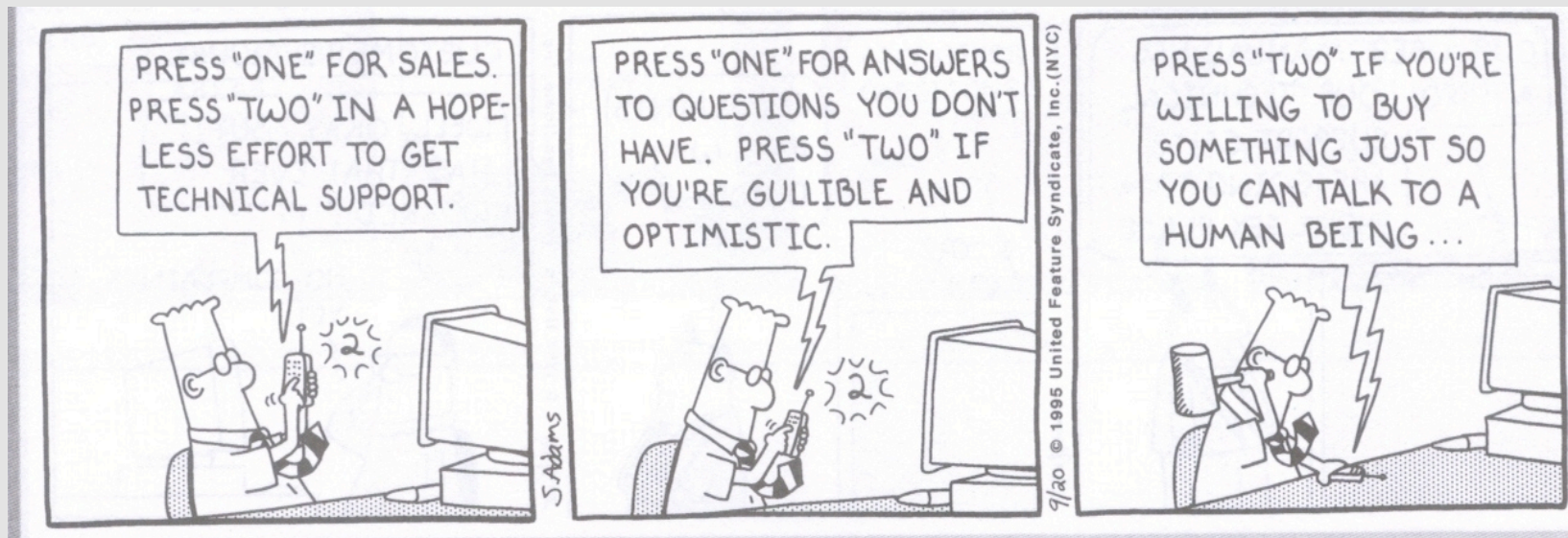


# Do it Yourself System Administration

Due to a heavy call volume, we are unable to answer your call at this time. Please remain on the line as calls will be answered in the order they were received. We appreciate your business and apologize for the delay. Your expected wait time is  $\infty$ .



# DIY System Administration

## Overview

- Overview
  - What I hope to cover:
    - System shutdown/restart procedures
    - Recovery from an outage
      - FDISK – how to perform the recovery operation
    - Identification of properly operating systems
      - System monitoring and troubleshooting
    - General Linux administration
    - Any outstanding questions, general or specific, as they apply to the systems at your ranges...
- Wrapping things up and your questions

# DIY System Administration

## MAC Shutdown and Restart steps DAS Shutdown and Restart steps

- External RAID devices must be up first
  - MAC raids are attached to the INTERACTIVE2 node
    - This node must be completely up before any other system that uses the raid (the admin node does not use the raid.)
  - DAS raids are attached to the SERVER node (on 5-node DAS configurations)
    - This node must be completely up before any other DAS systems (all of them use the raid)
  - 2-node DAS configurations do not use an external raid device, but *<range>*-das1 should be brought up first
    - There may be cross-mounting between the nodes as part of normal operations or for testing purposes.

# DIY System Administration

## Recovery from an Outage

- In general, recovery from an outage should be handled exactly like recovering from a controlled shutdown.
- These steps are documented in the attached handouts and at the online Robohelp website:
  - [http://www.4dwx.org/documentation/kbase/ISSI/WebHelp/4dwx\\_help.htm](http://www.4dwx.org/documentation/kbase/ISSI/WebHelp/4dwx_help.htm)
  - At some times, the systems will fail to boot cleanly due to errors on the disks or in the filesystems (operating system related) or due to no network being available.
    - *See next slide for fix to most common recovery issue*
  - Please check that power, AC, and network connectivity are available before rebooting the systems
  - Check that the switches and external raids are up before proceeding with the recovery
- That should be it, barring hardware failures...

# DIY System Administration

## Recovery from an Outage

- Boot process hangs due to fsck failure and waits at:
  - “Enter root password for maintenance or control-D to continue”
  - This is likely due to the system attempting to write to the hard disks when the system went offline.
- To fix it:
  - Check the screen to find out what file system had the issue
    - Look for something like “/dev/sda3 or /dev/sdb1”
  - Hit the “Enter” key to clear buffer and prep for root password entry
  - Enter the root password (you will see nothing on the console) and hit the “Enter” key
  - You should now be at a command prompt that ends with a “#”
  - The last step in this process is to run the command to fix the filesystem issue. Enter the following and hit “Enter”:
    - /sbin/fsck -fy /dev/sd{disk}{partition} [second filesystem to check]
      - where disk and partition were found in the first step
    - Ex: /sbin/fsck -fy /dev/sda3 /dev/sdb1
  - Once this has completed, type “exit” at the prompt to force the system to reboot properly,

# DIY System Administration

## Are my systems operating properly?

- There are 2 methods of watching systems to determine if they are working properly:
  - System monitoring (scheduled and automated)
    - The tools for this type of monitoring are primarily OS based and will be used by NCAR to watch your systems remotely
    - We intend for the ranges to have access to a web page that will display current and historical trends for all of the 4dwx systems
    - For the time being, alerts and warnings will be sent to NCAR admins only with possible future configurations notifying local personnel
  - General monitoring tools (immediate and manual or scripted)
    - These are OS level tools that any user can execute to look at the status of the currently running system
    - They will not provide extensive historical details, but can provide current status and an immediate history of the system
    - These commands can be put into “cron jobs” so that the output can be emailed to local/remote personnel in an automated fashion.
- Let's take a look at some general tools any user can execute

# DIY System Administration

## Are my systems operating properly?

- General system monitoring commands:
  - df – displays the disk partitions mounted on the system, the amount of “disk free” space, and a percent usage
  - free – displays the total and used memory and swap available on the system
  - uptime – displays the time the system has been up since the last reboot and the 1, 5, and 15 minute load averages for the system
    - load averages should be viewed as the number of jobs attempting to run on the system. A high number indicates a large demand on the CPUs, fewer resources, and a “bogged down” slow system.
  - ps – display a listing of the processes running on the system
  - top – displays a fairly concise summary of the previous 4 tools that updates every 5 seconds
  - ping – attempts to send a packet to another system on the network
- Please use the first 4 commands only if you intend on setting up any automated scripts to return information via email

# DIY System Administration

## General Linux Administration

- General Linux Admin
  - General commands
    - ls, cp, mv, cd, vi
    - file, date, tar, who
    - ssh, scp, rsync, ftp, ping
    - kill, snuff, killall
    - &, fg, tail, head
    - uname, clear, grep
  - Troubleshooting commands
    - df, du, top, uptime, free
  - Advanced commands
    - vmstat, route, mpstat

# DIY System Administration

Wrapping it up and sealing it shut

- Comments
- Questions
- Complaints
- Compliments
- Assertions
- Queries
- Announcements
- Suggestions
- Ponderings
- Posts
- Details
- Affirmations
- Denials
- Delusions
- Deceptions
- Criticisms
- Congratulations
- Quotes
- Quips
- Wonderments

The End. That's all folks!