

A Troubleshooting Approach

Slow is smooth, and smooth is fast. -- Dale

or

**Dude, you're no Sundance Kid.
Don't try shooting from the hip.**

- Before
 - Documentation:
 - Manuals
 - Take notes: "elog early and often" -- Dale.
 - Install notes
 - Configuration and connections
 - [twenty seven eight-by-ten color glossy photographs with circles and arrows and a paragraph on the back of each one explaining what each one was](#)
[link to song](#)
 - Drawings, picture, diagramming
 - Labeling!
 - Description
 - Vital Statistics
 - Make
 - Model
 - Serial Number
 - Date of Manufacture
 - Vendor
 - Date of Purchase
 - Previous incident reports
 - Expected behavior
 - Theory of Operation
 - Standard Protocols
 - Standard Operating Procedures
 - History of the Install
 - Date of Install
 - Date of Last Known Working
 - Configuration changes
 - Changes to the larger environment
- During
 - Define the problem.
 - Take notes - elog early and often, "even when elog is down". -- Toby
 - How is it suppose to work, what is it suppose to do?
 - What is it doing?
 - What is it not doing?
 - When did it last work correctly?
 - What else is not working?
 - Intermittent or totally broken?
 - Problem metric, reproducibility?
 - When was the problem noticed?

- When did the problem start? (not always when noticed)
- How does the problem coincide with changes to configuration?
- How does the problem coincide with changes to environment?
- Error indicators:
 - screaming users
 - blinky lights
 - red not green
 - messages, texts, email
 - beeps
 - klaxons
 - it's quite ... too quite
- Is there spark? Focus
 - Read prior notes
 - Take notes
 - magic smoke
 - blinky lights
 - cables
 - connections
 - not broken
 - corrosion
 - oxidation
 - power
 - bits
 - ping
 - traceroute
 - host
 - route
 - ifconfig / ipconfig
- Isolate the problem, methods of attack
 - Take notes
 - Bottom Up
 - Top Down
 - Divide and Conquer?
- Step through the problem / equipment / data flow
 - Use known working tools and replacements
 - Start from a know working position
 - Step - reproduce the problem
 - Take notes
 - Step - reproduce the problem
 - Repeat as necessary
- Lifelines
 - Support Services
 - Saint Google
 - RVTEC mailing list
 - Your Team
 - Your Friends
- Followup
 - Take notes
 - What was replaced and how was it broken?
 - Do you need to send it out for repair?

- Update the documentation / diagrams.
- After
 - Same as Before