROCESSORS OS Path PATHEXT PROCESSOR ARCHITECTURE	Value C:\Windows\system32\cmd.exe C:\Windows\System32\Drivers\DriverData 4 Windows_NT C:\Windows\system32;C:\Windows\C.\Win CCMM:EXE;.BAT;.CMD;.VBS;.VBE;.JS;JSE;.W: AMD64	idows\System3 5F;.WSH;.MSC	2\Wberr,

4. In the Edit environment variable window, click new, set a new variable entry with C:\Xilinx\Vivado\2020.1\bin. Then create another entry with C:\Xilinx\Vitis\2020.1\bin. Click OK in the Edit environment variable window, Click OK in the Environment Variable, Click OK in the Environment Variables window.

Edit environment variable	×
%SystemRoot%\system32	New
%SystemRoot%	
%SystemRoot%\System32\Wbem	Edit
%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\	
%SYSTEMROOT%\System32\OpenSSH\	Browse
C:\Xilinx\Vivado\2020.1\bin	
C:\Xilinx\Vitis\2020.1\bin	Delete
	Move Up
	Move Down
	Edit text
	-
	-
OK	Cancel

- 5. Reboot the system.
- 6. Now, let's verify the command line tools (CMD and powershell) can find the Vivado, Vivado HLS and Vitis executables. Open CMD or powershell. Type vivado (note the command is case sensitive), verify the vivado GUI can be called this way. Exit Vivado, type vivado_hls, verify the Vivado HLS GUI can be called this way. Exit Vivado HLS, type vitis, verify the Vitis GUI can be called this way.

D. Apply the Vivado 2020.1 patch for the Y2K22 bug

- 1. Like many developers, Xilinx were affected by the Y2K22 bug. You will need to patch your installation for this bug in order to be able to export designs for synthesis and implementation.
- Search for "xilinx y2k22" in your search bar and select the topmost entry Export IP Invalid Argument / Revision Number Overflow Issue (Y2K22) (https://support.xilinx.com/s/article/76960?language=en_US)
- 3. Follow the instructions given in the Solution section, making sure that after the extraction the y2k22_patch folder is under C:\Xilinx, i.e : C:\Xilinx\y2k22_patch
- 4. When the patch is successfully applied, you should be able to **Export RTL**, as described in Step 5 of Lab 1 in Chapter 2 of the 2020.1 Vivado HLS Tutorial, which you will complete in order to familiarize yourself with the design tool.