Bridge of Life Education

安裝Xilinx Vitis在Ubuntu VM開發機

2023/06

Xilinx Vitis安裝

- **Xilinx官網安裝說明**

https://docs.xilinx.com/r/2022.1-English/ug1400-vitis-embedded/Installation-Requirements

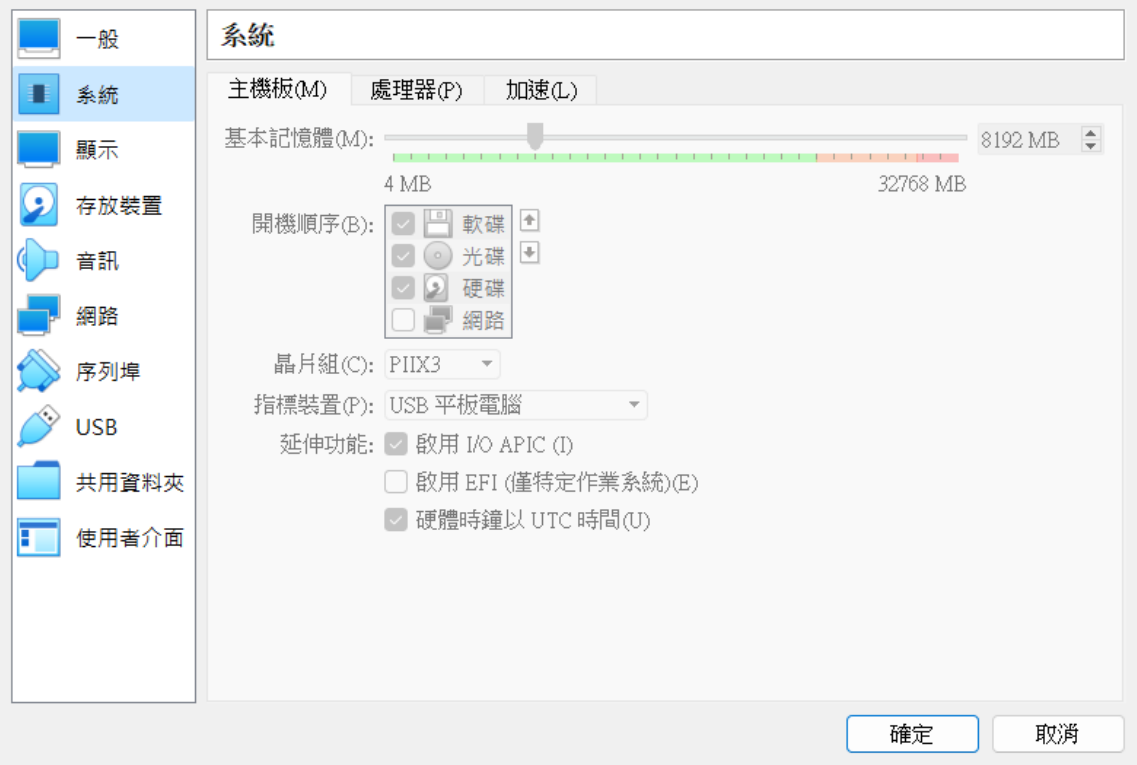
- **Xilinx官網註冊後下載安裝檔案**

https://www.xilinx.com/support/download/index.html/content/xilinx/en/downloadNav/vitis/2022-1.html

  - Xilinx Unified Installer 2022.1 SFD (TAR/GZIP - 73.81 GB)

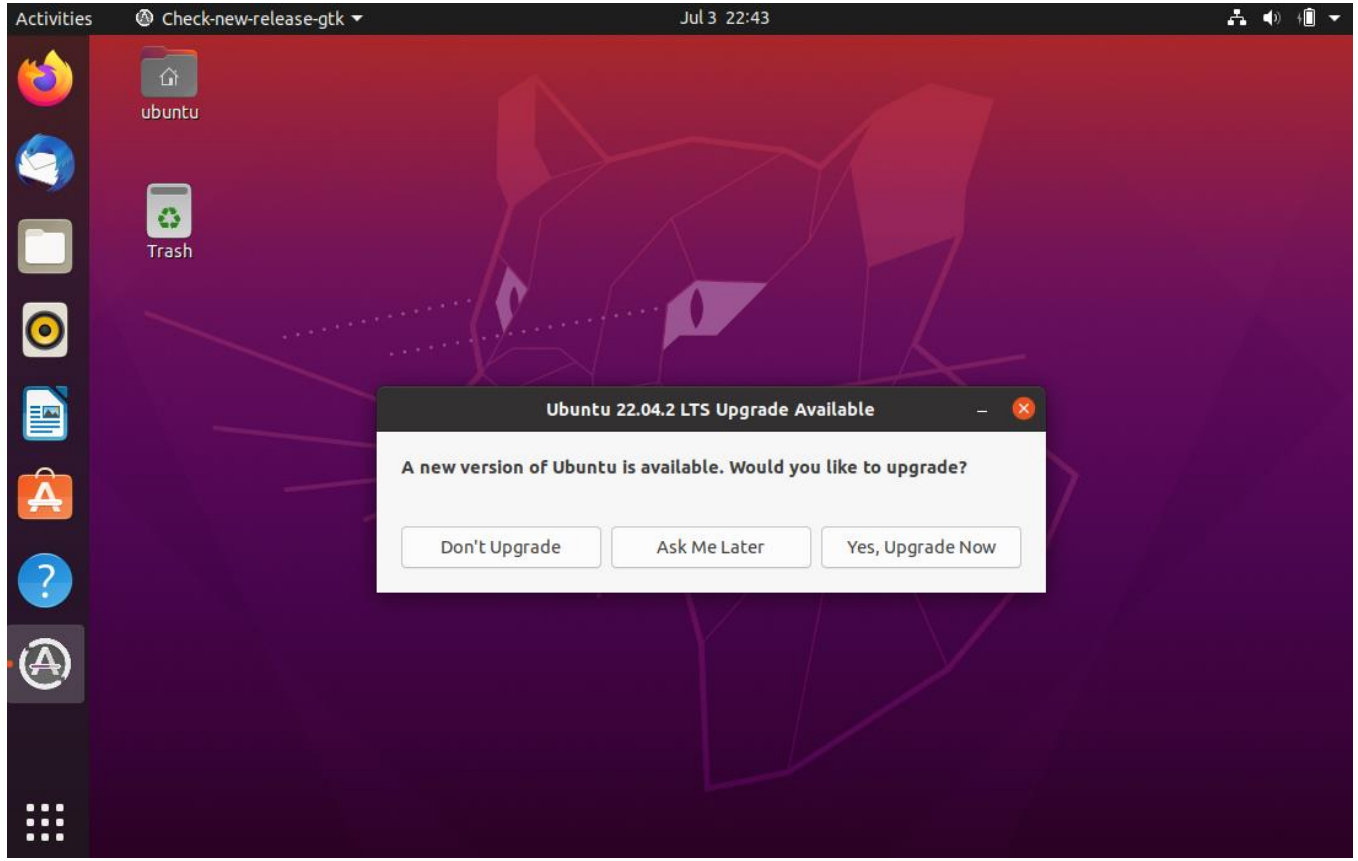
Ubuntu VM開發機設置

- 建議最低系統記憶體8192MB及2 CPUs



Ubuntu注意事項

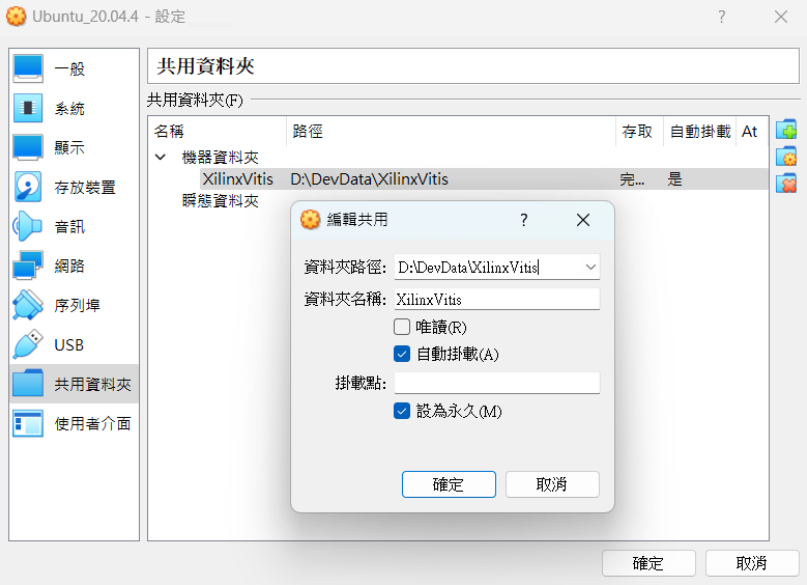
- 不要點擊Yes, Upgrade Now或在terminal中執行sudo apt upgrade指令，設置好的工具環境有可能無法正常工作。



Xilinx Vitis安裝 - 儲存空間配置

Xilinx Vitis安裝 - 儲存空間配置

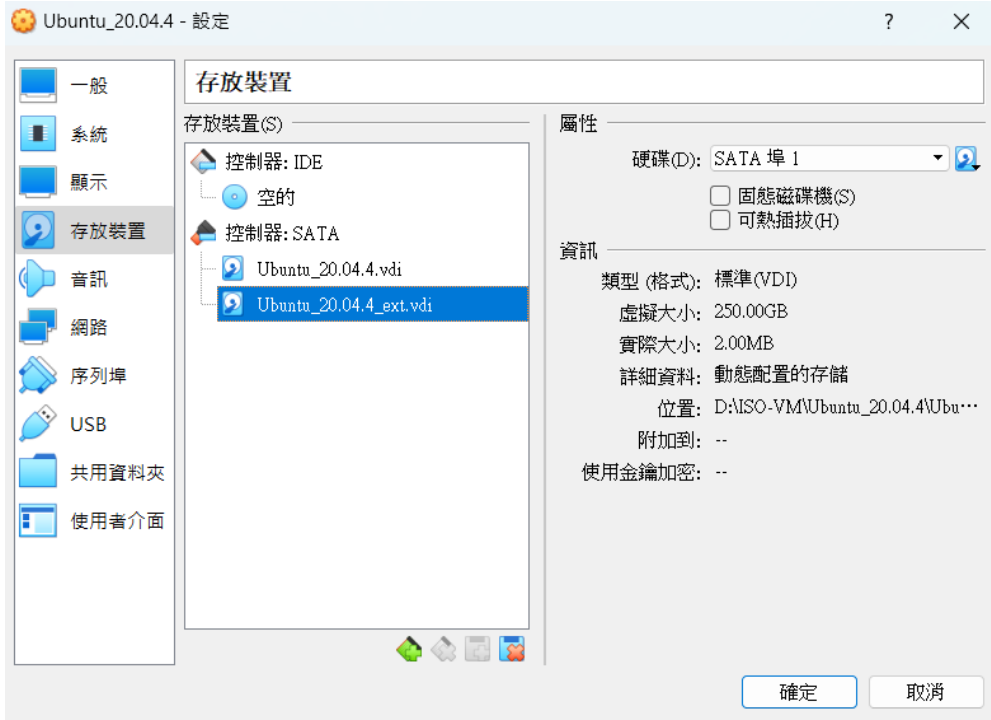
- Ubuntu VM系統碟 50GB
  - Ubuntu 20.04+預設系統資料
- Xilinx Unified Installer 73GB
  - 可用7z工具解壓縮73GB檔案到Windows資料夾XilinxVitis裡，再使用分享資料夾與Ubuntu VM共用
  - 登入Ubuntu VM執行這兩行指令掛載分享資料夾(1) mkdir ~/vitis_install (2) sudo mount -t vboxsf XilinxVitis ~/vitis_install




```
kevin@kevin:~$ ls vitis_install/Xilinx_Unified_2022.1_0420_0327/
api-ms-win-core-console-l1-1-0.dll            api-ms-win-core-processthreads-l1-1-0.dll  api-ms-win-crt-locale-l1-1-0.dll     msvcp140_1.dll
api-ms-win-core-datetime-l1-1-0.dll           api-ms-win-core-processthreads-l1-1-1.dll  api-ms-win-crt-math-l1-1-0.dll       msvcp140_2.dll
api-ms-win-core-debug-l1-1-0.dll              api-ms-win-core-profile-l1-1-0.dll         api-ms-win-crt-multibyte-l1-1-0.dll  msvcp140.dll
api-ms-win-core-errorhandling-l1-1-0.dll      api-ms-win-core-rtlsupport-l1-1-0.dll      api-ms-win-crt-private-l1-1-0.dll    payload
api-ms-win-core-file-l1-1-0.dll               api-ms-win-core-string-l1-1-0.dll          api-ms-win-crt-process-l1-1-0.dll    scripts
api-ms-win-core-file-l1-2-0.dll               api-ms-win-core-synch-l1-1-0.dll           api-ms-win-crt-runtime-l1-1-0.dll    tps
api-ms-win-core-file-l2-1-0.dll               api-ms-win-core-synch-l1-2-0.dll           api-ms-win-crt-stdio-l1-1-0.dll      ucrtbase.dll
api-ms-win-core-handle-l1-1-0.dll             api-ms-win-core-sysinfo-l1-1-0.dll         api-ms-win-crt-string-l1-1-0.dll     vccorlib140.dll
api-ms-win-core-heap-l1-1-0.dll               api-ms-win-core-timezone-l1-1-0.dll        api-ms-win-crt-time-l1-1-0.dll       vcruntime140_1.dll
api-ms-win-core-interlocked-l1-1-0.dll        api-ms-win-core-util-l1-1-0.dll            api-ms-win-crt-utility-l1-1-0.dll    vcruntime140.dll
api-ms-win-core-libraryloader-l1-1-0.dll      api-ms-win-crt-conio-l1-1-0.dll            bin                                  xsetup
api-ms-win-core-localization-l1-2-0.dll       api-ms-win-crt-convert-l1-1-0.dll          concrt140.dll                        xsetup.exe
api-ms-win-core-memory-l1-1-0.dll             api-ms-win-crt-environment-l1-1-0.dll      data
api-ms-win-core-namedpipe-l1-1-0.dll          api-ms-win-crt-filesystem-l1-1-0.dll       installLibs.sh
api-ms-win-core-processenvironment-l1-1-0.dll api-ms-win-crt-heap-l1-1-0.dll             lib
kevin@kevin:~$
```

Xilinx Vitis安裝 - 儲存空間配置

- Xilinx Vitis安裝碟 250GB
  - 新增第2顆磁碟配置給Ubuntu VM
  - 需在Ubuntu VM裡執行格式化後再掛載到對應目錄
  - 之後Xilinx Vitis安裝可指定安裝到此磁碟對應目錄



Xilinx Vitis安裝 - 儲存空間配置

- **Xilinx Vitis安裝碟 250GB - Partition 、格式化及掛載目錄**
  - 執行lsblk找到250GB對應到/dev/sdb

```
sdb                      8:16   0   250G  0 disk
sr0                     11:0    1  1024M  0 rom
```

  - 執行 -> n (add new partition) -> p (primary) -> 1 (partition num) -> enter (first sector) -> enter (last sector) -> w (write partition table to disk)

```
Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
```

  - 再執行lsblk確認建立partition sdb1成功

```
sdb                      8:16   0   250G  0 disk
└─sdb1                   8:17   0   250G  0 part
sr0                     11:0    1  1024M  0 rom
```

  - 執行格式化sudo mkfs.ext4 /dev/sdb1
  - 掛載到目錄
    - sudo mkdir /tools
    - sudo mount /dev/sdb1 /tools
  - 使用df確認250GB已掛載到/tools

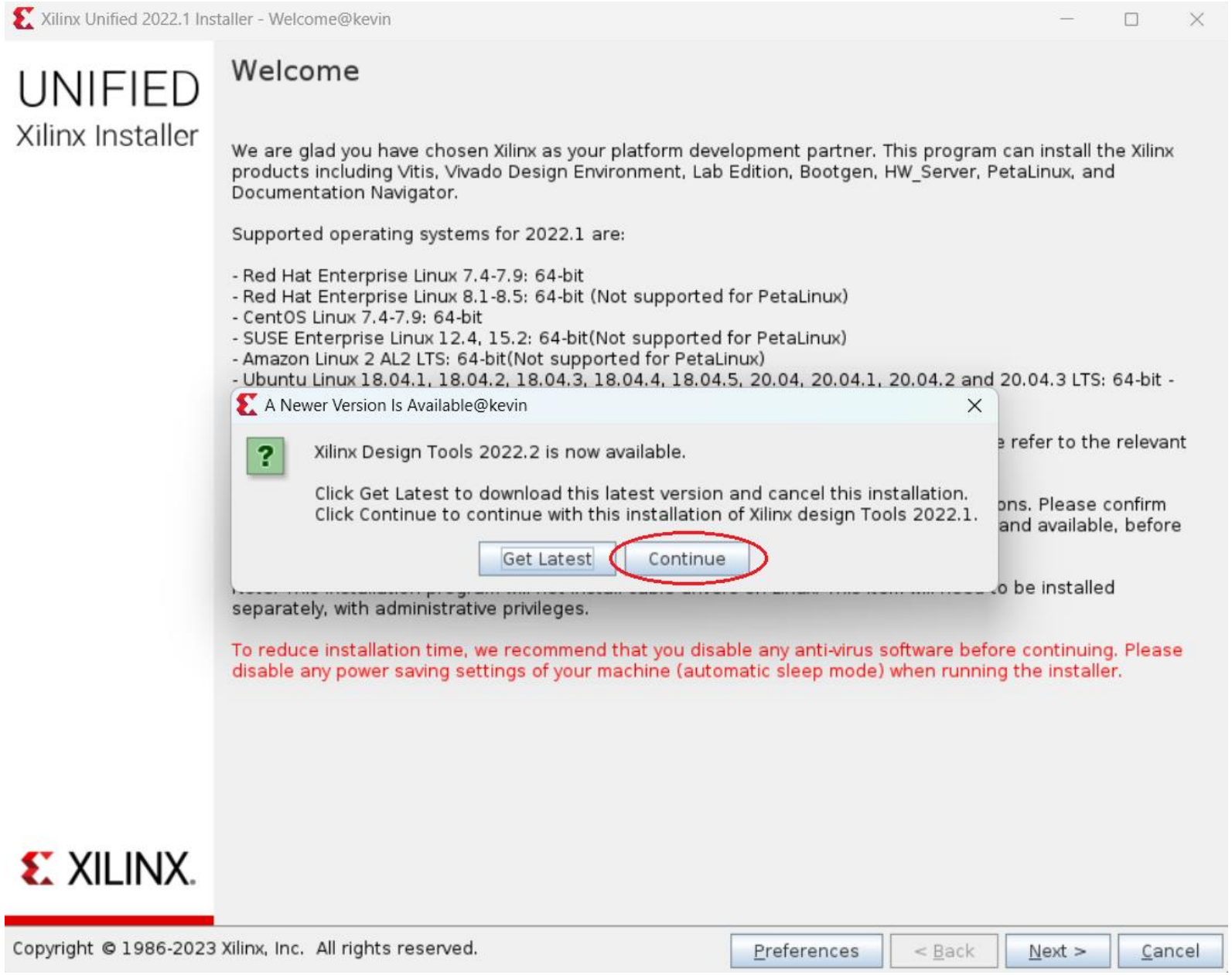
```
tmpfs                  402020      24    401996   1% /run/user/1000
/dev/sdb1            256980420   61468 243795420   1% /tools
```

安装Xilinx Vitis

安裝Xilinx Vitis

- **Xilinx Vitis的前置安裝設置**
  - Sudo update
  - sudo apt install libtinfo5 libncurses5 -y
  - sudo apt install build-essential -y
  - sudo cp ~/.Xauthority /root (使用MobaXterm SSH連線到Ubuntu VM並執行sudo ./xsetup前需要此動作)

- **安裝Xilinx Vitis**
  - 到Vitis安裝目錄，執行指令cd ~/vitis_install/Xilinx_Unified_2022.1_0420_0327/
  - 執行指令sudo ./xsetup


Xilinx Unified 2022.1 Installer - Welcome@kevin
UNIFIED
Xilinx Installer
Welcome
We are glad you have chosen Xilinx as your platform development partner. This program can install the Xilinx products including Vitis, Vivado Design Environment, Lab Edition, Bootgen, HW_Server, PetaLinux, and Documentation Navigator.
Supported operating systems for 2022.1 are:
- Red Hat Enterprise Linux 7.4-7.9: 64-bit
- Red Hat Enterprise Linux 8.1-8.5: 64-bit (Not supported for PetaLinux)
- CentOS Linux 7.4-7.9: 64-bit
- SUSE Enterprise Linux 12.4, 15.2: 64-bit(Not supported for PetaLinux)
- Amazon Linux 2 AL2 LTS: 64-bit(Not supported for PetaLinux)
- Ubuntu Linux 18.04.1, 18.04.2, 18.04.3, 18.04.4, 18.04.5, 20.04, 20.04.1, 20.04.2 and 20.04.3 LTS: 64-bit -
A Newer Version Is Available@kevin
Xilinx Design Tools 2022.2 is now available.
Click Get Latest to download this latest version and cancel this installation.
Click Continue to continue with this installation of Xilinx design Tools 2022.1.
Get Latest
Continue
refer to the relevant
ons. Please confirm
and available, before
be installed
separately, with administrative privileges.
To reduce installation time, we recommend that you disable any anti-virus software before continuing. Please disable any power saving settings of your machine (automatic sleep mode) when running the installer.
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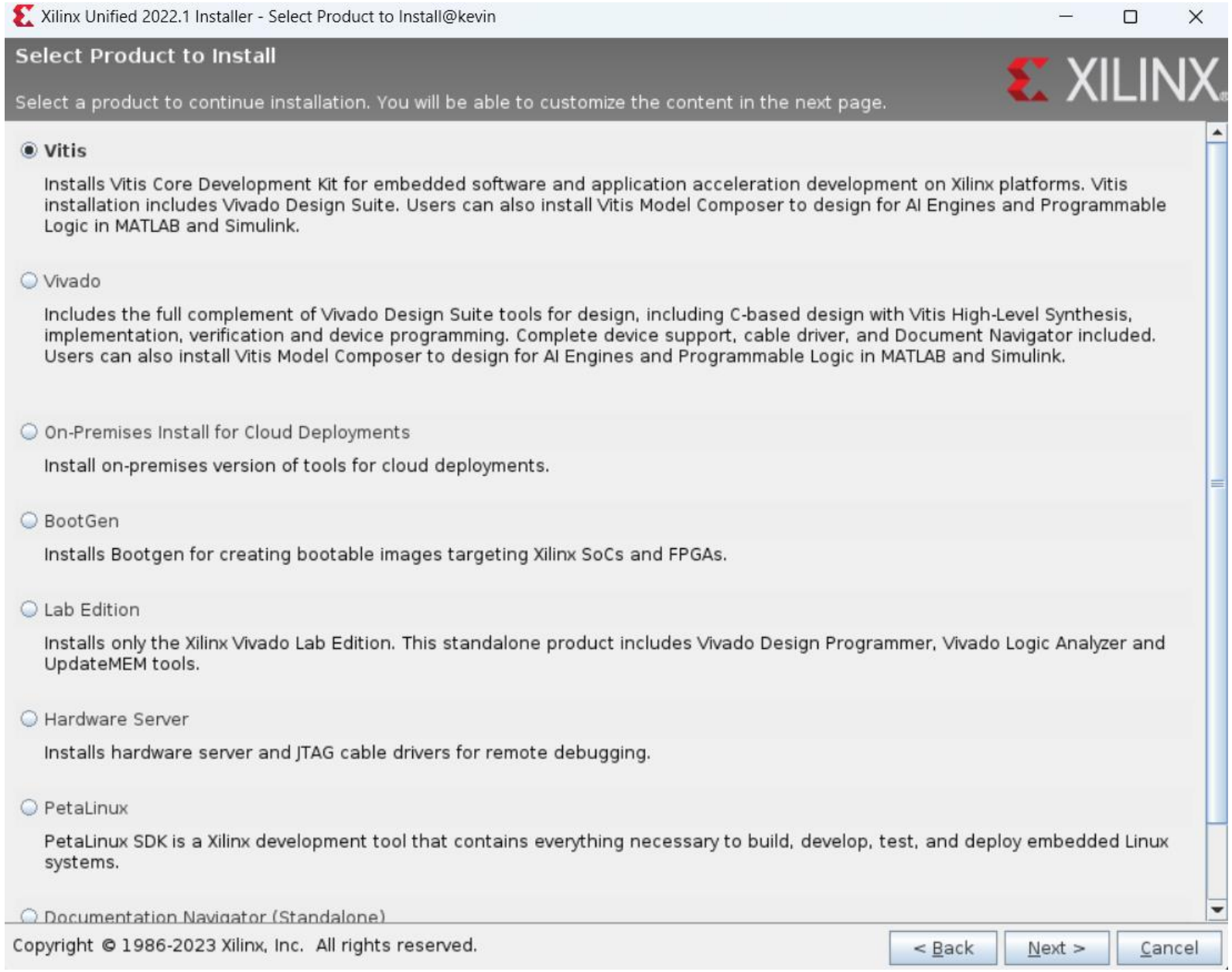
Xilinx Unified 2022.1 Installer - Select Product to Install@kevin
Select Product to Install
Select a product to continue installation. You will be able to customize the content in the next page.
XILINX
Vitis
Installs Vitis Core Development Kit for embedded software and application acceleration development on Xilinx platforms. Vitis installation includes Vivado Design Suite. Users can also install Vitis Model Composer to design for AI Engines and Programmable Logic in MATLAB and Simulink.
Vivado
Includes the full complement of Vivado Design Suite tools for design, including C-based design with Vitis High-Level Synthesis, implementation, verification and device programming. Complete device support, cable driver, and Document Navigator included. Users can also install Vitis Model Composer to design for AI Engines and Programmable Logic in MATLAB and Simulink.
On-Premises Install for Cloud Deployments
Install on-premises version of tools for cloud deployments.
BootGen
Installs Bootgen for creating bootable images targeting Xilinx SoCs and FPGAs.
Lab Edition
Installs only the Xilinx Vivado Lab Edition. This standalone product includes Vivado Design Programmer, Vivado Logic Analyzer and UpdateMEM tools.
Hardware Server
Installs hardware server and JTAG cable drivers for remote debugging.
PetaLinux
PetaLinux SDK is a Xilinx development tool that contains everything necessary to build, develop, test, and deploy embedded Linux systems.
Documentation Navigator (Standalone)
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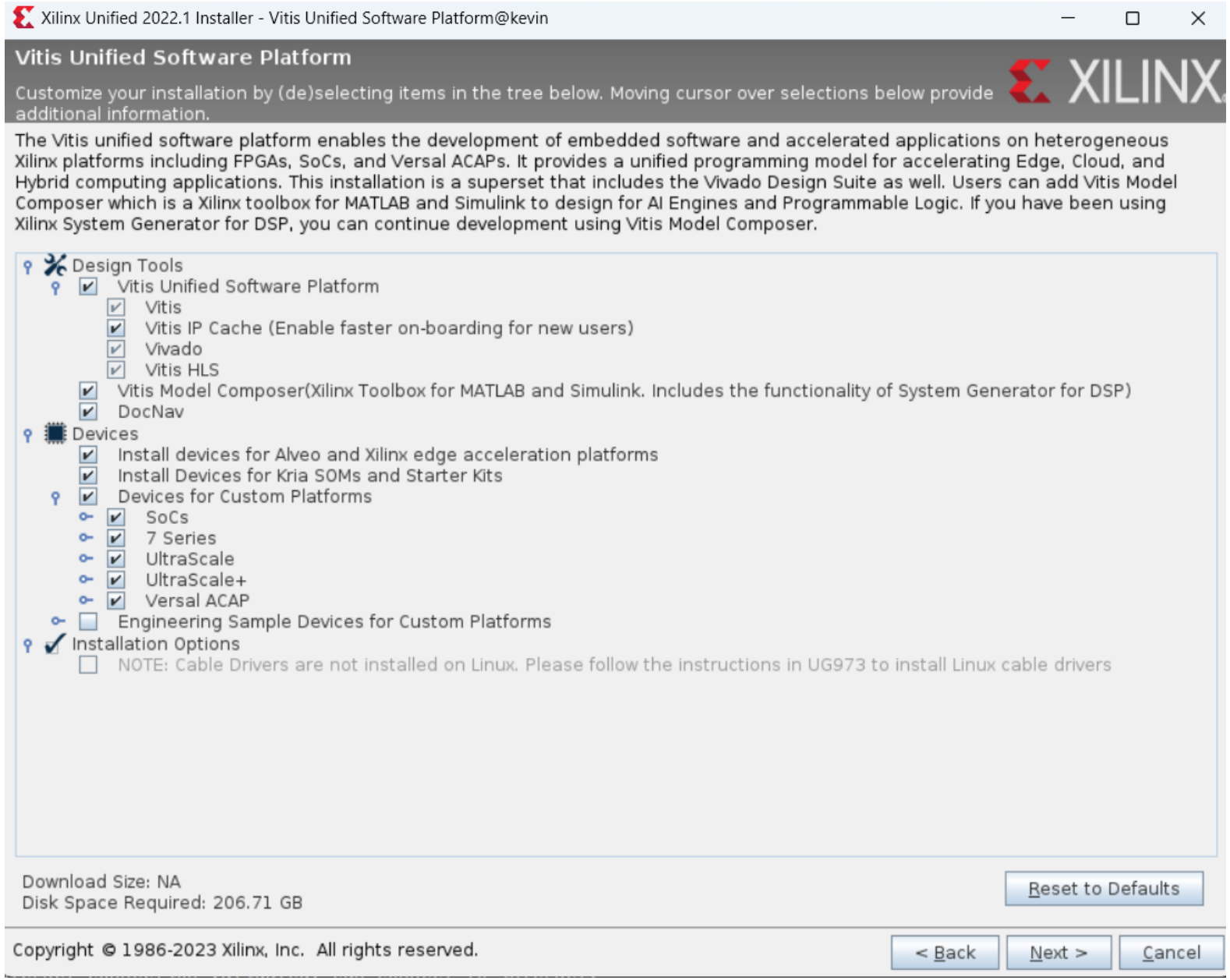
Xilinx Unified 2022.1 Installer - Vitis Unified Software Platform@kevin
Vitis Unified Software Platform
Customize your installation by (de)selecting items in the tree below. Moving cursor over selections below provide additional information.
XILINX
The Vitis unified software platform enables the development 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 add Vitis Model Composer which is a Xilinx toolbox for MATLAB and Simulink to design for AI Engines and Programmable Logic. If you have been using Xilinx System Generator for DSP, you can continue development using Vitis Model Composer.
Design Tools
Vitis Unified Software Platform
Vitis
Vitis IP Cache (Enable faster on-boarding for new users)
Vivado
Vitis HLS
Vitis Model Composer(Xilinx Toolbox for MATLAB and Simulink. Includes the functionality of System Generator for DSP)
DocNav
Devices
Install devices for Alveo and Xilinx edge acceleration platforms
Install Devices for Kria SOMs and Starter Kits
Devices for Custom Platforms
SoCs
7 Series
UltraScale
UltraScale+
Versal ACAP
Engineering Sample Devices for Custom Platforms
Installation Options
NOTE: Cable Drivers are not installed on Linux. Please follow the instructions in UG973 to install Linux cable drivers
Download Size: NA
Disk Space Required: 206.71 GB
Reset to Defaults
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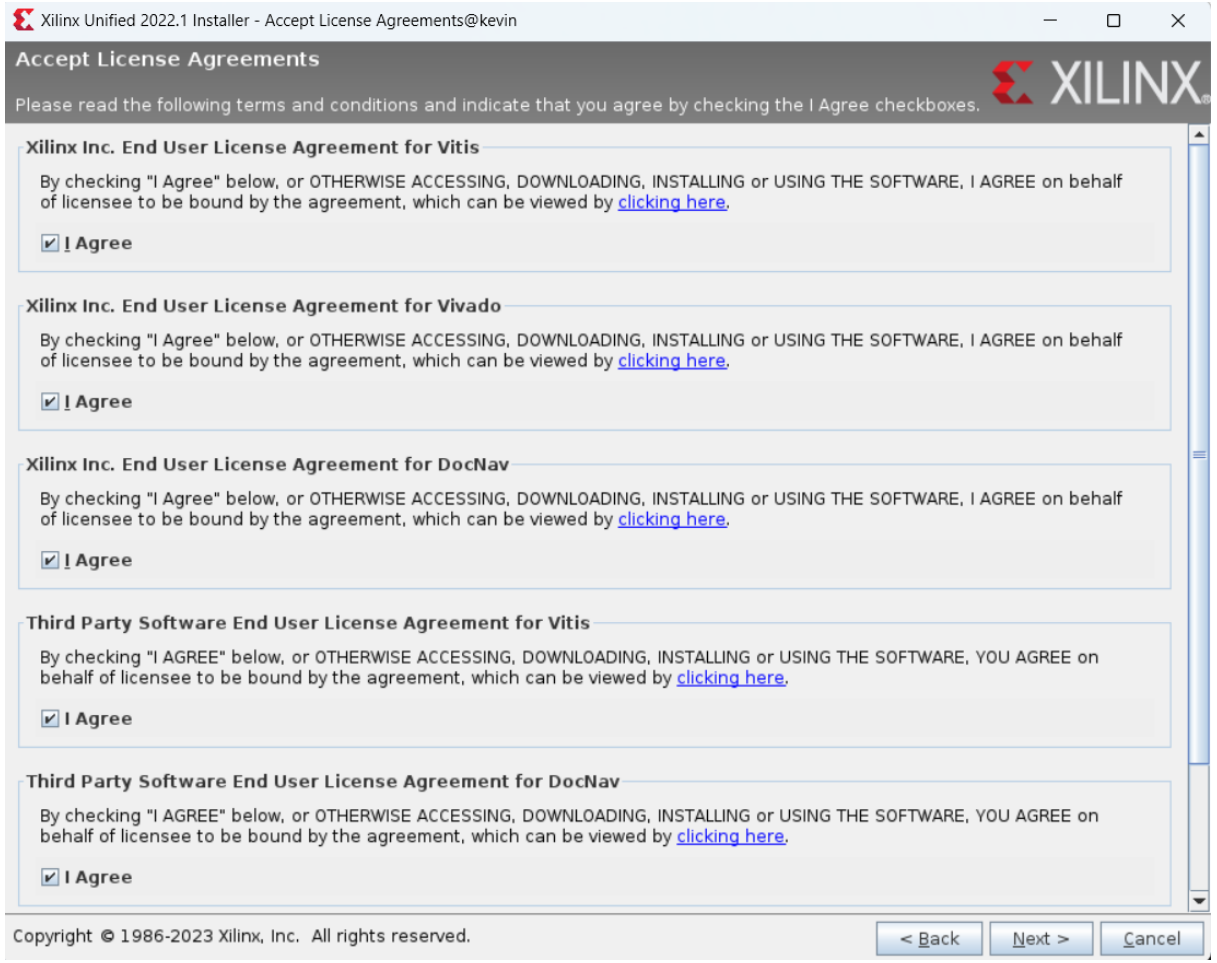
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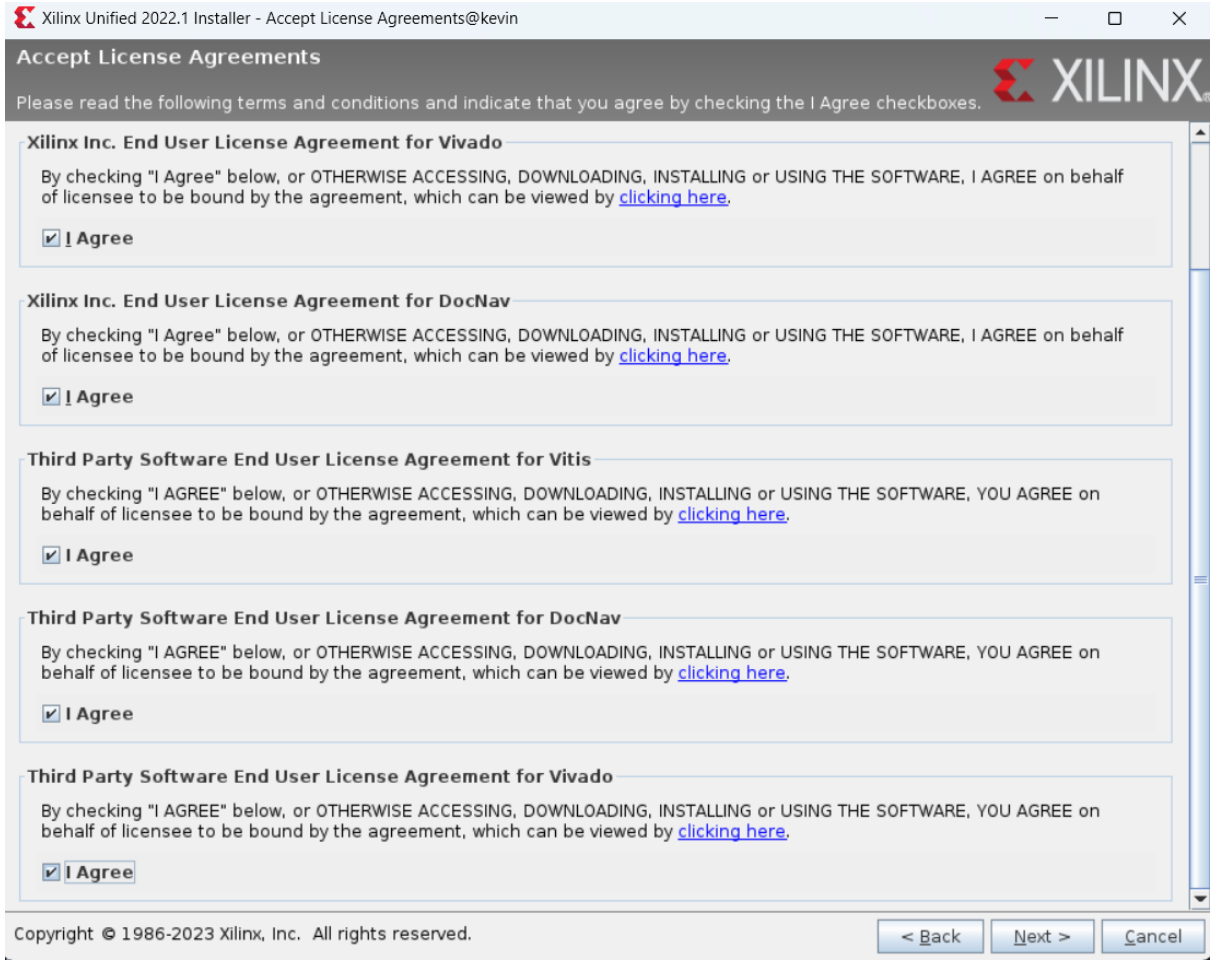
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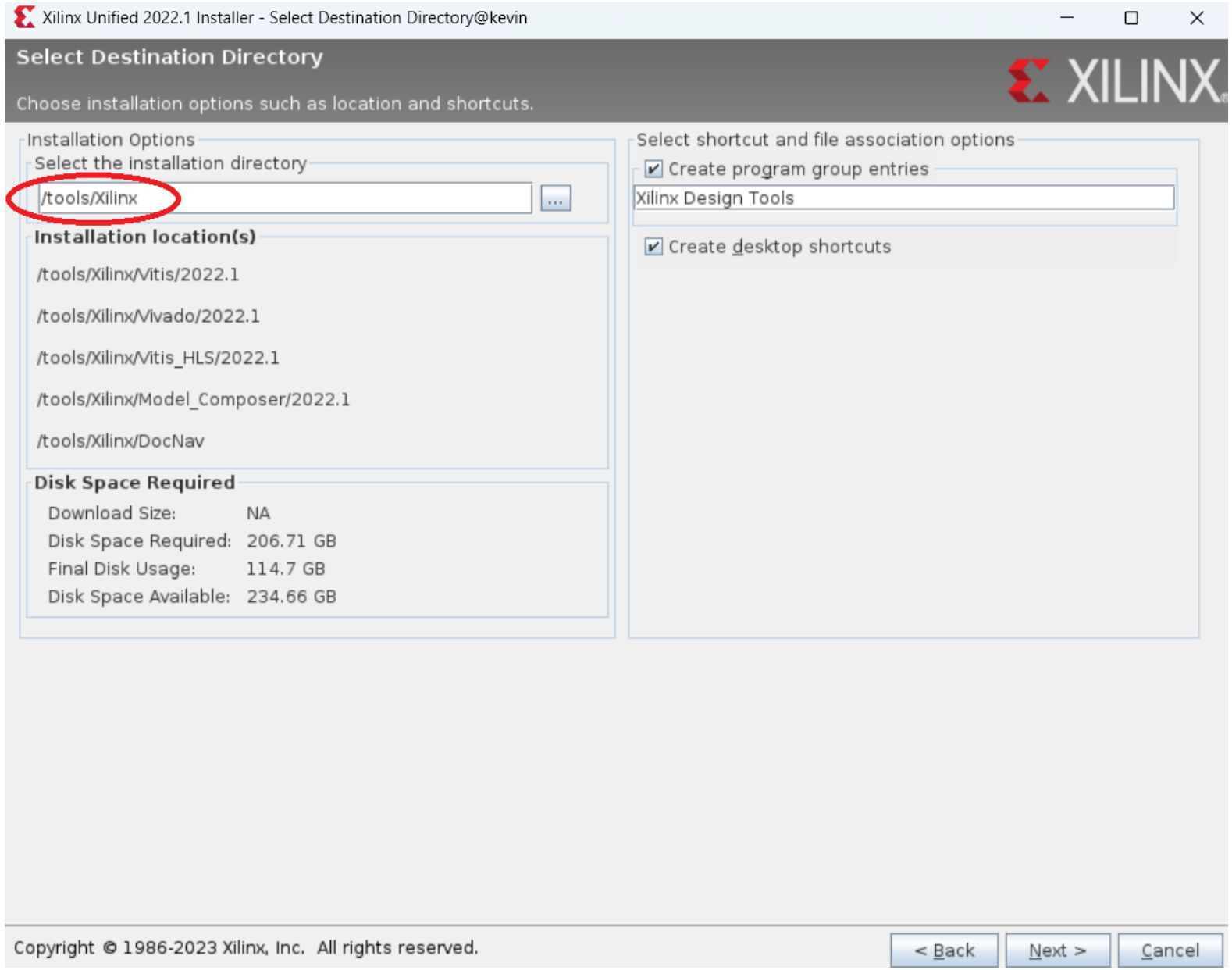
Xilinx Unified 2022.1 Installer - Select Destination Directory@kevin
Select Destination Directory
Choose installation options such as location and shortcuts.
XILINX
Installation Options
Select the installation directory
/tools/Xilinx
...
Installation location(s)
/tools/Xilinx/Vitis/2022.1
/tools/Xilinx/Vivado/2022.1
/tools/Xilinx/Vitis_HLS/2022.1
/tools/Xilinx/Model_Composer/2022.1
/tools/Xilinx/DocNav
Disk Space Required
Download Size: NA
Disk Space Required: 206.71 GB
Final Disk Usage: 114.7 GB
Disk Space Available: 234.66 GB
Select shortcut and file association options
Create program group entries
Xilinx Design Tools
Create desktop shortcuts
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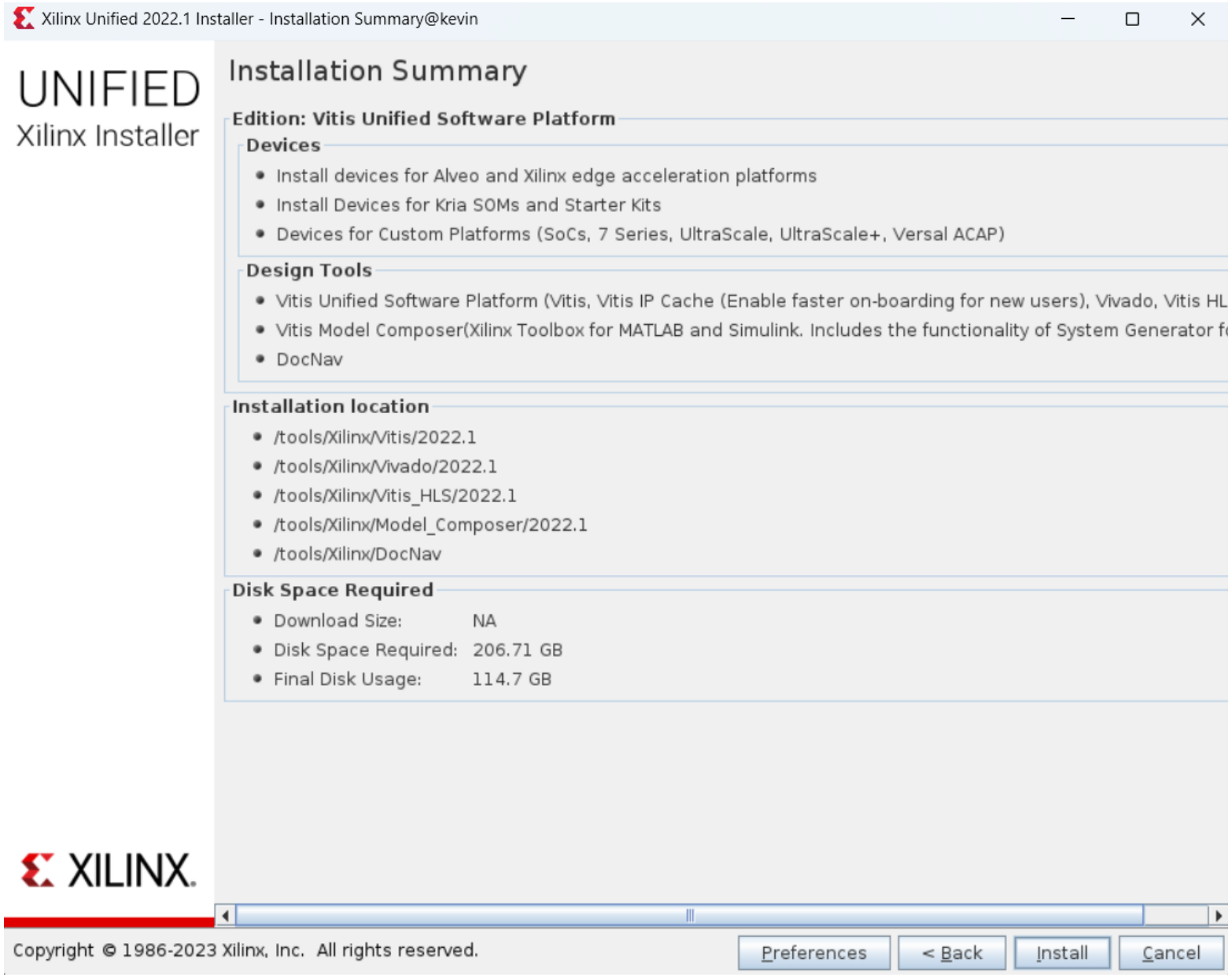
Xilinx Unified 2022.1 Installer - Installation Summary@kevin
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Xilinx Installer
Installation Summary
Edition: Vitis Unified Software Platform
Devices
Install devices for Alveo and Xilinx edge acceleration platforms
Install Devices for Kria SOMs and Starter Kits
Devices for Custom Platforms (SoCs, 7 Series, UltraScale, UltraScale+, Versal ACAP)
Design Tools
Vitis Unified Software Platform (Vitis, Vitis IP Cache (Enable faster on-boarding for new users), Vivado, Vitis HL
Vitis Model Composer(Xilinx Toolbox for MATLAB and Simulink. Includes the functionality of System Generator f
DocNav
Installation location
/tools/Xilinx/Vitis/2022.1
/tools/Xilinx/Vivado/2022.1
/tools/Xilinx/Vitis_HLS/2022.1
/tools/Xilinx/Model_Composer/2022.1
/tools/Xilinx/DocNav
Disk Space Required
Download Size: NA
Disk Space Required: 206.71 GB
Final Disk Usage: 114.7 GB
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Installation Progress
XILINX
Installing files, 68% completed.
Final Processing...
ZYNQ
Hardware Programmable
Software Programmable
AMBA
AMS
ARM
FPGA
I/O Programmable
Zynq SoCs enable the development of smarter systems
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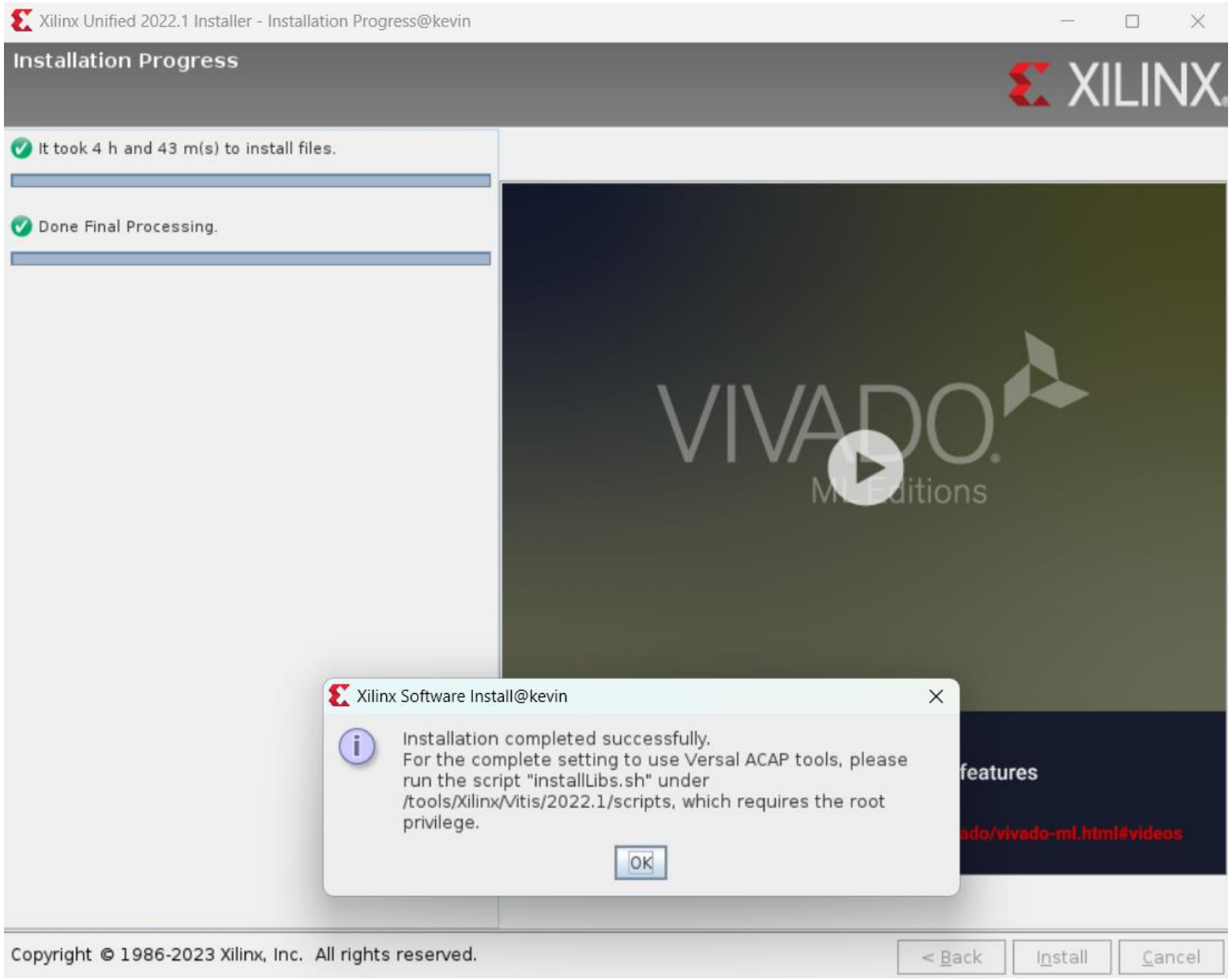
Xilinx Unified 2022.1 Installer - Installation Progress@kevin
Installation Progress
XILINX
It took 4 h and 43 m(s) to install files.
Done Final Processing.
VIVADO
features
Xilinx Software Install@kevin
Installation completed successfully.
For the complete setting to use Versal ACAP tools, please run the script "installLibs.sh" under /tools/Xilinx/Vitis/2022.1/scripts, which requires the root privilege.
OK
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安裝Xilinx Vitis

- **安裝Xilinx Vitis相關套件**
  - 執行兩個指令(1) cd ~/vitis_install/Xilinx_Unified_2022.1_0420_0327/
    (2) sudo ./installLibs.sh (安裝過程中出現兩行touch及chmod的Permission denied可忽略)
- **登入Ubuntu VM時自動設定Xilinx Vitis環境變數**
  - 執行指令echo 'source /tools/Xilinx/Vitis/2022.1/settings64.sh' | sudo tee -a ~/.bashrc
  - 再執行指令cat ~/.bashrc做確認是否如圖示中最後一行

```
# enable programmable completion features (you don't need to enable
# this, if it's already enabled in /etc/bash.bashrc and /etc/profile
# sources /etc/bash.bashrc).
if ! shopt -oq posix; then
  if [ -f /usr/share/bash-completion/bash_completion ]; then
    . /usr/share/bash-completion/bash_completion
  elif [ -f /etc/bash_completion ]; then
    . /etc/bash_completion
  fi
fi

source /tools/Xilinx/Vitis/2022.1/settings64.sh
```

- **設定Ubuntu VM自動掛載250GB硬碟及重新開機**
  - 執行echo '/dev/sdb1 /tools ext4 defaults 0 0' | sudo tee -a /etc/fstab
  - 執行sudo reboot

安裝Xilinx Vitis

- **測試Xilinx Vitis**
  - 登入Ubuntu VM開啟terminal，執行vitis, vitis_hls, vivado確認是否出現工具的GUI畫面