

# Routine Computer Maintenance



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**Dell—Windows  
aka “PCs”**



**Apple—macOS  
aka “Macs”**

**~~Linux or Unix~~**



What  
could  
go wrong?

Oh so much!




# Why Do Maintenance?

- **Security**
- **Prevention of data loss**
- Keep computer in good shape & function
- Early detection of issues
- Optimize software performance
- Extend hardware life



# Antimalware Software\*

- Essential for Windows systems
- The necessity for Apple computers is somewhat controversial
  - ...but yes, install antimalware software on  
Macs  ← Active hypertext links (~120)

\* Formerly known as “antivirus software”



# Antimalware Software— Windows



Vendor	Link
Avast	
Bitdefender	
BullGuard	
Eset	
Kaspersky	
Malwarebytes	
McAfee	
Norton	

References:





# Antimalware Software— macOS

Vendor	Link
Bitdefender	
Intego	
Kaspersky	
Malwarebytes	
McAfee	
Norton	
TotalAV	
TrendMicro	
ZoneAlarm	

References:



# Backup is Essential



**“We back up our data on sticky notes because sticky notes never crash.”**





# Backup to Where?

- External disk (HDD not SSD)
- Cloud services 
  - Slow to recover complete system
  - Relatively expensive
  - Offsite storage



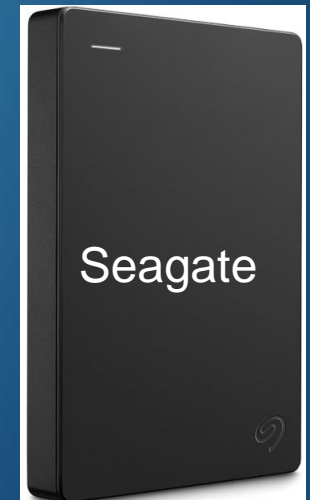
# Backup Types/Strategies

- Complete system
  - All the files you create (aka “your stuff”)
  - Disk image (everything on a disk)
- Selected files
- Duration—weeks, months or years
- **Pick backup software to match your requirements**



# HDD Backup Storage

- 2 or 3 external hard drives
- Exchange backup disks
  - Daily
  - Weekly ←
  - Biweekly
  - Monthly
- Store unused drives away from computer



1 TB	\$50
2 TB	\$64
4 TB	\$94
5 TB	\$115
8 TB	\$142



# Backup—How Often?

- Hourly
- Daily
- Weekly
- Monthly
- Automatic
- On demand



**Apple's  
Time Machine**

- Important to understand functionality of your backup software



# Backup Software

- Windows Computers 
  - File History\*   
  - Backup and Restore\*\*   
  - Acronis True Image 
  - Cobian Backup 
  - EaseUS ToDo Windows Backup Software 
  - Many others...     

\* Included with Windows 10

\*\* Included with Windows 10—legacy software (introduced 2007)



# Backup Software (cont.)

- Apple Computers 

- Time Machine\*   

- Acronis True Image  

- Carbon Copy Cloner 

- ChronoSync 

- SuperDuper! 

- Others...  

\* Included with macOS



“I’m trying to back it up, but I can’t find **reverse!**”

# Life Expectancy



**HDD**

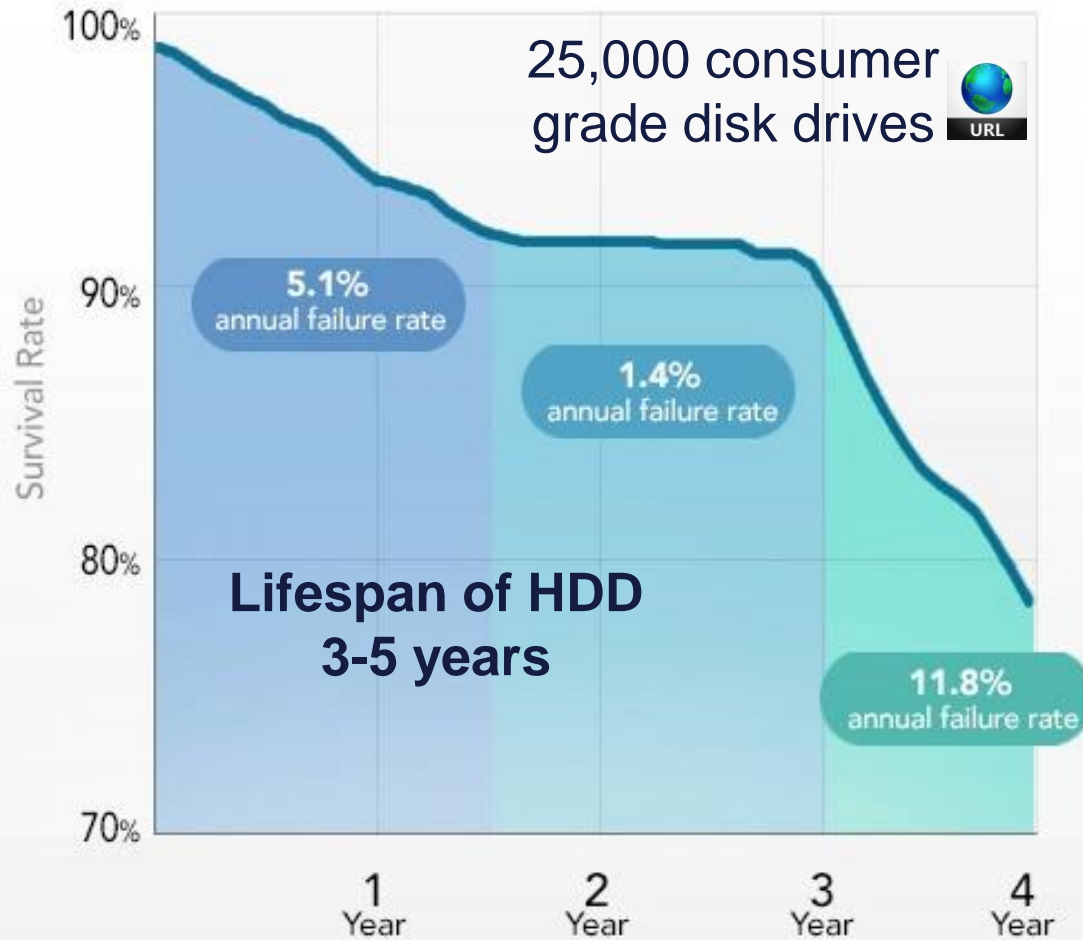


**SSD**



# Drives Have 3 Distinct Failure Rates


Hard Drive Survival Rates - Chart 1





# Solid State Drives\*



- Lifespan longer than HDD
- Age limit of 10 years (?)
- Endurance dependent on number of writes in specifications (see  to calculate lifespan)
  - nDW/D (number drive writes/day)
  - TBW (terabytes written [total])
- Generally held—lifespan of SSDs longer than other computer components (?)

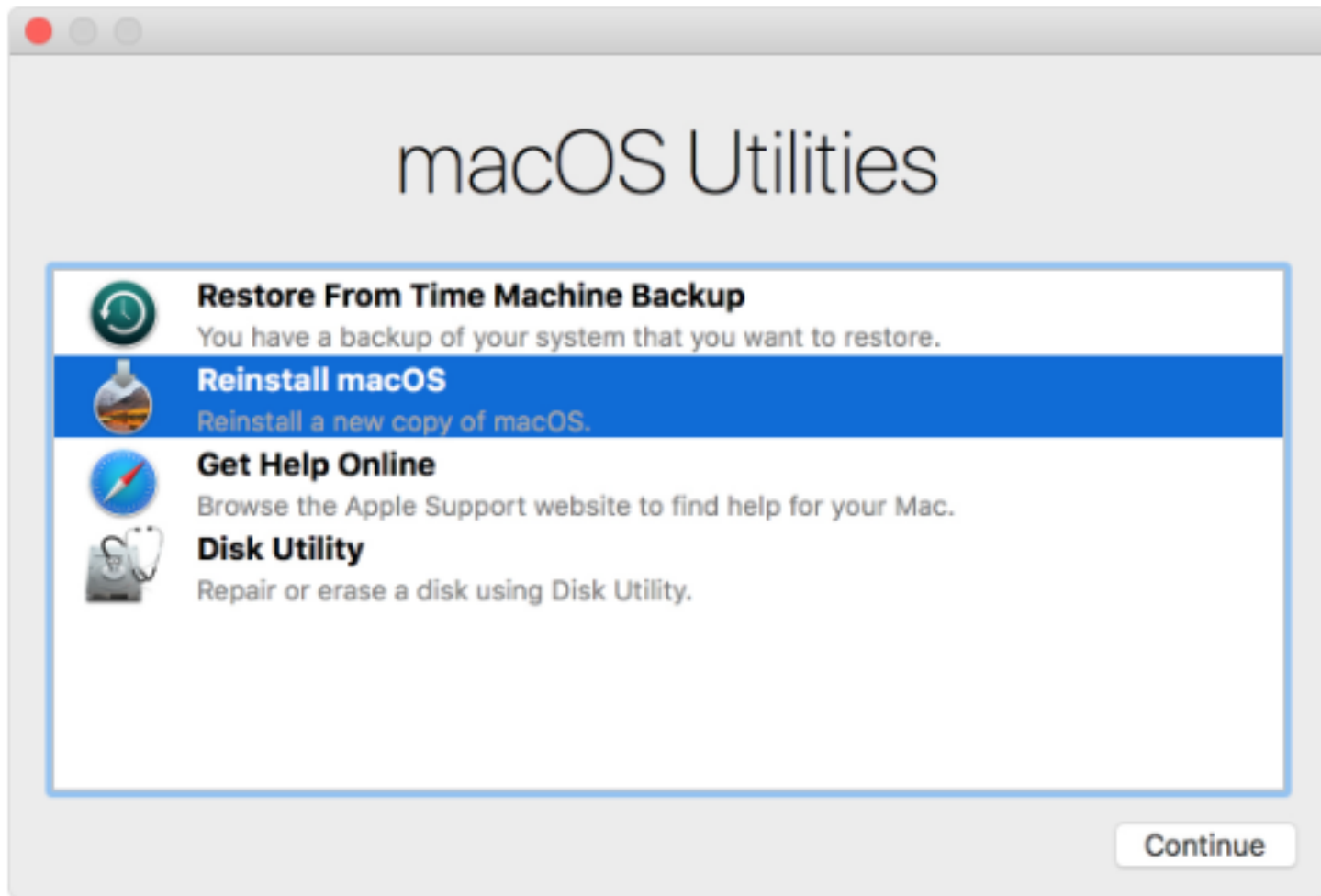
\* Consumer grade not commercial grade



# Mac Won't Boot Up?

- Boot drive isn't necessary
- Be sure computer has power and Internet access\*
- Press power button and hold down CMD and letter R keys (wait awhile)

\* Often the computer will boot up without Internet access







For more complete information see









# Operating System Updates

- Essential to keep current, **but...**
  - Delaying updates may be prudent
    - ✓ Updates of Win-10 can be temporarily delayed   
      - Up to 35 days Windows Home; Win Pro up to 365 days
  - Omitting some components may be wise
    - ✓ Drivers can be excluded in Win-10 updates 
  - First check the Web for problems
  - **Do complete backup before updating**




# Windows Updates

- Microsoft Windows 10 (v. 2004\*)
  - For guidance in updating Win 10 see  
- How to update...
  - ✓ Start → Settings → Update & Security → Windows Update  

\* Released May 27, 2020



# Windows Updates (cont.)


- Windows 7 support\* ended Jan 14<sup>th</sup> 
- Update to Windows 10 is still free 
- Microsoft recommends you get new hardware



\* Win 7 initially released October 22, 2009



# macOS Updates

- Annually in September or October 
- 2-4 minor releases per year
- Current release Catalina v10.15.6\*
- macOS Big Sur (11.0) coming this fall

 → System Preferences →




Software Update → Update Now

\* July 15, 2020









# macOS Updates (cont.)

- macOS updates can be delayed indefinitely
- **Catalina does not support 32-bit applications**
- How to determine 32-bit software
  - ✓  → About This Mac → System Report → [select] Legacy Software\*
  - ✓ For further information see  

\* Procedure using macOS Mojave v. 10.14.6



# Apple Silicon Coming\*







- Moving from Intel (x86) to Apple SoC (ARM)
- Transition over a 2 year period
  - ✓ All Apple computers to move to Apple SoC\*\*
  - ✓ SoC computer(s) to be available late 2020 (laptops?)
- SoC computers to use macOS Big Sur (11.0)
- Support for Intel based Apple computers to continue “for years”
- For more information see    

\* Announced June 22, 2020

\*\* Apple will continue to sell Intel computers



# Firewalls

- Router (built-in firewall)
- Windows 10 (software firewall) 
- macOS (software firewall) 
- Antimalware suites—firewall  
- Third-party firewalls  



# Your Applications

- Keep up-to-date\*, **but....**
  - First check the Web for problems
  - **Do a full backup before updating**
  - Delete unused applications

\* Keep a list of your applications






# Monitor Disk Capacity

- Running out of disk space isn't good
- Low space on SSDs shortens lifespan\*
- Windows 10; see  for how to do it
- macOS; see  for how to do it
- Third-party software 
- References:   

\* Common wisdom—keep a minimum of 20-30% free disk space




# Computer Monitoring—Win 10


- CPU temperature\* (plus other things)
  - Normally CPUs operate at 45° to 60°C
  - Gaming CPUs operate at 75° to 80°C
- Monitoring software...
  - Core Temp (Windows) 
  - Open Hardware Monitor (Windows) 
  - Speccy (Windows) 

\* For GPU monitoring see 



# Computer Monitoring—macOS

- System Monitor (App Store \$4.99)
- Temperature Gauge (App Store \$17.99)
- XRG for Mac (free, open source) 
- Activity Monitor & Console apps (in Utilities)
- Apple Diagnostics\* (Restart+D)

\* Checks for hardware problems  
(included with macOS) 



# Maintenance—How Often?

- Daily
- Weekly
- Bi-weekly
- Monthly
- Quarterly
- Annually

**Depends...**



# My Weekly Maintenance Checklist

Order	What to Check	Comments
1	Backup iCloud data	Backup Calendar, Contacts and Reminders
2	Batteries	Keyboard, mouse, trackpad
3	macOS updates	System Preferences → Software Update
4	Microsoft Office 365	Check for updates using Word
5	Chrome browser	Check for updates; Chrome → About Chrome...
6	Firefox browser	Check for updates; Firefox → About Firefox...
7	Opera browser	Check for updates; Opera → About Opera...
8	Delete "Recents"	Microsoft Word and PowerPoint
9	Empty "Junk" & "Trash"	From Apple Mail
10	Backup recovery	Delete/recover from desktop "TEST RECOVERY FOLDER"
11	Malwarebytes	Run this anti-malware app
12	Time Machine	Run this app to create recent backup
13	Backup disks	Exchange backup disks and run Time Machine

Total time required? ~10-15 minutes/computer

# Less Frequent Maintenance Checklist

<b>Frequency</b>	<b>What to Check/Do</b>	<b>Comments</b>
1-2 Weeks	Reboot computer	"Flush" the system
1-2 Weeks	Run antimalware	Do complete scan
Monthly	CPU temperature	Normally 45° to 60°C
Monthly	Router firmware	Update needed?
Monthly	Web-browsers	Clear history, cache, and cookies
Quarterly	Disk capacity	Need to plan for expansion?
Quarterly	Empty Trash	aka Recycle Bin
Quarterly	Update applications	Check list of applications
Annually	Physically clean computer	Don't forget keyboard and mouse



# Dust Bunnies & Crud

- Supplies
  - Microfiber cleaning cloths
  - Lens cleaner
  - Isopropyl alcohol
  - **Compressed air can**
  - Q-tips



# Dust Bunnies & Crud (cont.)

- What to clean?
  - Computer
  - Monitor
  - Keyboard
  - Mouse
  - Mouse pad



# Dust Bunnies & Crud (cont.)

- Cleaning advice:

- Desktop PCs    

- Laptop PCs   

- Desktop Macs (iMacs)\*   

- Laptop Macs (MacBooks)   

- ✓ Cleaning advice from Apple 

- ✓ Opening up Apple computer voids warranty?

\* Desktop Macs (iMacs) are all-in-one computers



**“Tech support says the problem is located somewhere between the keyboard and my chair.”**



**Thanks for your attention!**