Solving Hardware and Storage Issues

Overview

Internal components

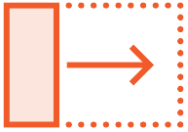- Power

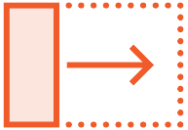- Motherboard

- CPU

- RAM

Storage
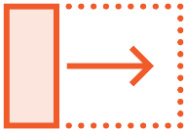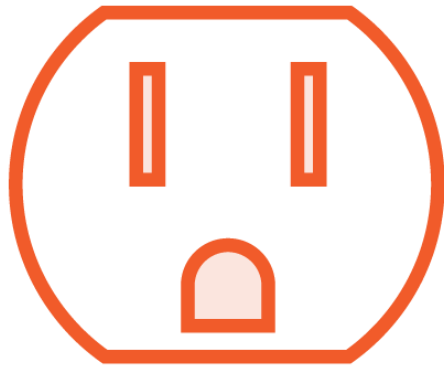
RAID

Power Issues

Power Issues

Smartphone, tablet, laptop, desktop, server, storage arrays, printers

Batteries

Uninterruptable Power Supplies (UPS)

Insufficient wattage
- Consider total PSU wattage
- Consider power draw for all components
  - Especially high-end video cards

Common Power-Related Symptoms

No power on startup

Random reboot/shutdown/ system lockup

Random card/device failure

Power for fans but not other cards/devices

Fan failure - overheating

Tripping circuit breakers upon PC power-on

Solving Power-Related Issues

Replace PSU

Test PSU with a multimeter

Ensure sufficient wattage

Try PSU in a different unit

Try a different electrical plug

Motherboard, CPU and RAM Issues

Common Problematic Motherboard/CPU Symptoms

POST beeps/messages/ light indicators

Blank screen upon boot
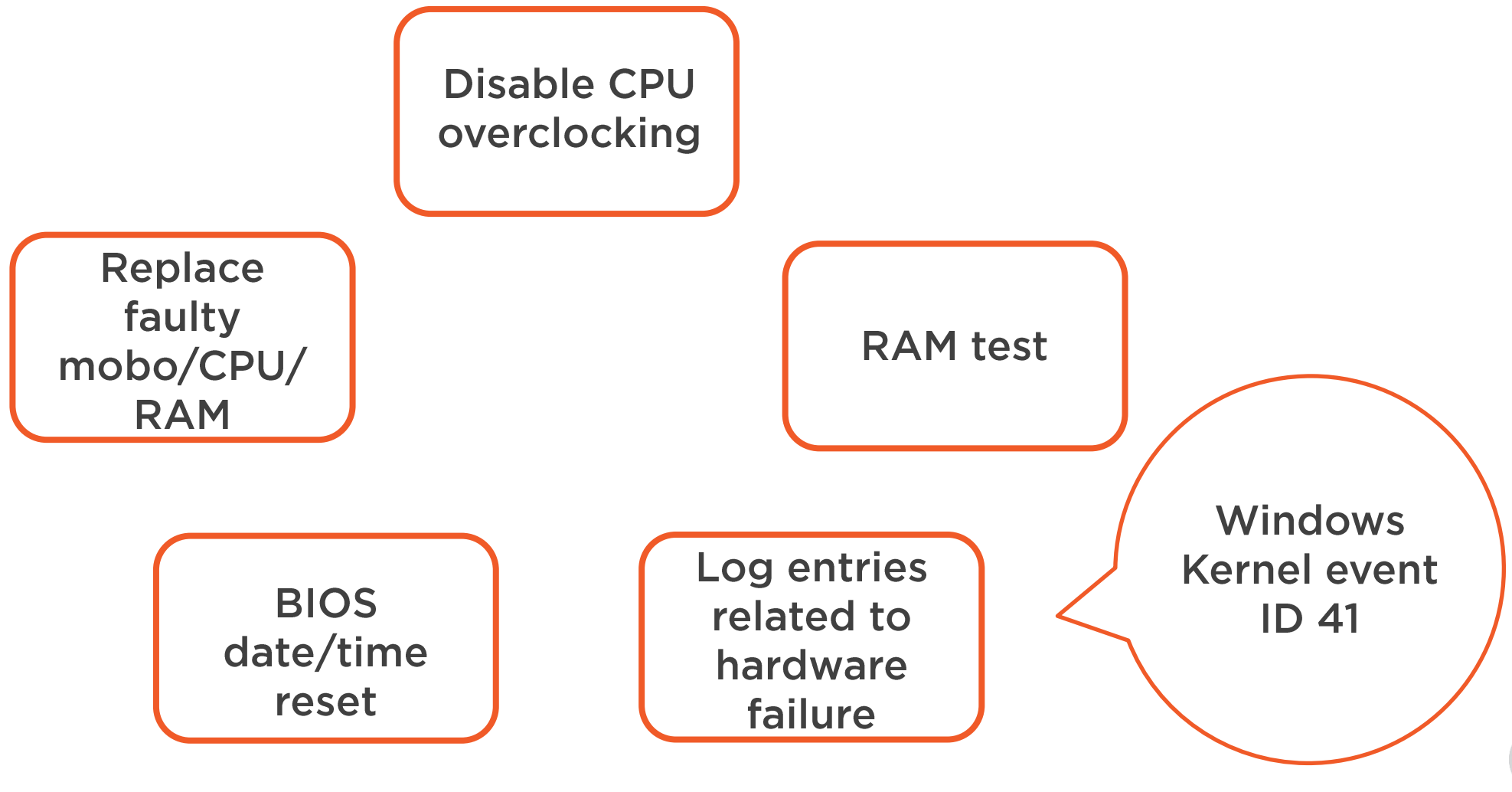
Windows system lockup (BSOD)
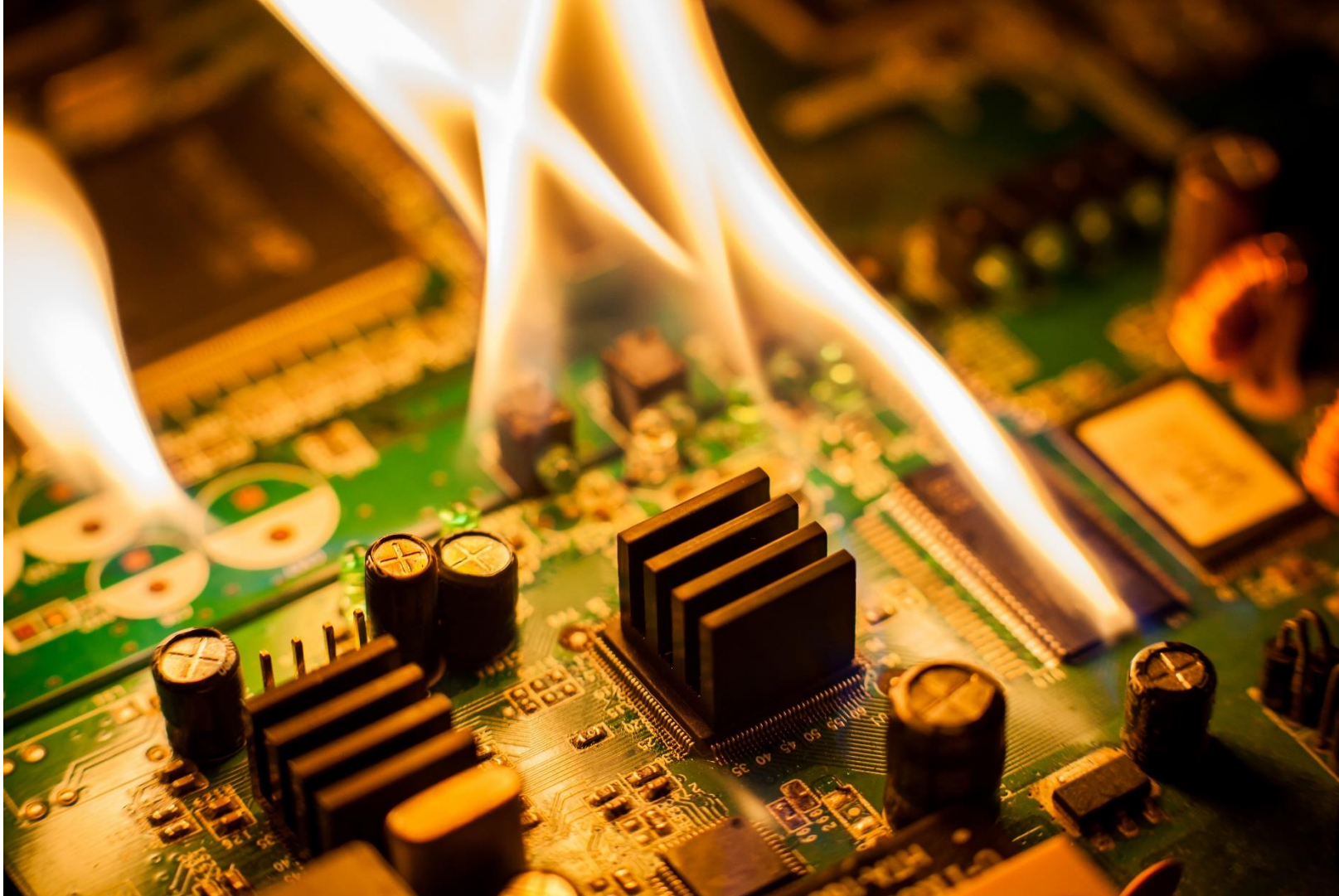
Random reboot/shutdown

CPU overheating

MacOS system lockup (SPoD)

Solving Motherboard, CPU and RAM Issues

Disable CPU overclocking

Replace faulty mobo/CPU/RAM

RAM test

BIOS date/time reset

Log entries related to hardware failure

Windows Kernel event ID 41

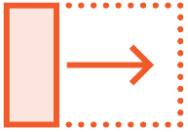# Failed Motherboard

Conducting a RAM Test
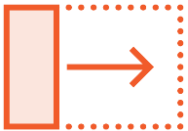
Demo

Run a memory test
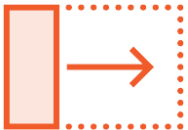
Storage and RAID Issues

Storage – What could possibly go wrong?

Storage media does not last forever – backup your data!

HDDs have mechanical components; they WILL fail sooner than SSDs

Storage issues can be software or hardware related

Common Storage-Related Symptoms

Failure to read or write to disk

Clicking noise

Slower than usual disk performance

Disk drive not recognized
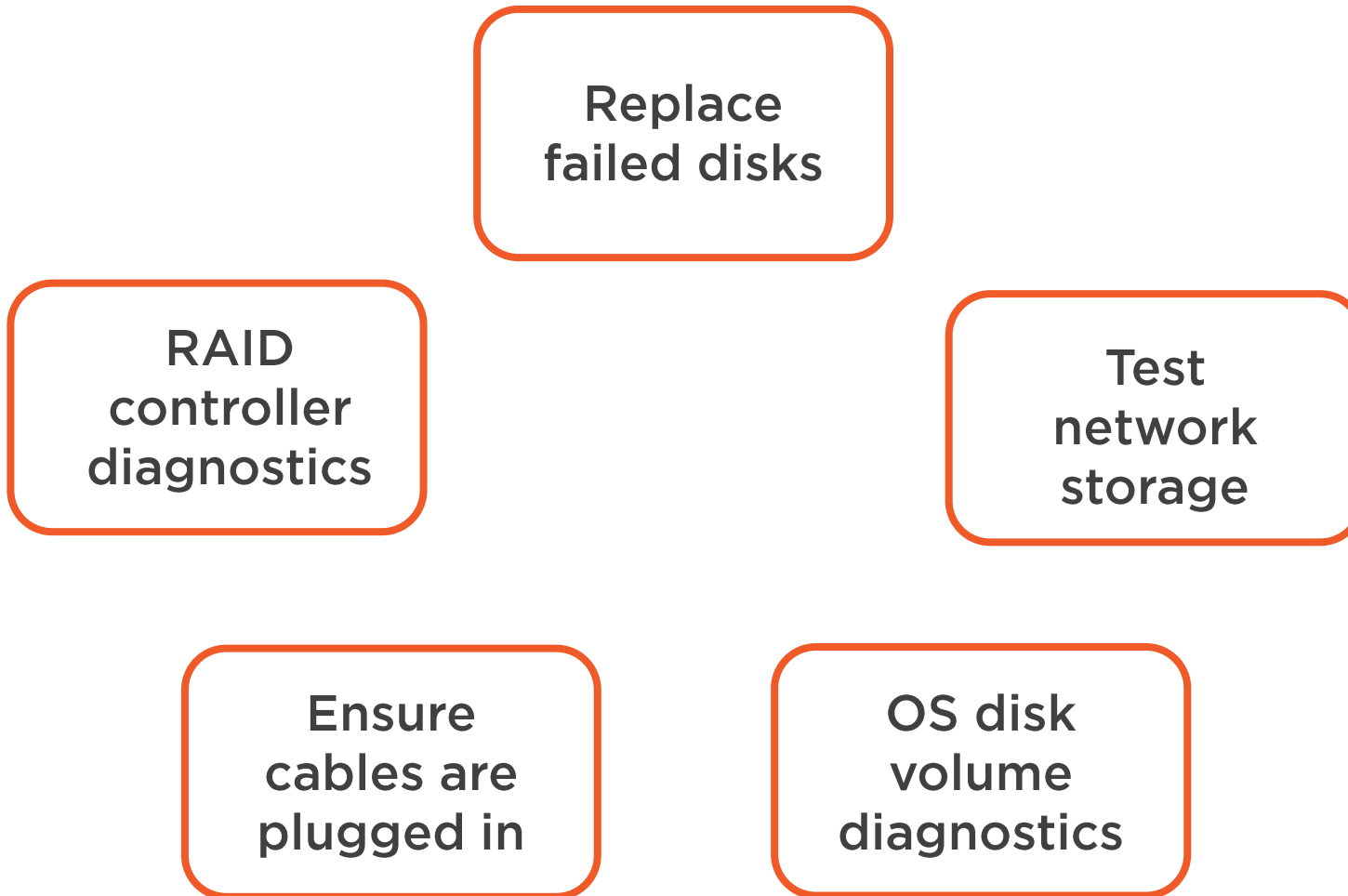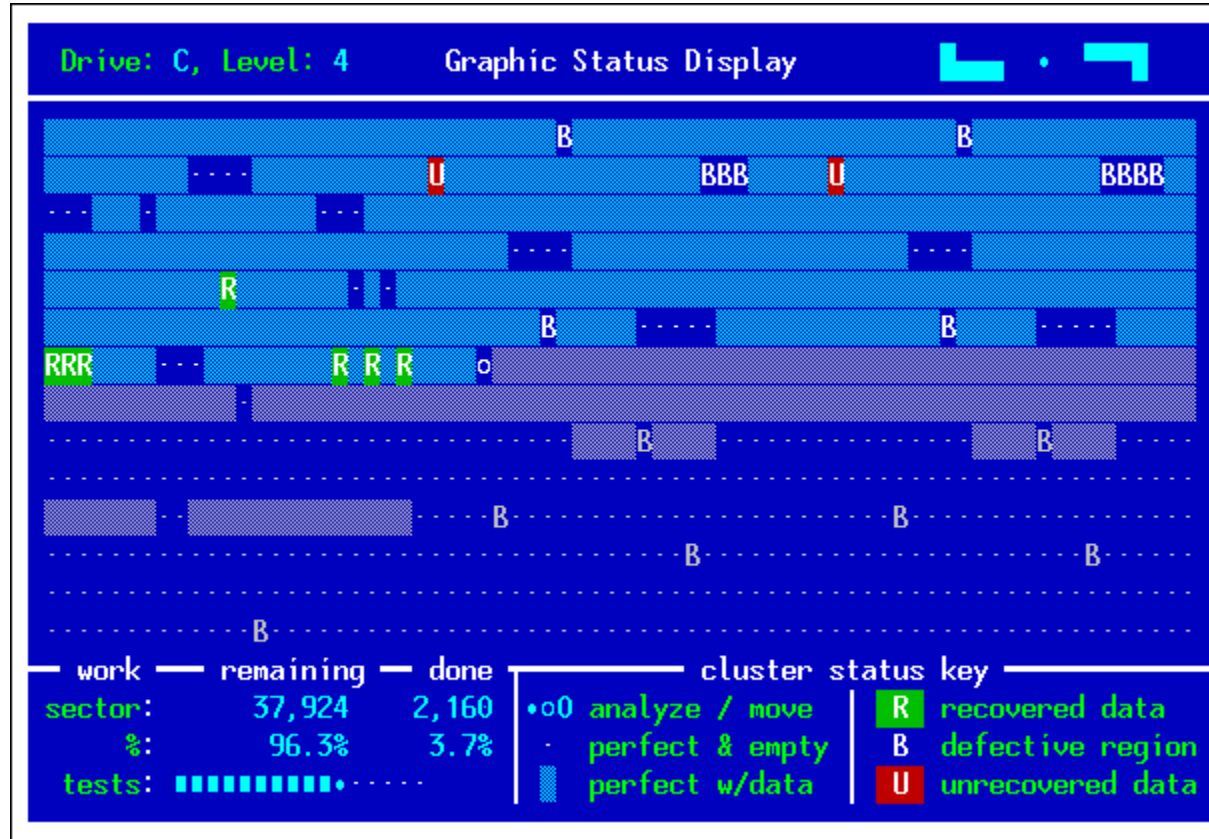
OS not found

RAID not found

Self-Monitoring Analysis and Reporting Techology

- S.M.A.R.T

- Disk drive firmware

- Used with server and disk storage arrays

- Predicts imminent HDD failure

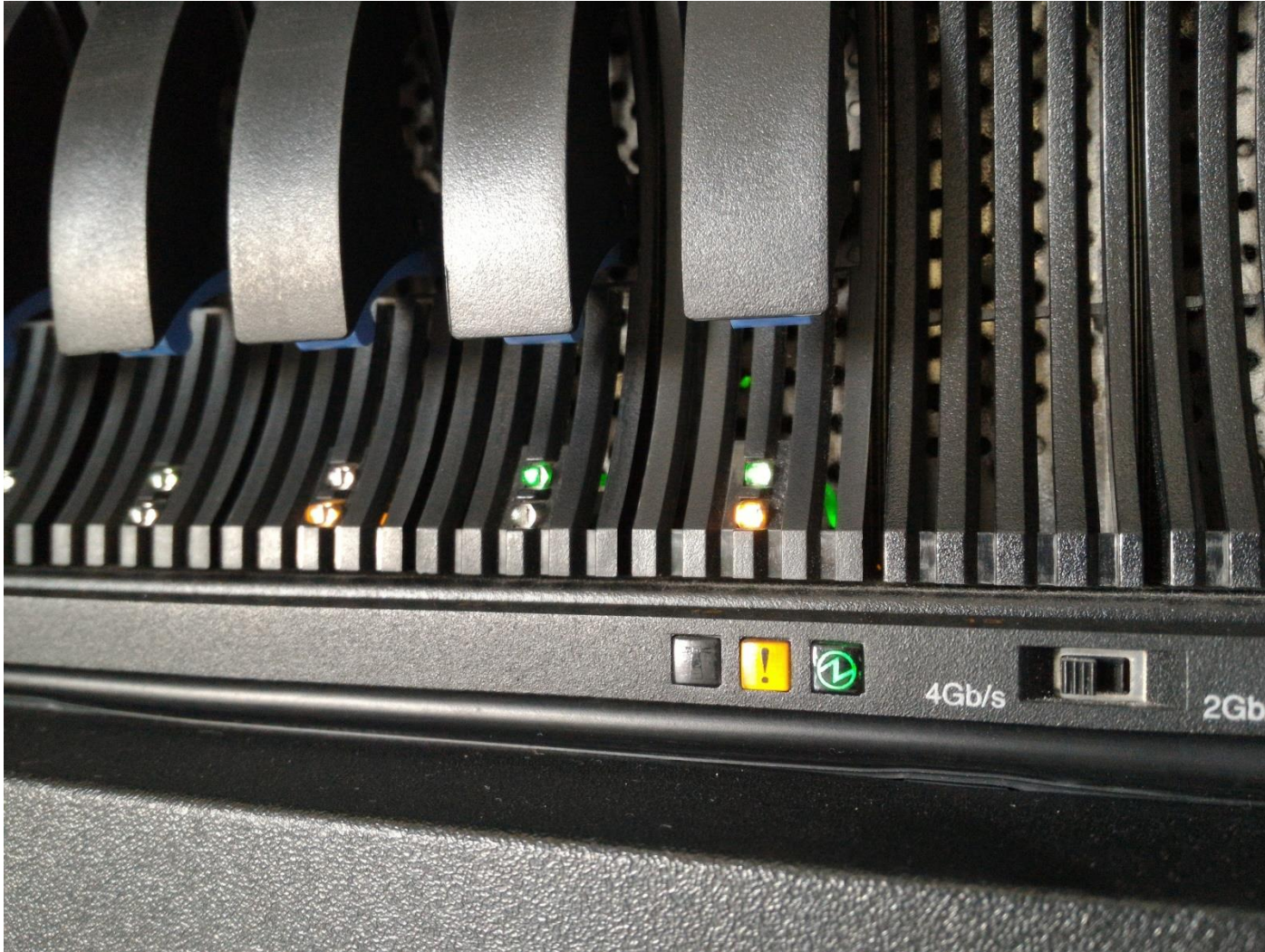- Backup data

Solving Storage-Related Issues

Replace failed disks

RAID controller diagnostics

Test network storage

Ensure cables are plugged in

OS disk volume diagnostics

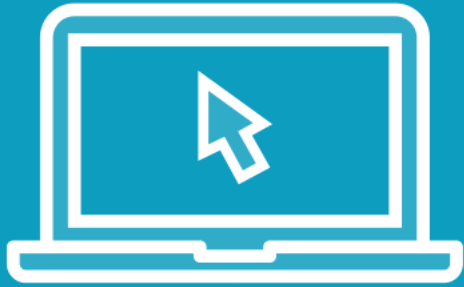# Software-based Disk Scanning Using SpinRite

Screenshot courtesy of Steve Gibson, Gibson Research Corporation

Identifying Failed RAID Disks

Demo

View RAID controller status information

Summary

Internal components
- Power
- Motherboard
- CPU
- RAM

Storage

RAID