Basic Troubleshooting Techniques

Freedom High School
Systems Management
Objectives

- Provide basic tools and terms used in computer troubleshooting
- Identify major internal and external computer components by sight
- Verbalize basic troubleshooting steps
- List at least three resources to enlist in identifying and resolving a problem
Agenda

- Introductions
- Troubleshooting Basics
- Hardware
- Common Problems
- Preventative Maintenance
- Summary
Speaking the Lingo

- Being able to distinguish between the “alphabet soup” known as computing acronyms is important

- **Online computing terminology sites**
  - [http://www.pcwebopedia.com](http://www.pcwebopedia.com)
  - [http://www.whatis.com](http://www.whatis.com)

- **Online acronym site**
  - [http://www.acronymfinder.com](http://www.acronymfinder.com)
Hardware Components

- Peripherals
- CPU

- Output
- Input
Troubleshooting Basics

- Seven step process
- Easiest to Hardest
- Outside In
Seven Steps in Troubleshooting

- Analysis
- Problem replication/identification
- Action Plan
- Implementation
- Testing
- Documentation
- Follow Up
What to include in your documentation?

- Hardware - workstations, servers, printers, and network devices
- Software - operating systems and applications
- Network diagram - detailing cabling and showing the location of all hardware devices
Cabling

- Parallel Cable
- Serial Cable
- USB Cable
- PS 2 Mouse/Keyboard
- Audio Jack
- Video Cable
- Network Cable
- Modem Cable
Boot Sequence

Power On

CPU Wakes up

CPU gets POST order from BIOS

POST
- Check BIOS
- Check Battery
- Check internal Devices (HD, RAM, Ports, Mouse, Keyboard, etc.)

If ok, then find and load OS

OS loads, takes over and loads device drivers, etc. and then the desktop
Common Problems

- Cables
- Keyboards and mice
- Disk Drives
- Overheating
- Power problems
- Electromagnetic Interference (EMI)
- Electrostatic Discharge (ESD)
- Windows errors
- Device drivers
- Spyware/Viruses
Cables
- Loose
- Bent Pins
- Failures
- Out of Ports
- Organization
Bad Mouse
Keyboard doesn't respond properly
CD-ROM/Floppy Drive Issues
Overheating

- Blocked vents
- Dust
- Cooling fans
- Power supply
- Room temperature
- Peripheral overload
Power Problems

- Black Out- Complete power failure
- Brown Out- Power “sags” below acceptable levels causing computer to reboot
- Surges or “Spikes”- Sudden surge of power (i.e. lightning strikes)
Electromagnetic Interference

- Caused by high power sources like motors, high power lines, etc.
- Interfere with communication in some types of cabling
- Causes computer screens to “wobble” or pulse
Electrostatic Discharge

- Static cling
- Environmental causes
- Prevention
Error Messages
Computer displays a disk error or non-system disk message?

Nonsystem Disk error
Device Drivers

- Provide the programs that helps the computer to “talk” to a peripheral
- Common point of failure
- Can be difficult to fix
- Check the manufacturer’s websites for notification of upgrades
Viruses

- Difficult to fix
- Easy to prevent
- Important to understand and be aware of
- Common types
- The best defense
Spyware

- Scourge of the internet
- Placed on your machine without knowledge or (usually) permission
Preventative Maintenance

- Cleaning
- Hard drive
- Updates
Cleaning

- Mouse
- Keyboard
- Box
- Monitor
- Printer
- Others
Hard Drive- Defragmentation

![Disk Defragmenter Window](image)

- Estimated disk usage before defragmentation:
- Estimated disk usage after defragmentation:
Hard Drive- Scandisk
Hard Drive- File Maintenance

- Disk cleanup
- Archiving
- Backups
Recommended Tools

- Compressed air
- Alcohol or screen swabs
- Small flashlight
- Wire ties
Final Thoughts

- Think simple first
- Outside in
- Gather resources
- Document
- Be patient
Resources

- http://www.tomshardware.com
- http://www.more.net
- http://www.microsoft.com
- http://www.gateway.com
- http://www.dell.com
- http://www.cisco.com