



# Installing and Preparing Windows 11 – Advanced Cisco Networking Academy

Colin J. Faletto, CCNA

## Purpose

Our networking academy branch uses Lenovo P7 workstations, which have an expansion slot that allow NVMe drives to be easily swapped out between computers. This lab documents the process of setting up one of these drives with Windows 11 and preparing it for future use in Cisco classroom settings.

## Background Information on Lab Concepts

Windows 11 is the eleventh major version of the Microsoft Windows operating system. Its tenure and wide range of compatibility make it the ideal operating system for most scenarios, such as office work, schoolwork, and scientific/laboratory applications. Windows 11 was released on October 5, 2021. Windows 11 is one of the more controversial windows releases, as it has faced compatibility issues, performance issues, and most recently, privacy issues as Microsoft has introduced intrusive privacy features through its generative AI software, Copilot. Windows has long been the preferred operating system of Newport's Cisco Networking Academy, as it was the most-used operating system in the 1990s and remains that way today. Cisco Networking Academy lessons usually include screenshots from Windows. Windows currently has 71% desktop market share, making it by far the most widely used operating system for standard desktop applications. Windows supports software critical to this class, such as terminal emulators, network simulators, and virtual machine emulators.

Lenovo is a Chinese-based electronics manufacturer, specializing in consumer and business grade laptops and desktops. Their support software, Lenovo Vantage, is an all-in-one support solution that allows Lenovo's users to scan for system updates, troubleshoot their devices, and optimize system components. Lenovo Commercial Vantage is a specialized skew of this software meant for IT administrators instead of standard consumers.

PuTTY is an open-source terminal emulator software developed by Simon Tatham. It has long been used to emulate serial connections and as an SSH and Telnet client in networking solutions.

The Microsoft Office Suite is a set of applications made for business use. These programs include Word, a word processor, Excel, a spreadsheet manager, and PowerPoint, a presentation maker. While it has many free alternatives, including Google Workspace and LibreOffice, Microsoft Office has long been the gold standard for business applications.

Wireshark is a program used to capture and analyze network traffic. It can capture many different types of traffic, including wireless and Ethernet traffic. While it has many legitimate applications, Wireshark can also be used for malicious purposes, as captured traffic can leave clues as to potential vulnerabilities in network infrastructure.

## Lab Summary

In this lab, we installed Windows 11 Education Edition with a local account. After the operating system was installed, we updated the Lenovo drivers through Lenovo Service Bridge. In addition, we installed Lenovo Commercial Vantage, PuTTY, the Microsoft Office Suite, and Wireshark through running the installers from these programs' respective websites.

## Lab Commands

### Install

- Create a bootable media drive from the Windows 11 media creation tool (<https://www.microsoft.com/software-download/windows11>) (in this case, we were provided a premade USB drive).
- With the NVMe drive and USB drive inserted, turn on the workstation and boot from USB (see figure 1).
- Select your desired language/locale (see figure 2A) and click “Next”.
- Enter a valid windows product key (see figure 2B) and click “Next”. (In this case, I selected *I don't have a product key*, because I had not yet obtained a product key).
- Select your desired version of windows (see figure 2C) and click “Next”. (In this case, I selected *Windows 11 Education*).
- Agree to the terms and conditions (see figure 2D) and click “Next”.
- Select *Custom: Install Windows Only* (see figure 2E). Upgrading Windows is not an option in this context, as we are installing onto a blank drive.
- Select the primary partition of the drive you are installing to (see figure 2F), then click “Next”.
- The computer will begin the installation process, then restart into the OOB (Out of Box Experience)

### OOBE

- Instead of connecting to a Wi-Fi network, select *I don't have Internet* (see figure 3A); this will bypass the mandatory Microsoft account sign-in and allow you to create a local account.
- Create a local account (see figure 3B), setting a password and three security questions.
- Be agreeable through the rest of the install, and you will eventually arrive at the desktop (see figure 3C).

### Drivers

- In an internet browser, navigate to <https://pcsupport.lenovo.com>.
- Under PC, click *Detect Product* (see figure 4) and allow Lenovo Service bridge to run. If it returns an error, click the link at the bottom of the pop-up to download Lenovo Service Bridge.
- Once Lenovo Service bridge detects the workstation's model and specifications, click *Drivers and Software* and then click *Automatic Update* (see figure 5)
- Lenovo Service Bridge will update any necessary drivers.

- At this point, restart your computer by pressing the start key, pressing the power button, and pressing *Restart*.

## Software

- In an internet browser, navigate to <https://support.lenovo.com/us/en/solutions/hf003321-lenovo-vantage-for-enterprise>.
- Click the link that specifies the latest version (see figure 6) and extract the resulting .zip file.
- In the extracted folder, right-click *setup-commercial-vantage.bat* and click *Run as Administrator*. (see figure 7)
- Navigate to <https://putty.org>, click *Download PuTTY*, then click the 64-bit x86 MSI link (see figure 8) and run the .msi file. Be agreeable through the installation.
- Navigate to <https://www.office.com>, log into a Microsoft account with a valid Office License and click *Install and More > Install Microsoft 365 Apps* (see figure 9). On the resulting site, click *Install Office* and run the resulting .exe file.
- Navigate to <https://www.wireshark.org>, click *Download*, then click *x64 Windows Installer* and run the resulting .exe file. Be agreeable through the installation. (see figure 10)

## Images

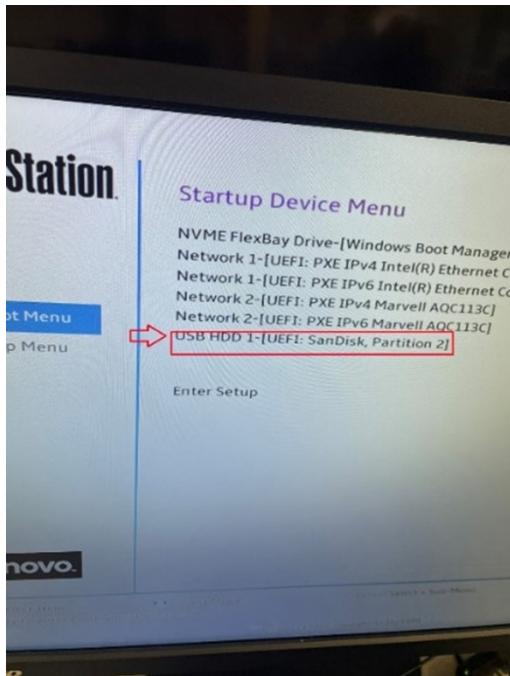


Figure 1: Lenovo UEFI Boot menu, USB flash drive is highlighted.

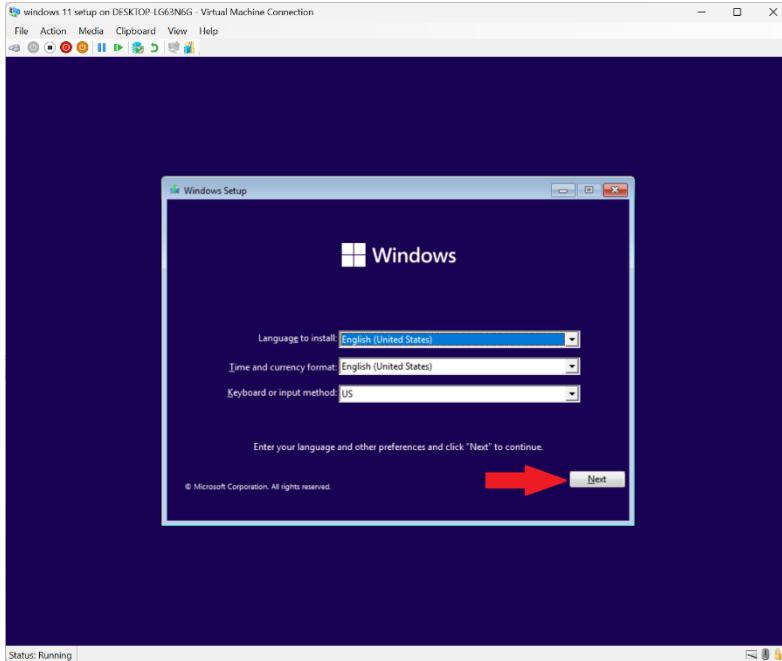


Figure 2A: Windows 11 Installation, Language/Locale select screen. *Next* button is highlighted

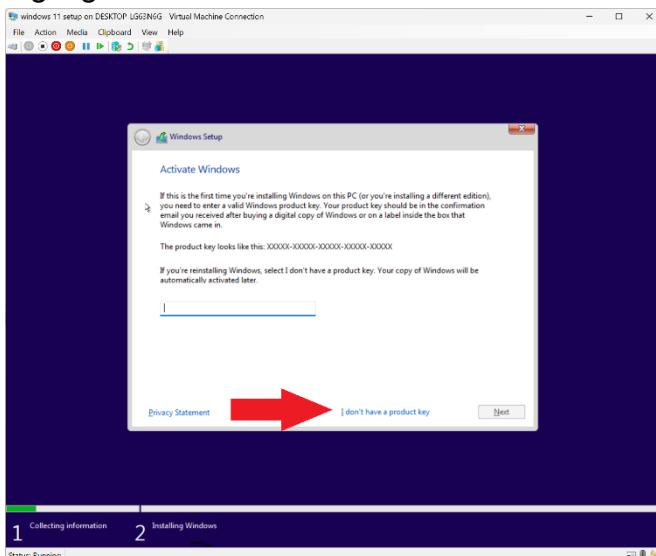


Figure 2B: Windows 11 Installation, product key screen. *I don't have a product key* option is highlighted.

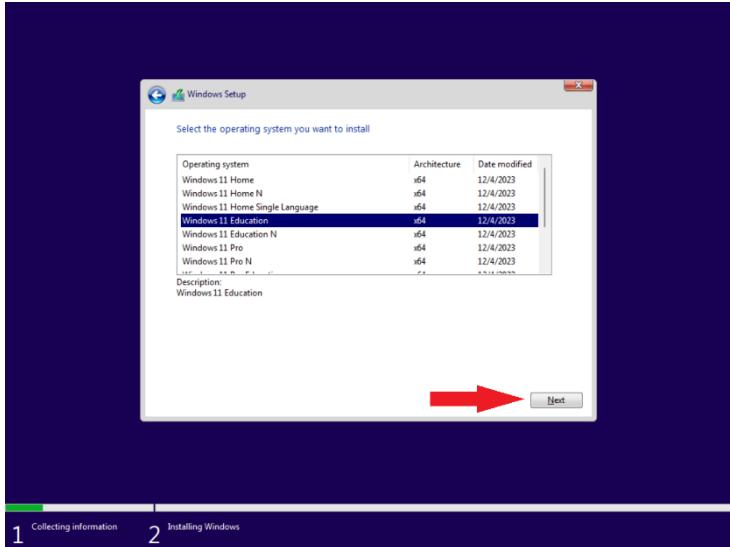


Figure 2C: Windows 11 Installation, version select screen. Next button is highlighted.

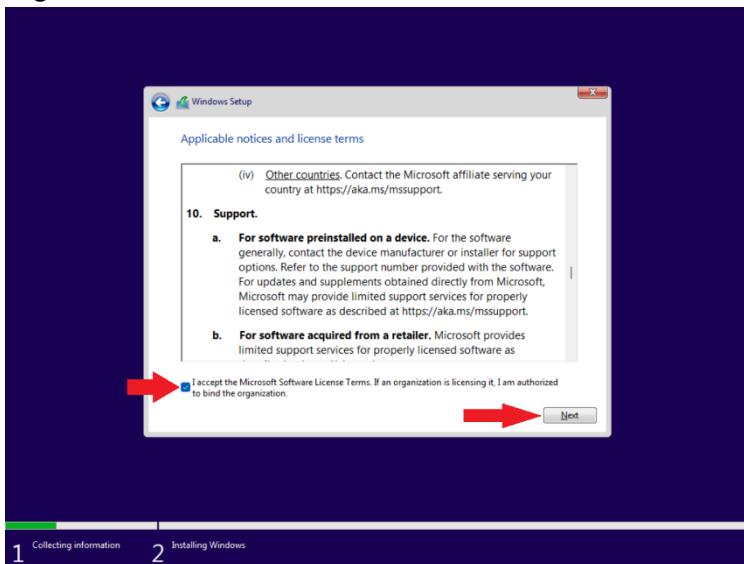


Figure 2D: Windows 11 Installation, terms and conditions screen. Checkbox and Next button are highlighted.

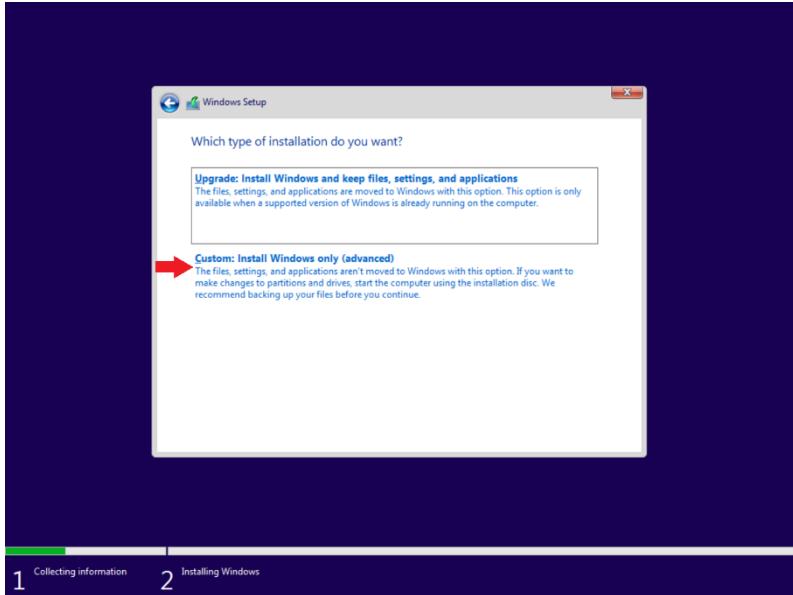


Figure 2E: Windows 11 Installation, installation type screen. *Custom* option is highlighted.

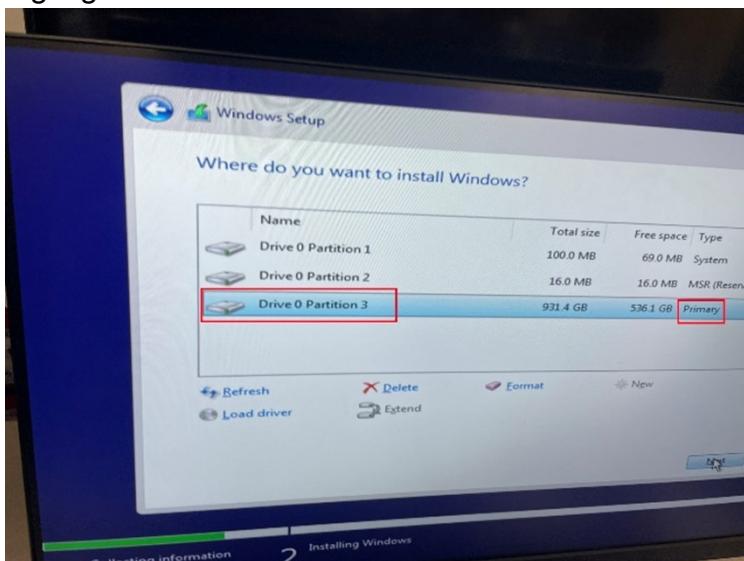


Figure 2F: Windows 11 installation, partition select, primary partition is highlighted.

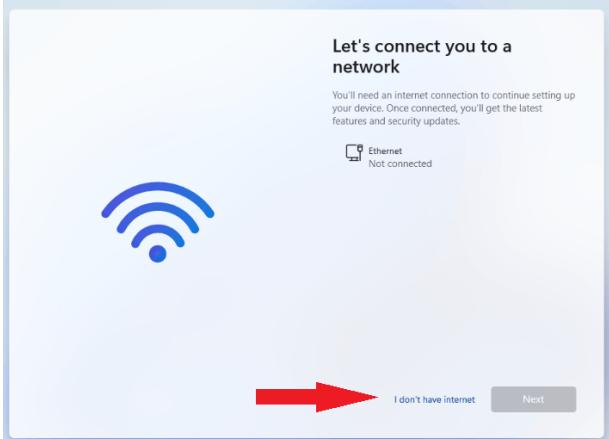


Figure 3A: Windows 11 OOB, Wi-Fi selection screen. *I don't have internet* button is highlighted.

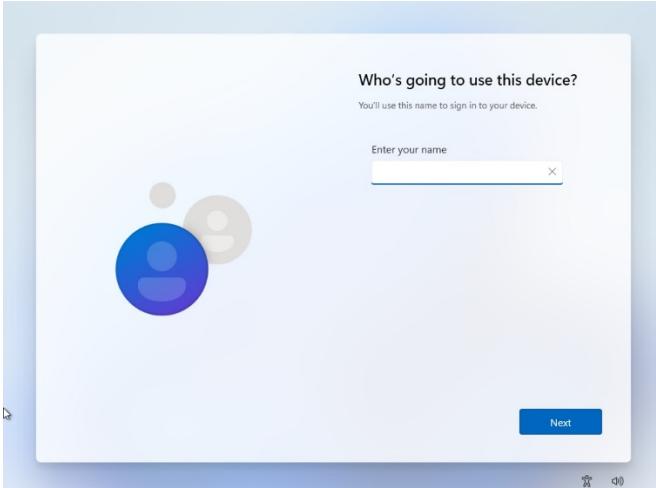


Figure 3B: Windows 11 OOB, Local account creation screen.



Figure 3C: Standard Windows 11 Desktop.

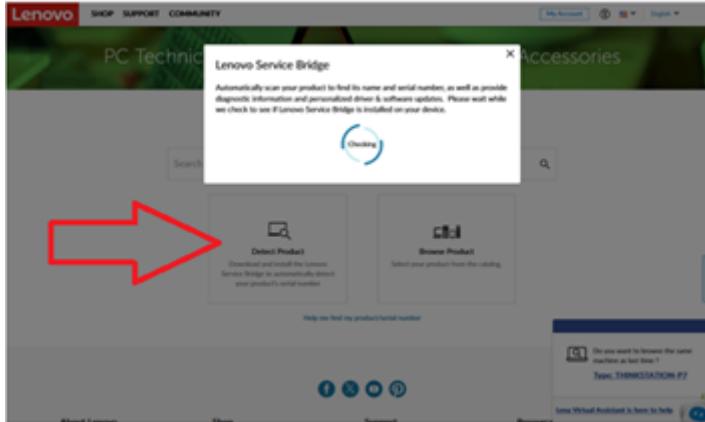


Figure 4: Lenovo Support Website, detecting PC information.

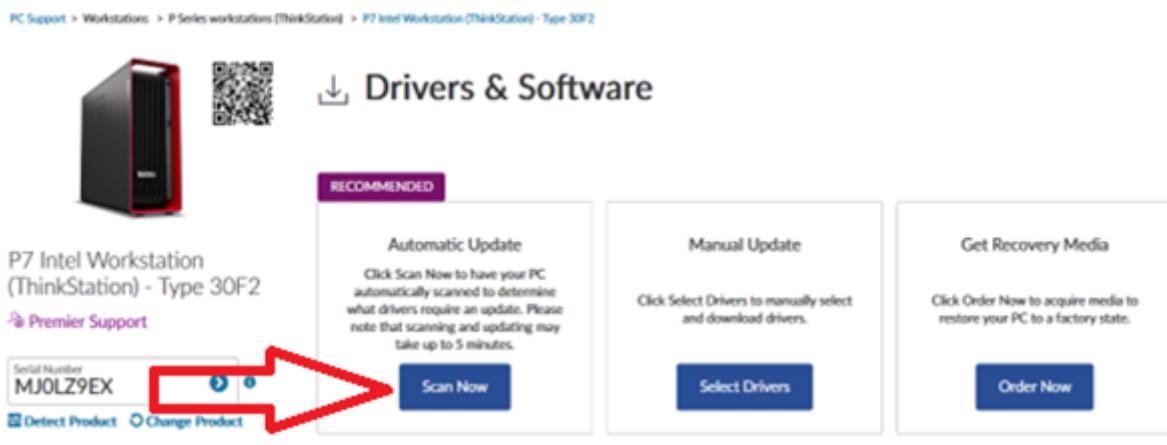


Figure 5: Lenovo Support Website, Drivers and Software page. Automatic Update button is highlighted.

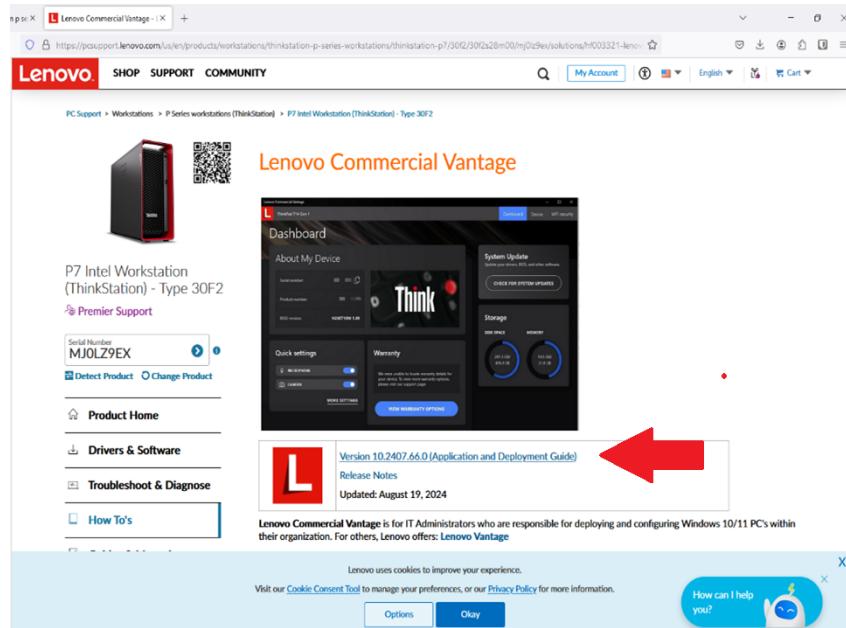


Figure 6: Lenovo Commercial Vantage download page.

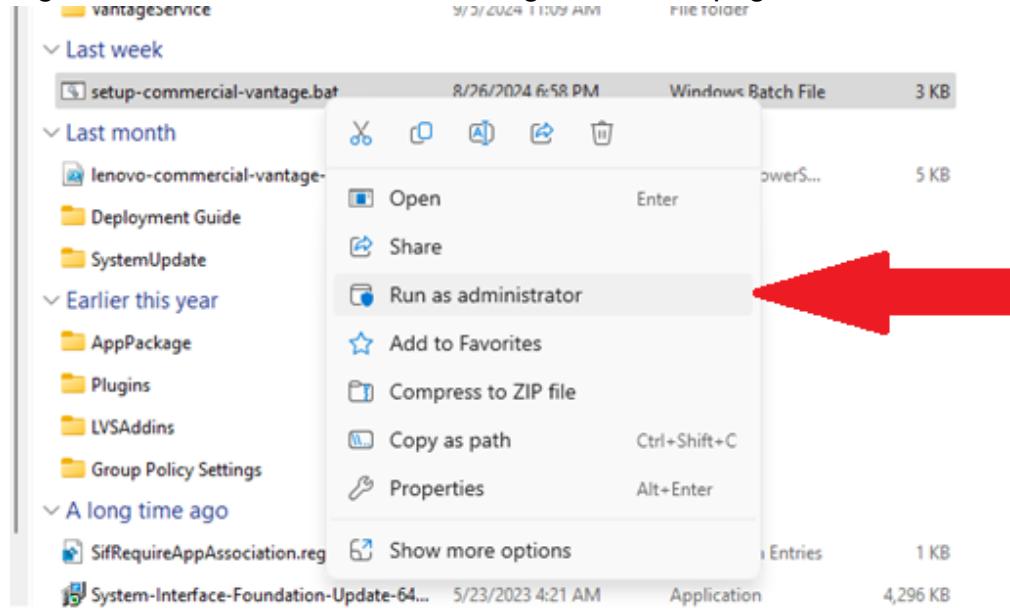


Figure 7: File Explorer, demonstration of running Commercial Vantage batch script as administrator.

**Package files**

You probably want one of these. They include versions of all the PuTTY utilities (except the new and slightly experimental Windows pterm).  
(Not sure whether you want the 32-bit or the 64-bit version? Read the [FAQ entry](#).)

We also publish the latest PuTTY installers for all Windows architectures as a free-of-charge download at the [Microsoft Store](#); they usually take a few days to appear there after we release them.

**MSI ('Windows Installer')**

64-bit x86:	<a href="#">putty-64bit-0.81-installer.msi</a>	
64-bit Arm:	<a href="#">putty-arm64-0.81-installer.msi</a>	<a href="#">(signature)</a>
32-bit x86:	<a href="#">putty-0.81-installer.msi</a>	<a href="#">(signature)</a>

**Unix source archive**

.tar.gz:	<a href="#">putty-0.81.tar.gz</a>	<a href="#">(signature)</a>
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Figure 8: PuTTY download page. 64-bit x86 link is highlighted.



Figure 9: Microsoft Office Homepage. Install Microsoft 365 Apps button is highlighted.

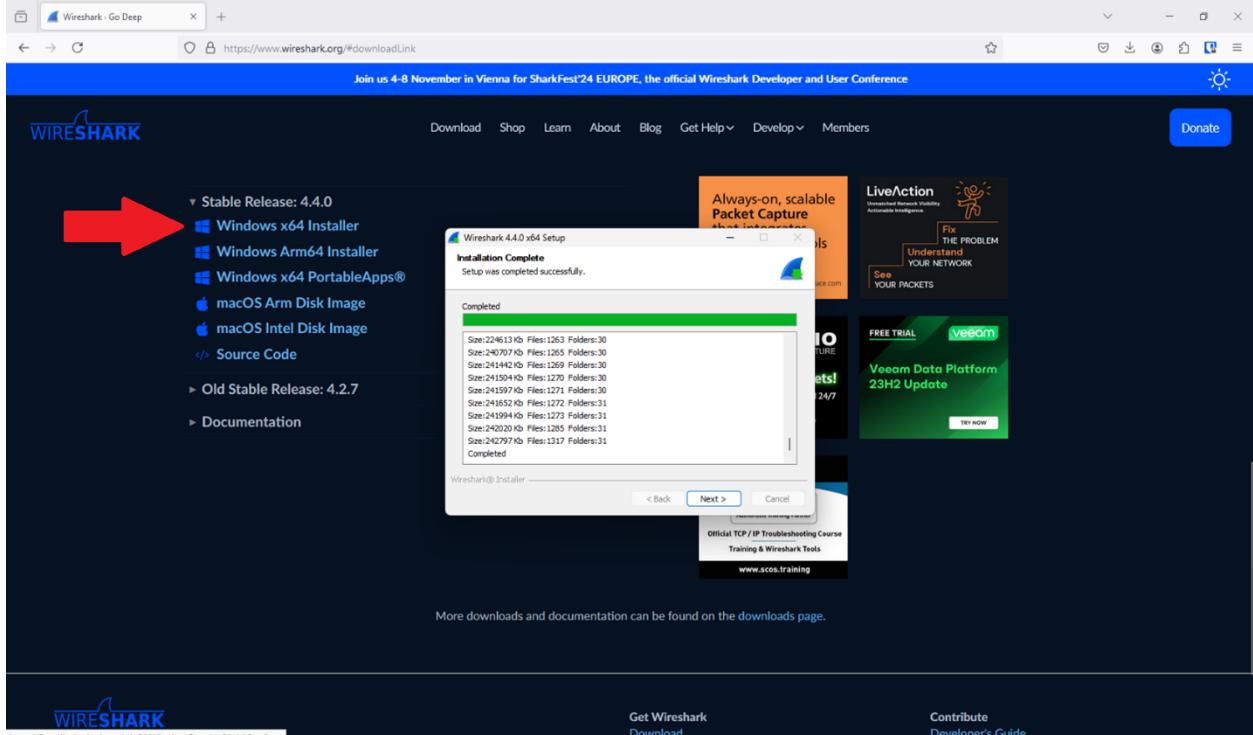


Figure 10: Wireshark download page with Wireshark installer in the foreground.

## Problems

One problem we encountered was a forced sign-in to a Microsoft account. Accidentally connecting to Wi-Fi will disable the option to create a local account. To bypass this, press Shift+F12 (opens command prompt) and type `OOBE\BYPASSNRO`. This command will disable the mandatory Microsoft account login and restart the OOB. Upon restart, reopen command prompt and type: `ipconfig /release`

Another problem we encountered was an issue with NVMe drives corrupting. Several team members had their drives corrupt. This occurred because the drive was ejected from the NVMe expansion bay slot while the workstation was running. This issue can be avoided by being vigilant and making sure that the workstation is completely powered off before removing/inserting a drive.

## Conclusion

All in all, the installation process of Windows 11 and the various software required went smoothly, with only a few hangups in the process. Microsoft's intrusive interface design made installation slightly more difficult, but still very achievable by the average Cisco student.