



EFOP-3.4.3-16-2016-00009

A felsőfokú oktatás minőségének és hozzáférhetőségének
együttes javítása a Pannon Egyetemen

FPGA-BASED EMBEDDED SYSTEM DEVELOPMENT (VEMIVIB334BR)



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Updated: 13. Feb. 2024.

SZÉCHENYI 2020



MAGYARORSZÁG
KORMÁNYA

Európai Unió
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és Beruházási Alapok



BEFEKTETÉS A JÖVŐBE



1. INSTALL XILINX VITIS/VIVADO

Embedded System development environment

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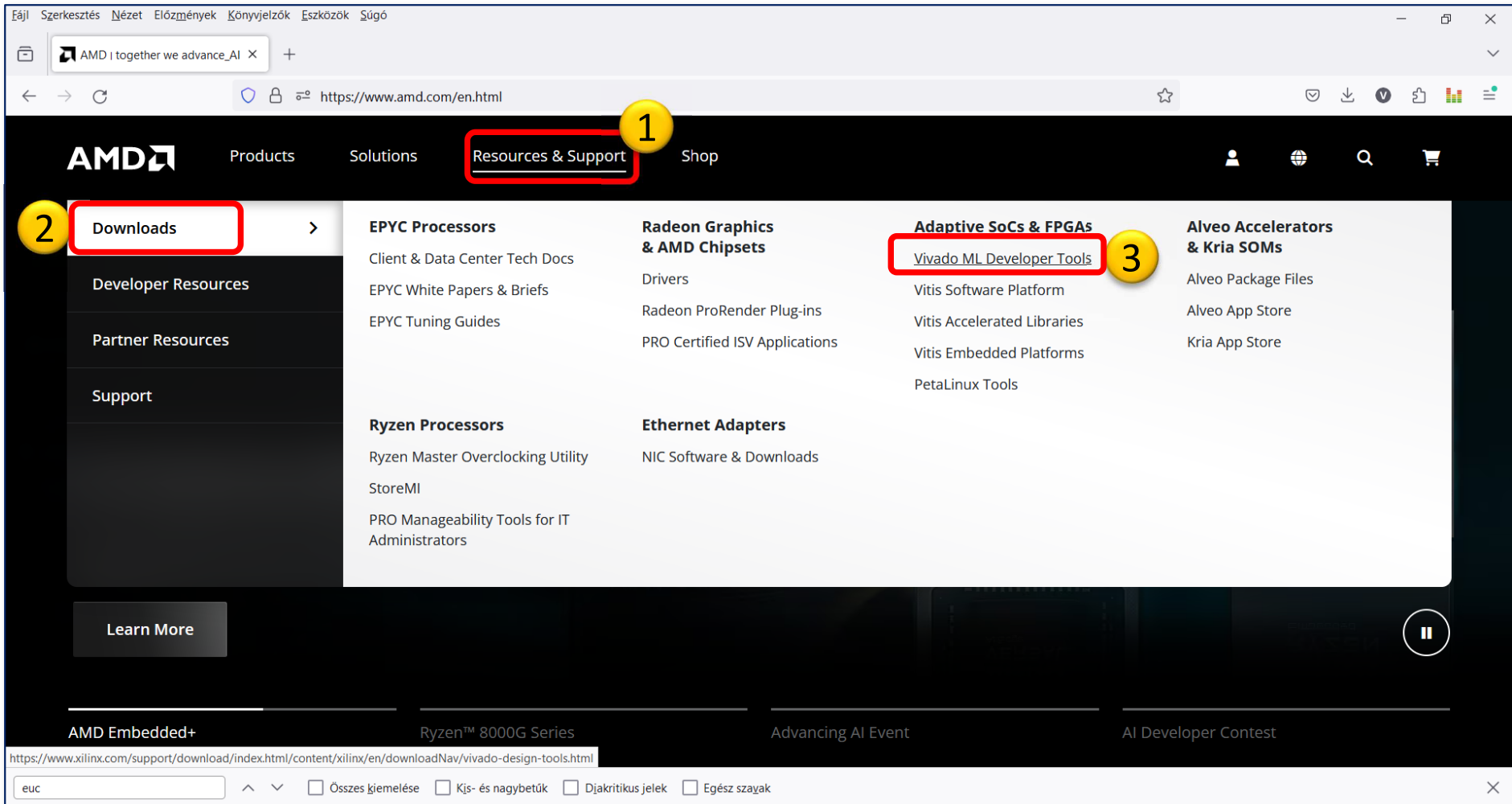


BEFEKTETÉS A JÖVŐBE

AMD-Xilinx website

- Visit AMD-XILINX official website (Feb. 2024):

 <http://www.amd.com>



The screenshot shows the AMD website's navigation menu. The 'Resources & Support' menu item is highlighted with a red box and a yellow circle labeled '1'. The 'Downloads' sub-menu item is also highlighted with a red box and a yellow circle labeled '2'. Within the 'Downloads' sub-menu, the 'Vivado ML Developer Tools' link is highlighted with a red box and a yellow circle labeled '3'. The website's footer includes links for 'AMD Embedded+', 'Ryzen™ 8000G Series', 'Advancing AI Event', and 'AI Developer Contest'. The browser's address bar shows the URL: <https://www.xilinx.com/support/download/index.html/content/xilinx/en/downloadNav/vivado-design-tools.html>.

Download package

Select [Xilinx Unified Installer 2020.2: Windows Self Extracting Web Installer](#) (EXE – **248 MB**)
LARGE PACKAGE - OR - SMALL PACKAGE WEB BASED INSTALLER!

Select [Vivado HLx 2020.2: All OS installer Single-File Download](#) (TAR/GZIP – **43 GB**) (Win+Linux)

1

Licensing Help Alveo Accelerator Card

Vivado (HW Developer) **Vitis (SW Developer)** Vitis Embedded Platforms Alveo Packages PetaLinux Device Models Documentation Navigator

Version

- 2020.2**
- 2020.1
- 2019.2
- SDSoC Archive
- SDAccel Archive
- SDK/PetaLinux Archive

2 Select VITIS archive

Vitis Core Development Kit - 2020.2 Full Product Installation

Important Information

Versal AI Core series devices require a separate AI Engine tool license. Please visit [Vitis get started webpage](#)

Vitis™ Unified Software Platform 2020.2 is now available:

- Application acceleration and embedded software development support for Versal

3

[Xilinx Vitis 2020.2: All OS installer Single-File Download \(TAR/GZIP - 43.07 GB\)](#)

MD5 SUM Value : 523e8596f114ab5e389c14df50ecb1d8

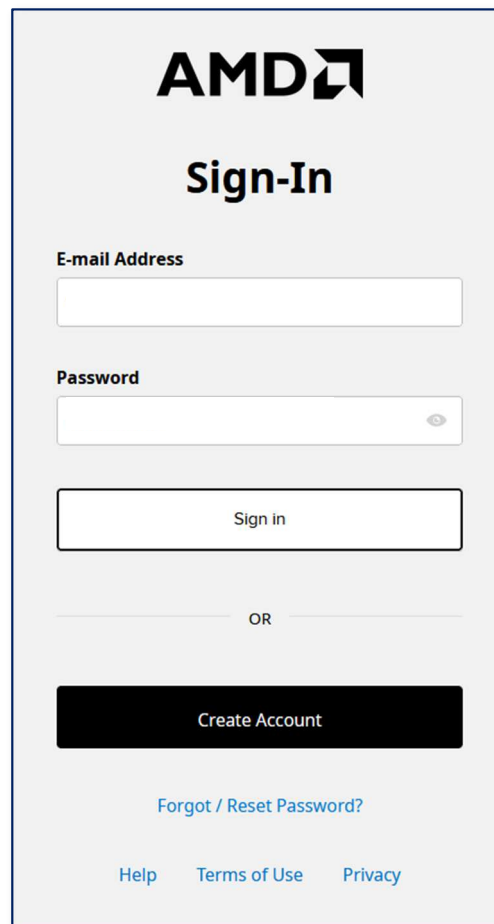
Download Verification ⓘ

Digests Signature Public Key

Download Includes	Vitis Core Development Kit
Download Type	Full Product Installation
Last Updated	Nov 24, 2020
Answers	2020.x Known Issue
Documentation	Vitis Release Notes OS Support Update What's New


Sign into AMD-Xilinx webpage

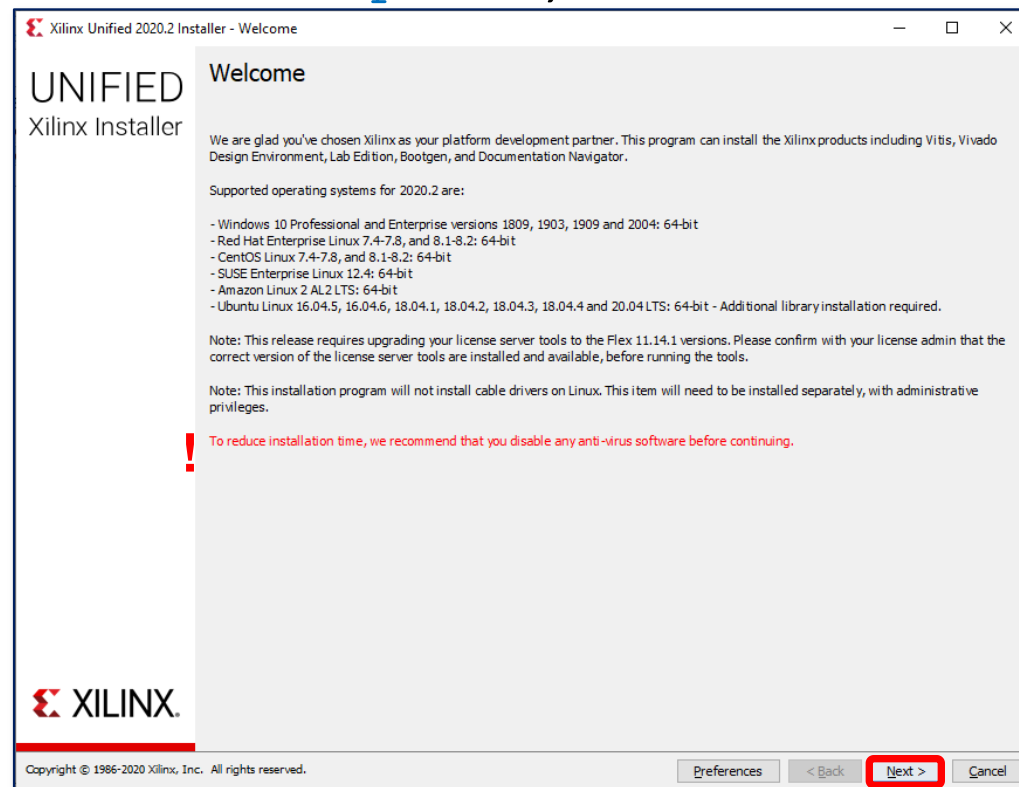
- Sign-in (if you have AMD-Xilinx account) or
- Create a new account (free registration with a valid email address)



The image shows a screenshot of the AMD Sign-In page. At the top, the AMD logo is displayed. Below it, the text "Sign-In" is centered. There are two input fields: "E-mail Address" and "Password". The "Password" field has a small eye icon to its right. Below the input fields is a "Sign in" button. Underneath the button is the word "OR" centered between two horizontal lines. Below that is a "Create Account" button. At the bottom of the form, there is a link for "Forgot / Reset Password?". At the very bottom, there are three links: "Help", "Terms of Use", and "Privacy".

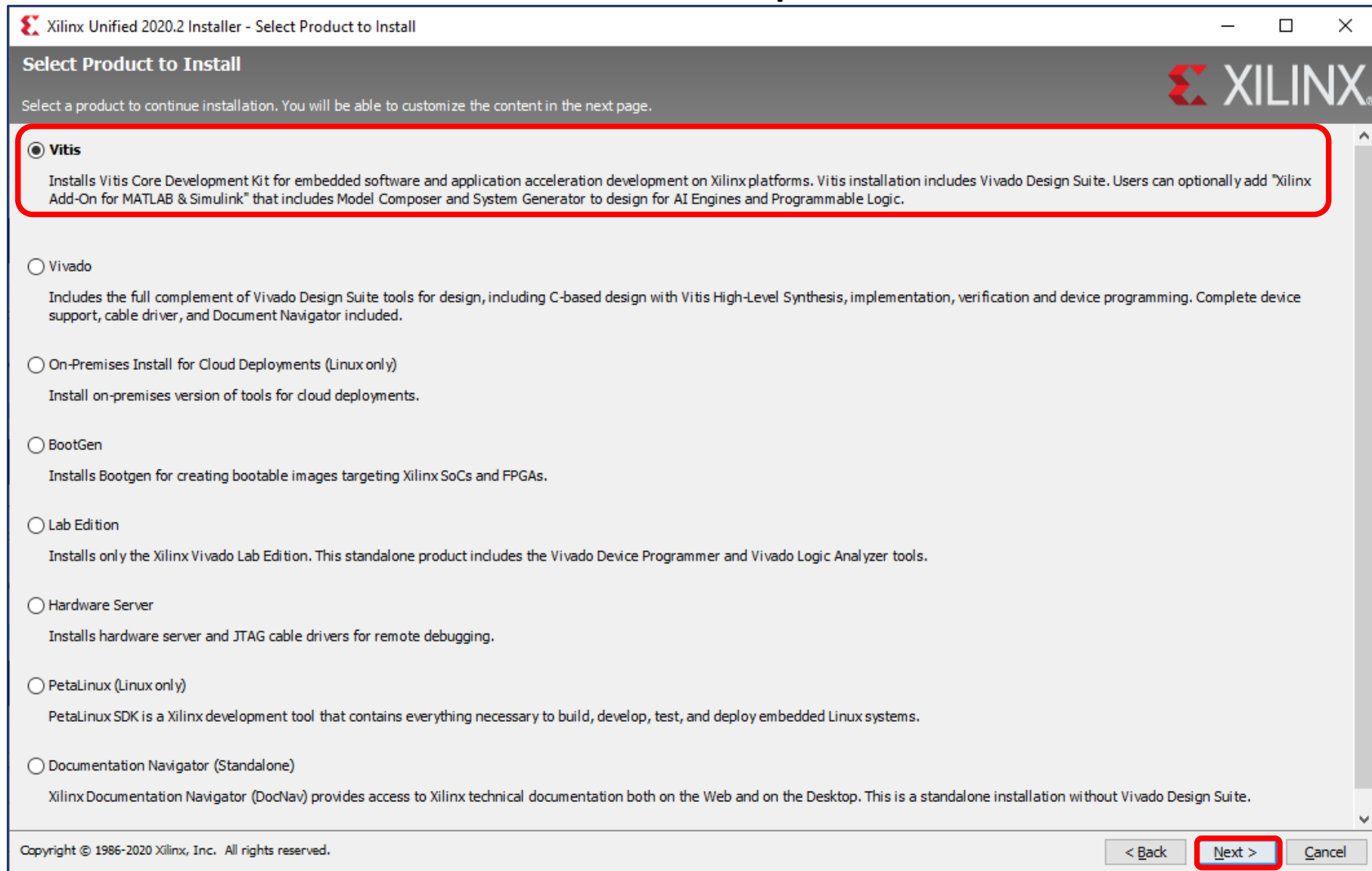
Run installation

- If you downloaded the [Vivado HLx 2020.2: All OS installer Single-File Download](#) (TAR/GZIP - **43.07 GB**) larger / full install package, then:
 - Unzip and untar the package,
 - Locate and run `xsetup.exe`, 



Select product to install - VITIS

- VITIS: includes VITIS Unified platform + Vivado



Customize install – VITIS + Vivado

Xilinx Unified 2020.2 Installer - Vitis Unified Software Platform

Vitis Unified Software Platform

Customize your installation by (de)selecting items in the tree below. Moving cursor over selections below provide additional information.

The Vitis unified software platform enables the development of embedded software and accelerated applications on heterogeneous Xilinx platforms including FPGAs, SoCs, and Versal ACAPs. It provides a unified programming model for accelerating Edge, Cloud, and Hybrid computing applications. This installation is a superset that includes the Vivado Design Suite as well. Users can optionally add "Xilinx Add-On for MATLAB & Simulink" that includes Model Composer and System Generator to design for AI Engines and Programmable Logic.

- Design Tools
 - Vitis Unified Software Platform
 - Vitis
 - Vivado
 - Vitis HLS
 - Add-On for MATLAB and Simulink
 - Model Composer and System Generator
 - DocNav
- Devices
 - Install devices for Alveo and Xilinx edge acceleration platforms
 - Devices for Custom Platforms
 - SoCs
 - Zynq-7000
 - Zynq UltraScale+ MPSoC
 - Zynq UltraScale+ RFSoc
 - 7 Series
 - UltraScale
 - UltraScale+
 - Versal ACAP
 - Engineering Sample Devices for Custom Platforms
- Installation Options
 - Install Cable Drivers (You MUST disconnect all Xilinx Platform Cable USB II cables before proceeding)

Download Size: NA
Disk Space Required: 53.38 GB !

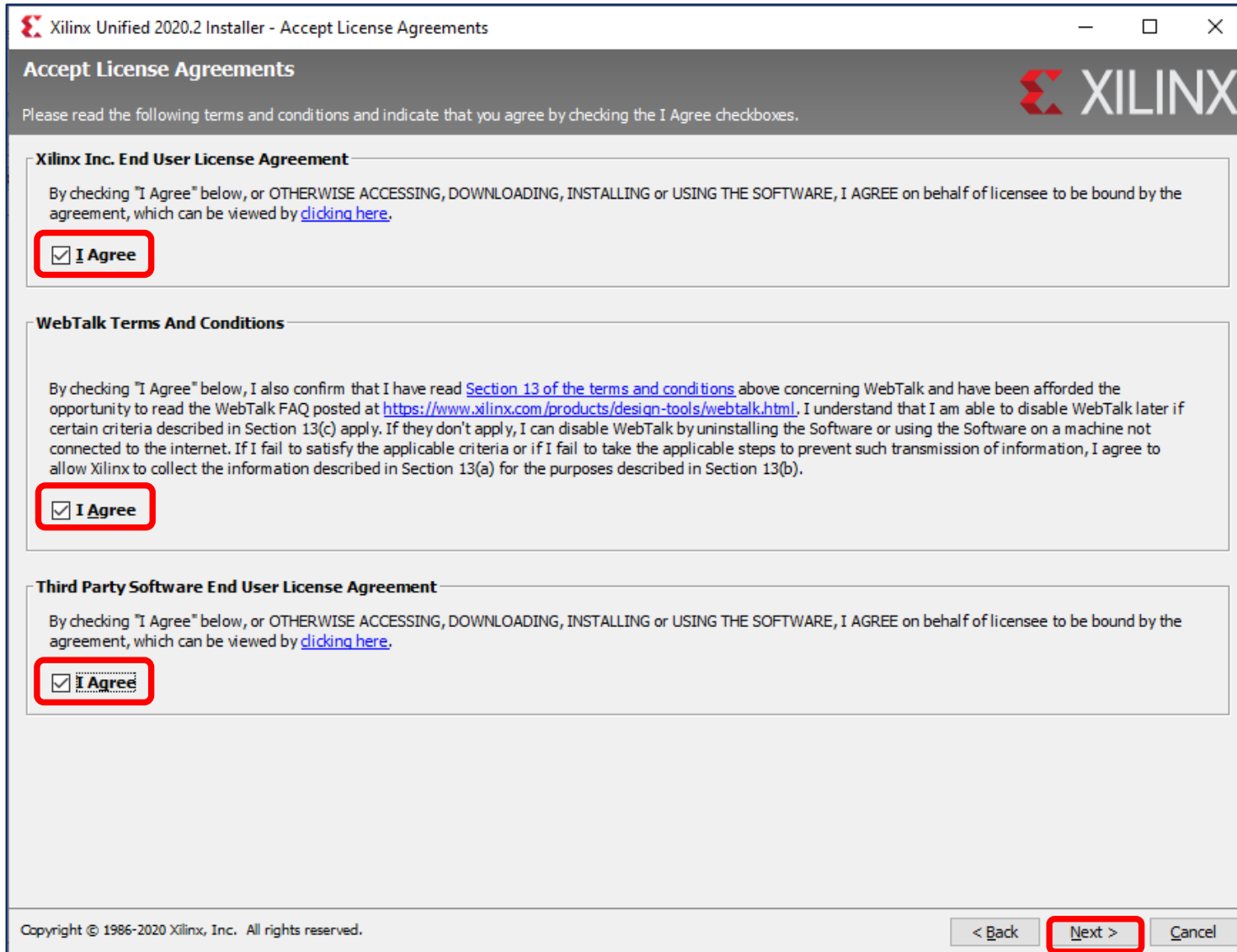
Copyright © 1986-2020 Xilinx, Inc. All rights reserved.

Reset to Defaults

< Back **Next >** Cancel

License agreements

- Check and accept all agreements



Xilinx Unified 2020.2 Installer - Accept License Agreements

Accept License Agreements

Please read the following terms and conditions and indicate that you agree by checking the I Agree checkboxes.

Xilinx Inc. End User License Agreement

By checking "I Agree" below, or OTHERWISE ACCESSING, DOWNLOADING, INSTALLING or USING THE SOFTWARE, I AGREE on behalf of licensee to be bound by the agreement, which can be viewed by [clicking here](#).

I Agree

WebTalk Terms And Conditions

By checking "I Agree" below, 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/products/design-tools/webtalk.html>. 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).

I Agree

Third Party Software End User License Agreement

By checking "I Agree" below, or OTHERWISE ACCESSING, DOWNLOADING, INSTALLING or USING THE SOFTWARE, I AGREE on behalf of licensee to be bound by the agreement, which can be viewed by [clicking here](#).

I Agree

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< Back **Next >** Cancel

Destination directory

Xilinx Unified 2020.2 Installer - Select Destination Directory

Select Destination Directory

Choose installation options such as location and shortcuts.

Installation Options

Select the installation directory:

Installation location(s)

- C:\Xilinx\Vitis\2020.2
- C:\Xilinx\Vivado\2020.2
- C:\Xilinx\Vitis_HLS\2020.2
- C:\Xilinx\DocNav

Disk Space Required

Download Size:	NA
Disk Space Required:	53.38 GB !
Final Disk Usage:	42.0 GB
Disk Space Available:	86.01 GB

Select shortcut and file association options

- Create program group entries
Xilinx Design Tools
- Create desktop shortcuts
- Create file associations
- Apply shortcut & file association selections to:
 Current user
 All users

Copyright © 1986-2020 Xilinx, Inc. All rights reserved.

< Back Next > Cancel

Make sure that you have enough storage space as required.

Summary

Xilinx Unified 2020.2 Installer - Installation Summary

UNIFIED Xilinx Installer

Installation Summary

Edition: Vitis Unified Software Platform

- Devices**
 - Devices for Custom Platforms (SoCs)
- Design Tools**
 - Vitis Unified Software Platform (Vitis, Vivado, Vitis HLS)
 - DocNav
- Installation Options**
 - Install Cable Drivers (You MUST disconnect all Xilinx Platform Cable USB II cables before proceeding)

Installation location

- C:\Xilinx\Vitis\2020.2
- C:\Xilinx\Vivado\2020.2
- C:\Xilinx\Vitis_HLS\2020.2
- C:\Xilinx\DocNav

Disk Space Required

- Download Size: NA
- Disk Space Required: 61.57 GB
- Final Disk Usage: 48.58 GB

XILINX.

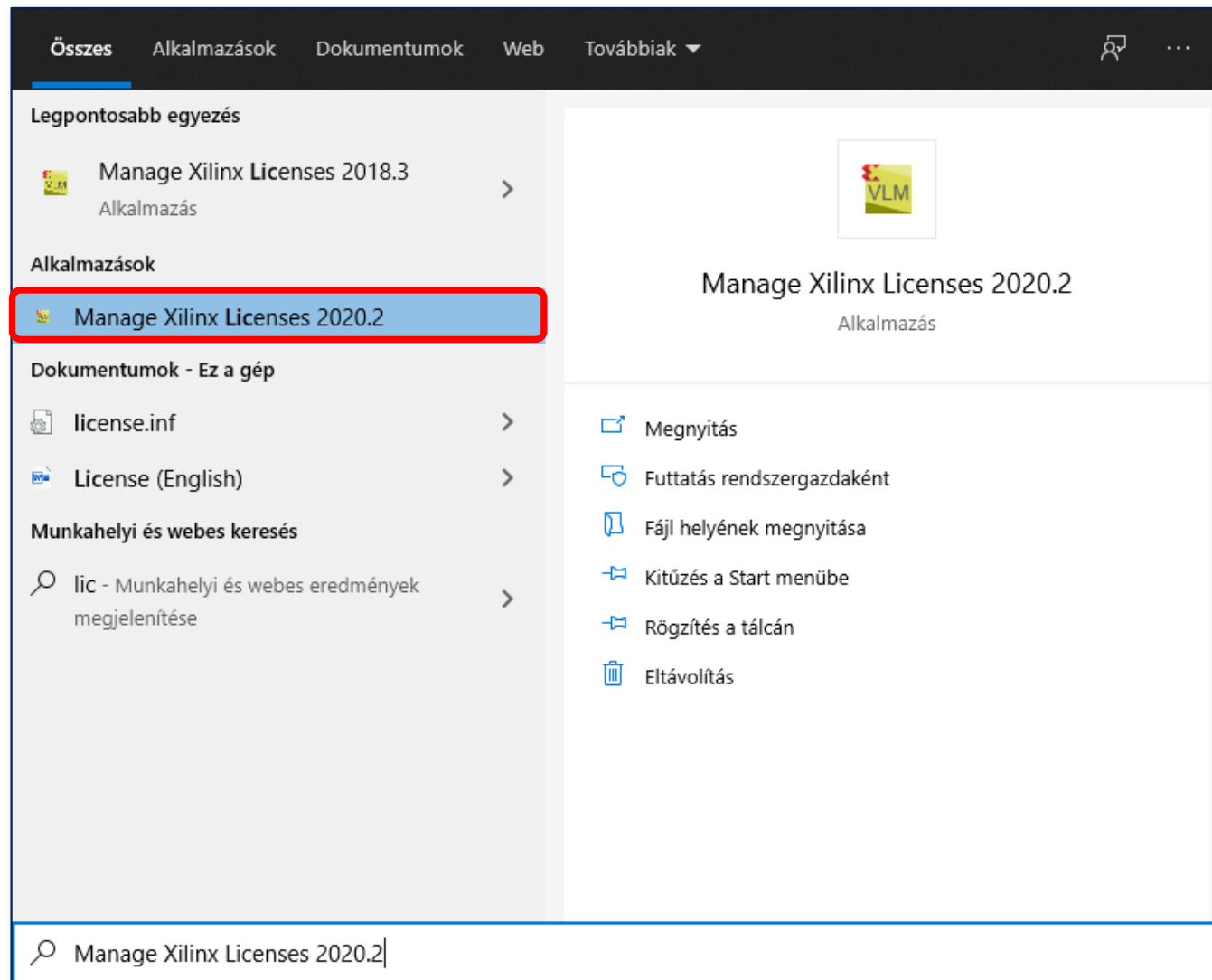
Click Install >
Be patient!
Installation takes
30min - 1 hours!

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Preferences < Back **Install** Cancel

Run License settings

- Select and run „Manage Xilinx Licenses 2020.2”



License settings

The screenshot shows the Vivado License Manager 2020.2 application window. The title bar reads "Vivado License Manager 2020.2". The menu bar contains "File" and "Help". The main header area features the "VIVADO" logo on the left and the "XILINX" logo on the right. Below the header, the "License Manager" title is centered. On the left side, there is a navigation tree with the following items: "Get License", "Set Proxy", "Obtain License", "Load License", "Manage License", "View License Status", "View System Information", and "View Host Information". The "Manage License" item is expanded, and "Manage License Search Paths" is highlighted with a red box and a yellow circle labeled "1". The main content area is titled "Manage License Search Paths" and contains the following text: "To point to a floating server license, or to point to license files in locations other than %APPDATA%\XilinxLicense, set one of the environment variables below. XILINXD_LICENSE_FILE is the preferred environment variable for working with Xilinx licenses." Below this text are three examples: "Example: Pointing to a floating server license" with the command `XILINXD_LICENSE_FILE=1234@server`; "Example: Including additional local directories" with the command `XILINXD_LICENSE_FILE=C:\licenses\Xilinx.lic`; and "Example: Pointing to multiple locations" with the command `XILINXD_LICENSE_FILE=1234@server;C:\licenses\Xilinx.lic`. At the bottom of the main area, there are two input fields. The first field is labeled "XILINXD_LICENSE_FILE" and contains the text "1234@server". The second field is labeled "LM_LICENSE_FILE" and contains the text "c:\flexm\xilinx\xilinx.lic". This second field is highlighted with a red box and a yellow circle labeled "2". Below the "LM_LICENSE_FILE" field is a "Set" button, which is also highlighted with a red box and a yellow circle labeled "3". A red arrow points from a yellow callout box to the "Set" button. The callout box contains the text: "Overwrite LM_LICENSE_FILE. Instructor gives it in the first lab! (or ask your instructor). Finally Set."

Check license

Vivado License Manager 2020.2

File Help

VIVADO License Manager

XILINX

View License Status

Certificate Based Licenses:

License Name	Tools/IP	Expiration Date	Version Limit	License Type	Location	# of Seats
Analyzer	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
ChipScopePro_SIOTK	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
ChipscopePro	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
HLS	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
ISE	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
ISIM	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
Implementation	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
PartialReconfiguration	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
PlanAhead	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
SDK	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
Simulation	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
Synthesis	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
SysGen	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
Vivado_System_Edition	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted
XPS	Tools	Permanent	2021.01	Nodelocked	c:\flexm\xilinx\xilinx.lic	Uncounted

Clear Cache Refresh

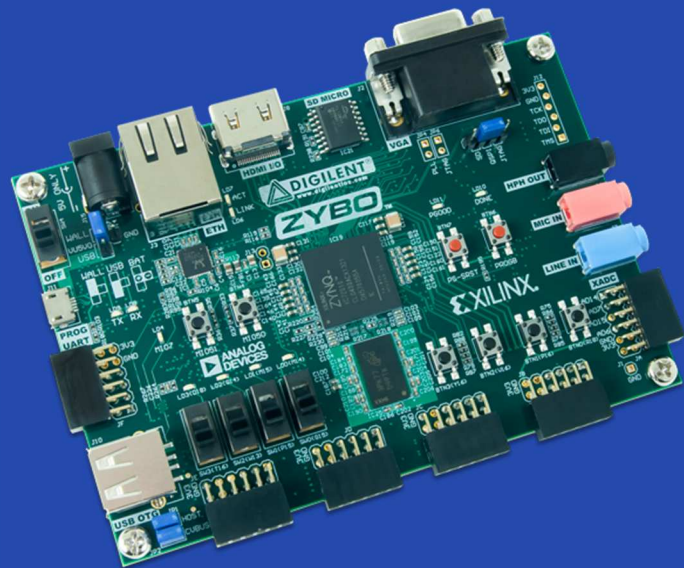
Check the number of Seats.
It is „20” !
License type: „Floating”

1 View License Status

2

2. SET „ZYBO” HW PLATFORM

Xilinx Vivado



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Set Hardware platform I.

- In order our „ZyBo” as HW platform can be selectable in the Vivado development environment, the following steps must be taken (for the first time only):
- **Step 1.)** Download the appropriate support package from the Laboratory’s webpage:

(Link will redirect to the Digilent website):

Digilent ZYBO

- Support package (**):



Letölthető gyakorlati anyag
-
Digilent ZyBo Fejlesztőkártyákhoz (BSP, XDC): XDC (FPGA lábkiosztás - GIT master): Zybo-Master.xdc
Base System Pack (BSP): Vivado Board Files (2020.1)
Digilent Zybo hivatalos weboldal: Zybo Zynq-7000 ARM/FPGA SoC Trainer Board

Set Hardware platform II.

- ** Direct Link for Digilent board support package:
<https://github.com/Digilent/vivado-boards/archive/master.zip>

Step 2.)

- **COPY** the entire contents of the `\ vivado-zybo-master`
`\ new` subdirectory in the package to the Xilinx subdirectory
by keeping the directory structure in it
- **TO** → `<Xilinx_install_dir> \ Vivado \ 202x.y`
`\ data \ boards \ board_files`

Subdirectory.

- We will use the latest **B.4** version of board files!



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THAT'S ALL 😊

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