Rick Lincoln

Rick Lincoln is a Desktop Support Specialist for the Broad Institute of MIT and Harvard located in Cambridge MA. Rick has been with the Broad for 3 years where he is the primary Mac escalation point for the Service Desk as well as the primary VIP and Core Faculty support technician. He helps manage and support almost 1000 Macs.

He is also a Certified Casper Administrator and Certified Casper Mobile Administrator. He is known as the "tech guy" to his family and friends and enjoys spending time with his 10 month old daughter and his wife and will be celebrating their 2 year wedding anniversary in May



Using OS Resources to Diagnose Troubles

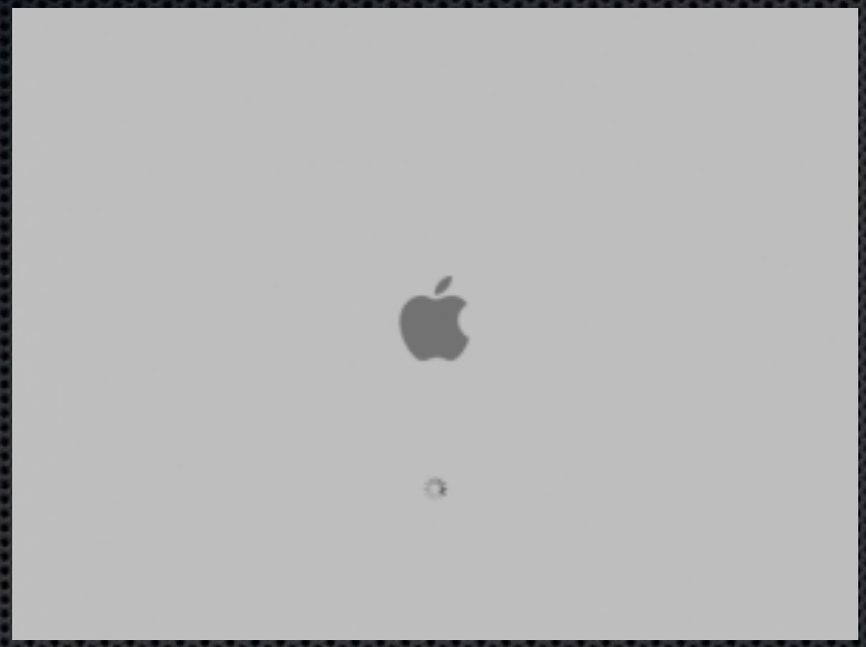
Using boot timing to troubleshoot issues

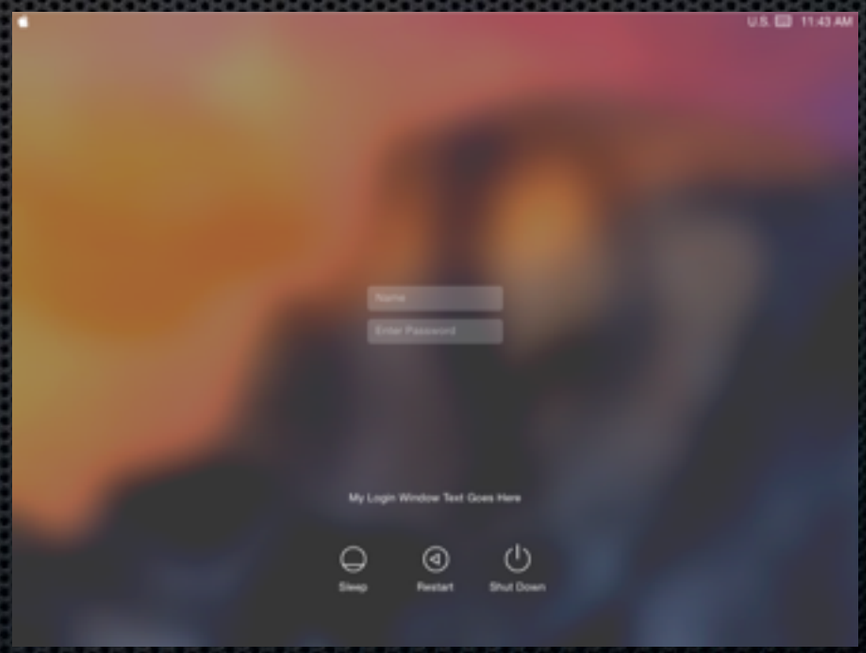
- What boot stages are important to troubleshooting
- How do you determine which stage you are in?
- What does that tell you?
- Why does it matter which stage you're in?

OS X System Boot

- Firmware
- Booter
- Kernel
- launchd

Kernel, launchd and loginwindow explained





launchd…

- System level
- Shared Library level
- User level

- Launch Agents vs. Launch Daemon's

- https://developer.apple.com/library/mac/documentation/MacOSX/Conceptual/BPSystemStartup/Chapters/CreatingLaunchdJobs.html#//apple_ref/doc/uid/10000172i-SW7-BCIEDDBJ

Startup Shortcuts

- To boot from a CD/DVD, press and hold "C"
- To start NetBoot, "N"
- To start in Target Disk Mode, "T"
- To use the Apple Diagnostics/Hardware test, "D"
- To enter recovery tools, Command (⌘) and "R"
- To manually select a startup disk, "Option"
- To reset PRAM, Command, Option, "P" and "R"
- To start in Verbose Mode, Command and "V"
- To start in Single User Mode, Command and "S"
- To start in Safe Mode, "Shift"

Startup Disk, Netboot and Target Disk Mode

- Holding Option during startup will allow manual startup disk selection
- Doing the same with the "N" key will launch NetBoot
- Holding the "T" key will initialize Target Disk Mode

Safe Mode, Single User Mode and Verbose Mode

- Holding Shift will start in Safe Mode
- Holding Command and “V” will launch Verbose Mode
- Command and “S” will start in Single User Mode
  - fsck, mount, passwd,

Boot Stages, Boot Tones, and Startup Keyboard Shortcuts

- Boot Stages
  https://support.apple.com/en-us/HT2674
- Boot Tones
  https://support.apple.com/en-us/HT202768
- Startup Keyboard Shortcuts
  http://support.apple.com/en-us/HT201255

Boot Failure Examples



Boot Failure Examples



Boot Failure Examples



Hang vs. Crash

- What's an application hang
- What's an application crash
- How to troubleshoot each

Binary method of troubleshooting

- Grouping items to narrow the scope of the issue
- Reducing environmental variables
- Identifying issues as user level or system level

Disk Utility

- Repairing permissions
- Issues using disk utility
- Repairs through the operating system recovery partition and command line (diskutil)

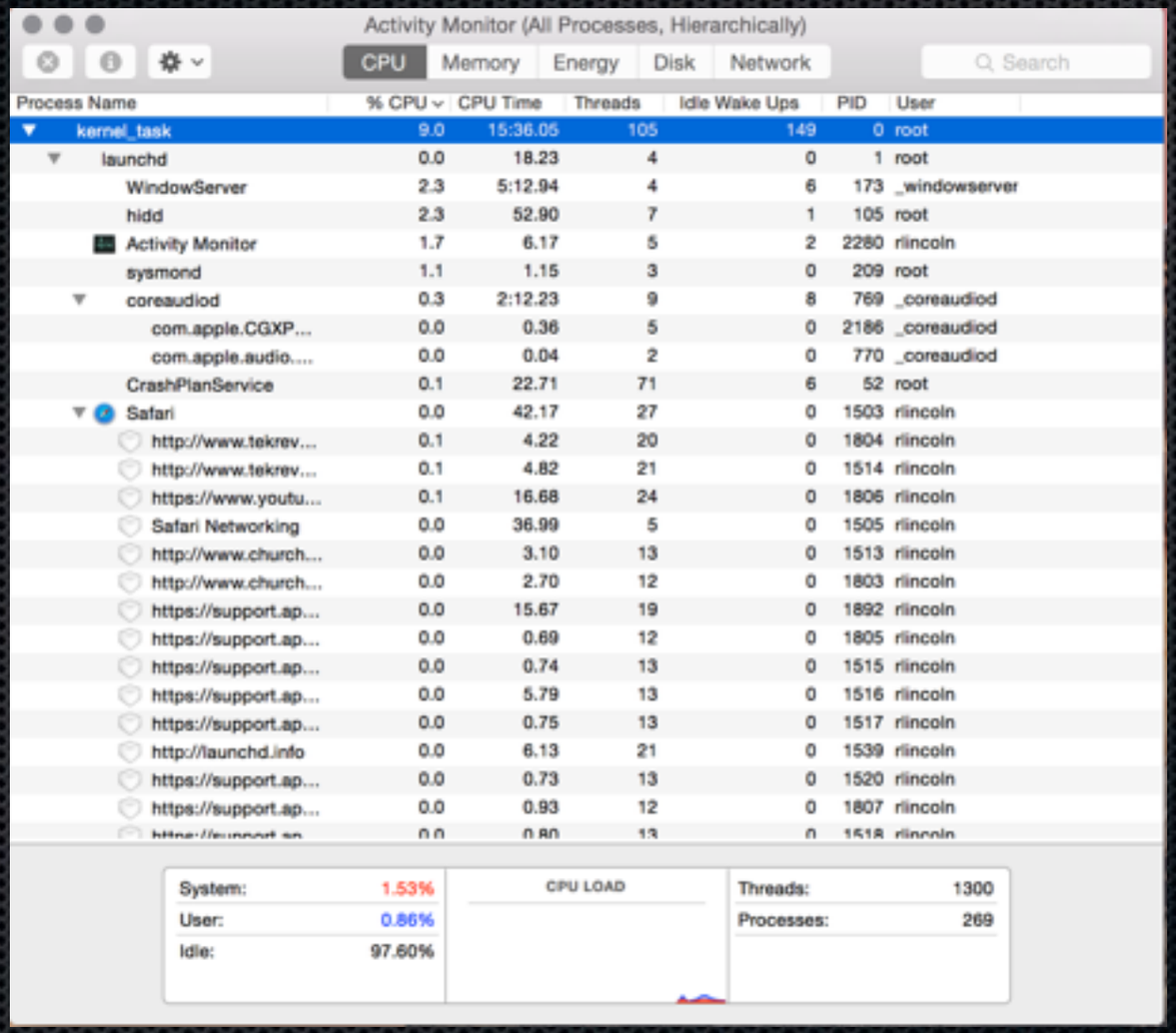
Recovery Partition

- What do you do if one doesn't exist?
- Having a portable recovery partition (e.g., USB drive)
- Recovery Disk Assistant and createinstallmedia
- Password reset utility to reset a user's password
- Using network utility from the recovery partition to troubleshoot network issues outside of the boot OS.
- https://support.apple.com/en-us/HT201372

Utilities moved from the Utilities Folder

- /System/Library/CoreServices/Applications/
- What else is in /System/Library/CoreServices/
- What to use, what to avoid

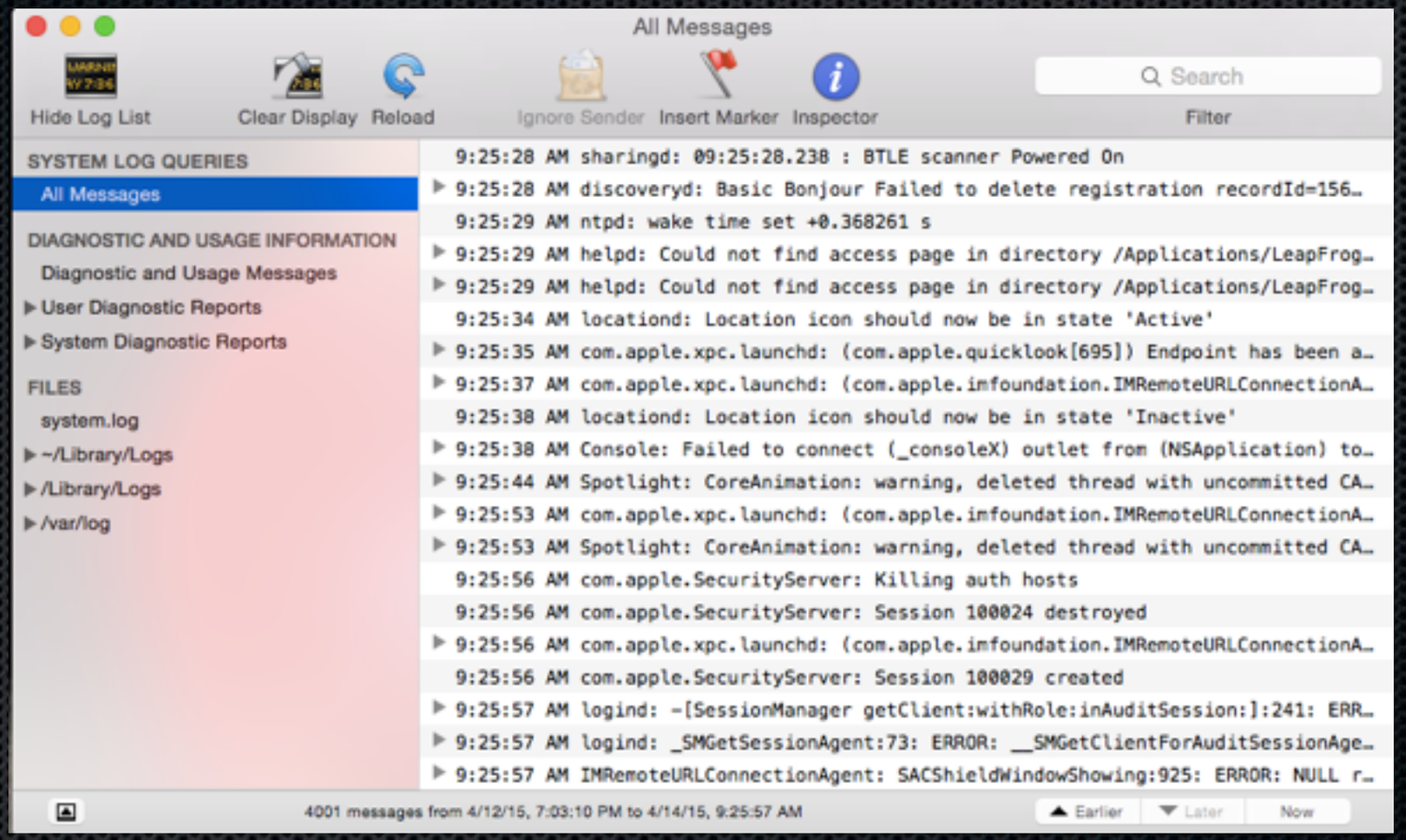
Activity Monitor



Activity Monitor

- Troubleshooting Server specific concerns with Activity Monitor
- Finding the "pigs"
  - CPU
  - Memory
  - Energy
- What's the command line equivalent of this tool?

System Console



System Console

- Log locations: what's the difference between the different locations
- About reading logs.
- Google is your friend.
- Note that sometimes logs are not available in console
- Notes on using logs for troubleshooting, search terms, use warn, fail, error, etc…

Command Line Tools

- ifconfig
- networksetup
- airport
- lsof
- top
- nettop
- nslookup
- dig

If all else fails…



More Resources

- https://support.apple.com/en-us/HT202768 [Startup Tones]
- https://support.apple.com/en-us/HT201255 [Startup Key Combos]
- https://support.apple.com/en-us/HT2674 [Startup Sequence]
- http://jrause.com/blog/?p=383 [OSX Troubleshooting]
- https://support.apple.com/en-us/HT204325 [Startup Issues]
- https://developer.apple.com/library/mac/documentation/MacOSX/Conceptual/BPSystemStartup/Chapters/CreatingLaunchdJobs.html [launchd documentation]
- https://support.apple.com/en-us/HT201372 [Creating Bootable Installers]
- https://support.apple.com/en-us/HT202790 [Network Utility]

Questions?



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