

# Parallels Desktop for Mac



Creating and Using Virtual Computers



MacBook Pro

# Computer Simulation and Emulation

- The terms Simulation and Emulation are often used interchangeably - but there is a significant difference
- Both mimic the real thing in a virtual environment
- Simulations copy the real thing into a virtual environment - simulating the basic behavior of the real thing but not all of the detailed aspects - for instance a flight simulator
- Emulations duplicate the real thing exactly as it exists in real life - they are a complete imitation of the real thing but operate in a virtual environment instead of the real world

# Computer Emulators

- Computer Emulation is when one computer system imitates or reproduces another system
- One example is software emulation that runs different operating systems in a virtual environment
  - Parallels Desktop, VMware, and Apple's Boot Camp run various operating systems on Intel-based Macintosh computers
  - Sun Microsystems' xVM Virtual Box (now Oracle VirtualBox) runs various operating systems on Windows, Mac, and Unix platforms
- Another example is software emulation that runs console video games such as Nintendo and PlayStation games on Mac and Windows computers

# Apple Boot Camp

- Boot Camp is an Apple supplied alternative for installing Windows on a Mac
- The Boot Camp Assistant App is located in the Utilities folder of all Macs
- Creates an NTFS Partition to install Windows
- Provides support software that connects Mac interfaces and graphics cards to Windows - essentially transforming the Mac into a PC
- Allows Booting a Mac directly into Windows resulting in the fastest Windows capability - although it requires a separate boot
- Parallels Desktop can also run using a Boot Camp partition if you want to have it both ways

# Boot Camp Assistant



# macOS Catalina Considerations

- macOS Catalina will only run 64-bit Apps
- Earlier versions of macOS supported both 32-bit Apps and 64-bit Apps - but this resulted in a less efficient and more complex operating system which needed to support both 32-bit and 64-bit binary versions along with the associated libraries
- The latest Macs come with macOS Catalina already installed and will not run earlier versions of macOS - so Virtual Computers may be your only choice if you need to run 32-bit Apps

# Software Considerations

- Fortunately most Apps have now been updated to 64-bit versions - but many of these Apps require the purchase of upgrades or subscriptions
- Some 32-bit Apps are no longer supported, or developers have decided not to upgrade them because of the effort involved
  - If you need to run these Apps, you probably will need to run them on a Virtual Computer or on a separate disk or partition with an older version of macOS installed
  - These separate disks and partitions can be easily created for installation of older versions of macOS by using the Disk Utility App located in the Utilities folder of all Macs

# Cautions Using Older Apps

- Even though you may be able to install and run older App versions on a Virtual Computer, they may no longer be supported by the developer
  - Drivers may not be available for Apps using external hardware (macOS Catalina drivers also need to be updated to 64-bit versions as well as updated to support new security requirements)
  - Online services may no longer be available - for example Quicken no longer supports Quicken 2016 and earlier, including online banking services for these versions



# Why Use a Virtual Computer?

- Allows running more than one Operating System on a single computer (e.g.; macOS High Sierra and Windows 10, or macOS Catalina and macOS Mojave, or numerous other configurations)
  - The number of Virtual Computers you install is only limited to your available memory
- Permits running the occasional Windows program you may need without purchasing a PC
- Allows running older programs incompatible with the latest operating systems (e.g.; 32-bit Apps on macOS Catalina which only supports 64-bit Apps)

# Today's Presentation

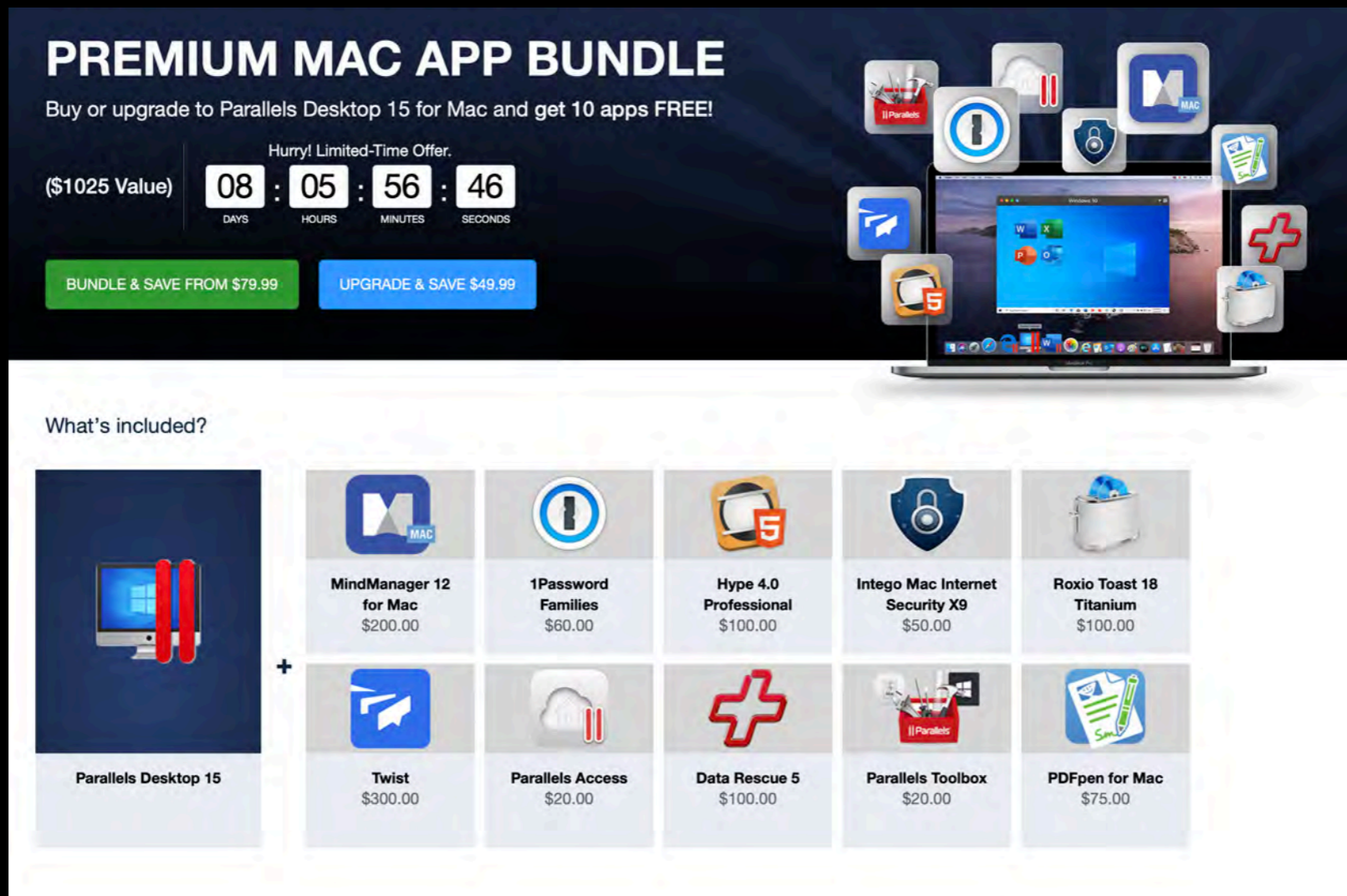
- Today I will be discussing and demonstrating Parallels Desktop 15 for Mac that can emulate multiple versions of Mac, Windows, and Linux operating systems
- If time permits, I will also briefly demonstrate two other programs that can emulate Apple II software and Mac OS 9 software (the last classic Mac OS Operating System) to show the wide variety of emulators available for the Mac

# Parallels Desktop Capabilities

- Allows running a Parallels Virtual Computer (e.g.; Windows) side-by-side with macOS - sharing files and folders, copying and pasting images and text, and dragging and dropping files between Mac and Virtual Computer applications
- Parallels Virtual Computers can appear in a Mac Window, occupy the entire screen just like they would on an actual computer, or appear in Coherence Mode where the Virtual Computer desktop is invisible (Virtual Computer Apps appear on the Mac Desktop)
- Full description of capabilities available at [https://  
www.parallels.com](https://www.parallels.com)

# Parallels Desktop 15 Cost

- New licenses cost about \$80, but often are available at discounts or as part of a bundle
- Current Bundle available through end of February:



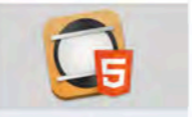








**PREMIUM MAC APP BUNDLE**  
Buy or upgrade to Parallels Desktop 15 for Mac and get 10 apps FREE!

Hurry! Limited-Time Offer.  
(\$1025 Value) **08** : **05** : **56** : **46**  
DAYS HOURS MINUTES SECONDS

**BUNDLE & SAVE FROM \$79.99** **UPGRADE & SAVE \$49.99**

What's included?

 <b>Parallels Desktop 15</b>	 <b>MindManager 12 for Mac</b> \$200.00	 <b>1Password Families</b> \$60.00	 <b>Hype 4.0 Professional</b> \$100.00	 <b>Intego Mac Internet Security X9</b> \$50.00	 <b>Roxio Toast 18 Titanium</b> \$100.00
	 <b>Twist</b> \$300.00	 <b>Parallels Access</b> \$20.00	 <b>Data Rescue 5</b> \$100.00	 <b>Parallels Toolbox</b> \$20.00	 <b>PDFpen for Mac</b> \$75.00

# Parallels Desktop 15 Requirements

<b>Mac Computer</b>	Intel Core 2 Duo, Core i3, Core i5, Core i7, Core i9, Core M, or Xeon Processor
<b>Memory</b>	4 GB minimum, 16 GB recommended 500 MB for Parallels Desktop Additional disk space for each guest operating system (16 GB minimum for Windows 10) SSD drive recommended for better performance
<b>Internet</b>	Internet connection for product activation and select features
<b>Software</b>	macOS Catalina (10.15) macOS Mojave (10.14) macOS High Sierra (10.13) macOS Sierra (10.12)

This MacBook Pro - Late 2019 Apple 16" MacBook Pro with Touch Bar, 2.3GHz 8-core Intel Core i9 Processor, Turbo Boost up to 4.8GHz, with 16MB shared L3 cache, 16GB RAM, 1TB SSD, AMD Radeon Pro 5500M Graphics Card with 4GB of memory

# Parallels Guest Operating Systems

## (Virtual Computers)

- Includes most recent versions of macOS, Windows and Linux Operating Systems

Windows 10	macOS Catalina 10.15
Windows 8.1	macOS Mojave 10.14
Windows 8	macOS High Sierra 10.13
Windows Server 2019	macOS Sierra 10.12
Windows Server 2016	OS X El Capitan 10.11
Windows Server 2012	OS X Yosemite 10.10
Windows 7	OS X Mavericks 10.9
Windows Server 2008	OS X Mountain Lion 10.8
Windows Vista	OS X Lion 10.7
Windows Server 2003	OS X Lion Server 10.7
Windows XP	OS X Snow Leopard Server 10.6
Windows 2000	OS X Leopard Server 10.5

# Installing Parallels Desktop

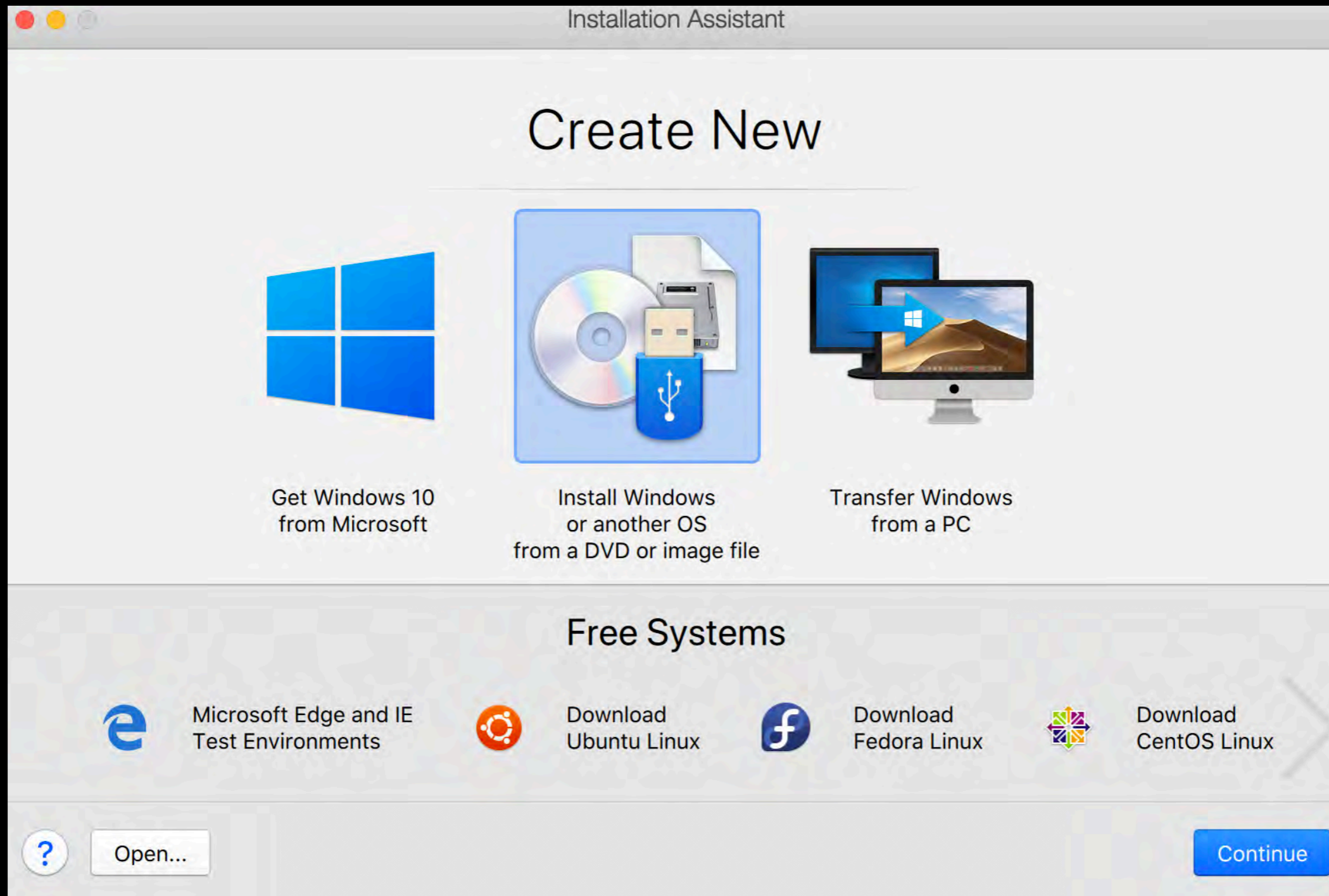
Parallels Desktop 15

for Mac



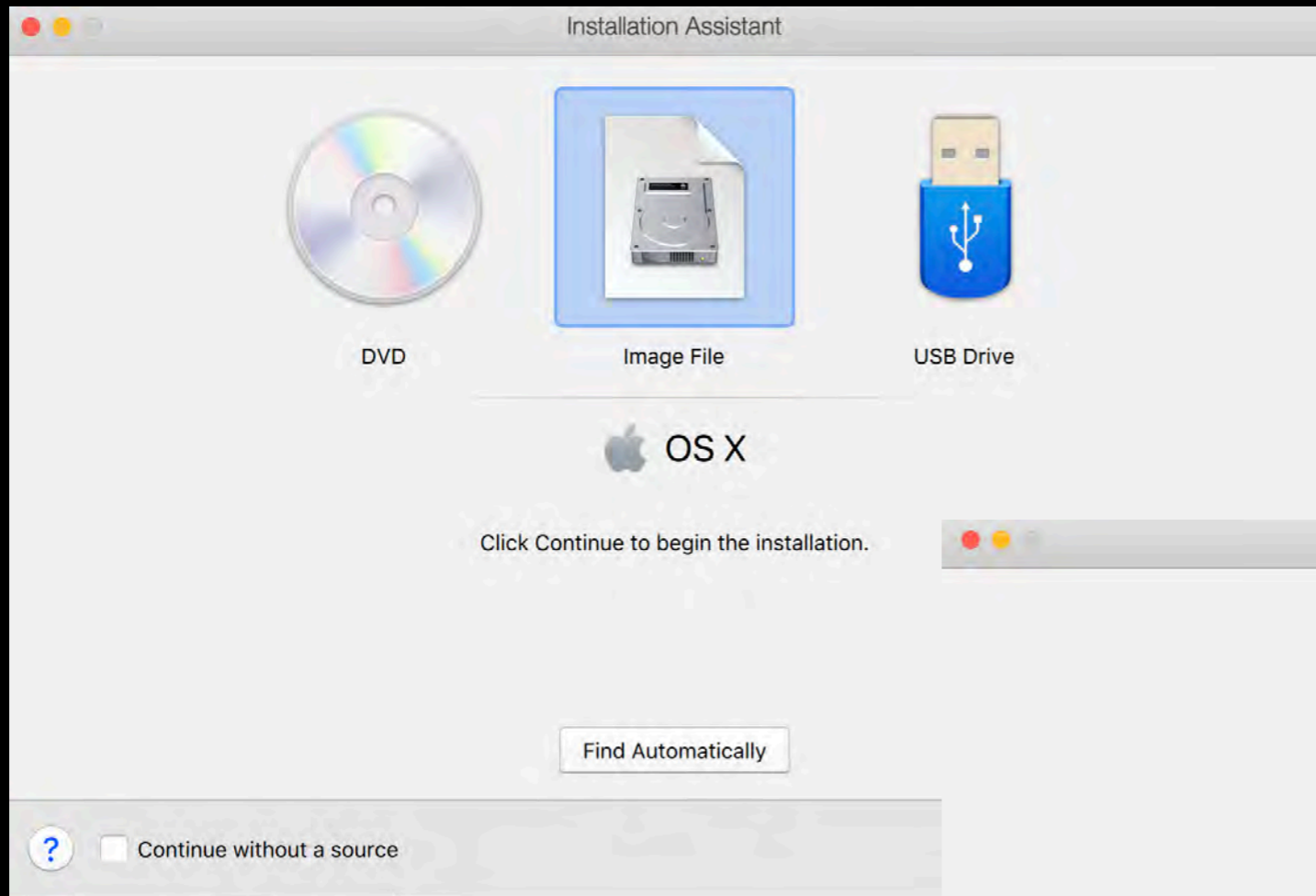
Install.app

# Installing Guest Operating System



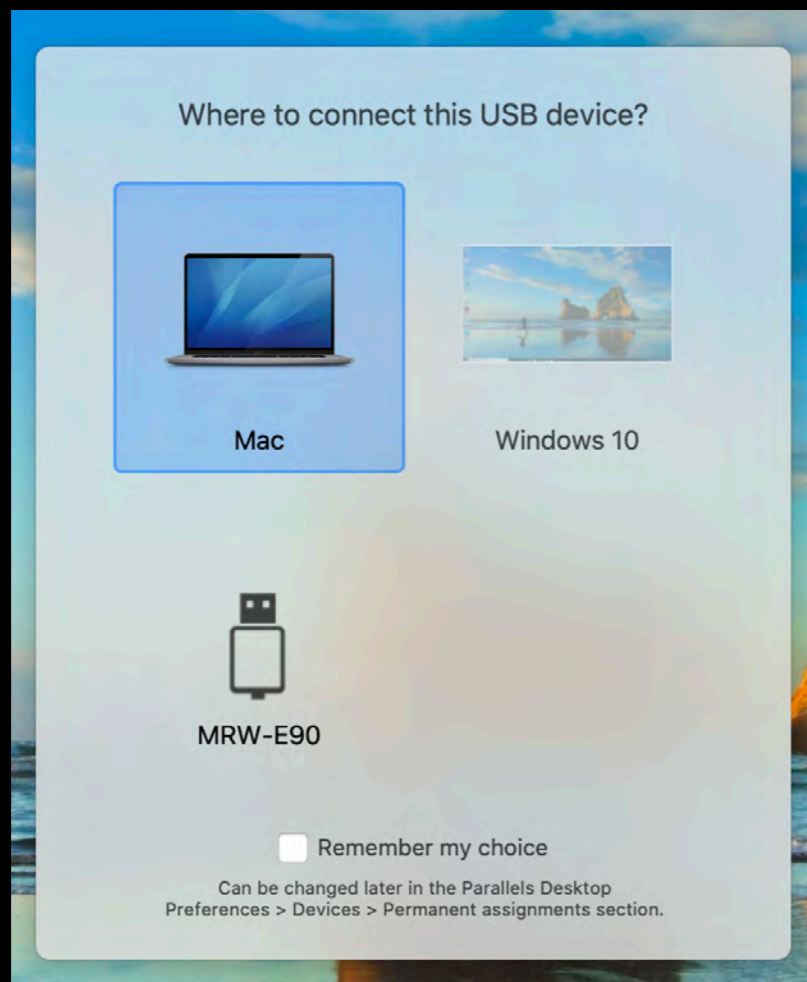


# Installing macOS



# Select OS to Use for Peripherals

- When connecting a new peripheral device you are given a choice of which OS handles it
- If you select the Guest Operating System you must install any required drivers



# Windows 10 Demonstration

- Parallels with latest version of Windows 10
- Microsoft Office 365 installed with Word, Excel, PowerPoint, Outlook, OneDrive, Skype, Publisher, and Access (last two not available with Mac Office 365)
- FileMaker Pro 18 Advanced installed (permits generating Windows runtime solutions of FileMaker databases)
- Windows versions of Apple iTunes, iCloud, Photos, and QuickTime installed for cross-platform compatibility

# Snow Leopard Server Demonstration

- Snow Leopard was the last version of Mac OS X that included Rosetta (a dynamic binary translator), permitting running PowerPC only Apps
- Snow Leopard Server (rather than Snow Leopard) is required for installation with Parallels Desktop
- iLife '11 (iPhoto, iMovie, GarageBand, iWeb, iDVD) installed from iLife '11 DVD
- Snow Leopard Server will also run 32-bit Mac applications which are incompatible with macOS Catalina

# Demonstration of Other Emulations

- SheepShaver will run many Mac OS 9 applications, but unlike Parallels Desktop it requires installation of both the Mac OS System and the associated ROM files
- Sweet16 will run many Apple II and Apple II GS applications, but unlike Parallels Desktop it requires installation of both the Apple II GS System and the associated ROM files

**Questions?**