

OCF System Administration

Decal

Advanced Topics in System Administration

CS 198/98

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Some Warnings

- ◆ Material in this lecture is at a significantly more complicated than the rest of the course.
- ◆ Don't worry if you don't understand all the details just try to get the big picture.

Motivation

- ◆ We have presented you a very sanitized story on how to setup and manage servers.
- ◆ In real life, sysadmins must be knowledgeable about all sorts of crazy things.



Case Study 1: File Systems /Data Integrity

Problem:

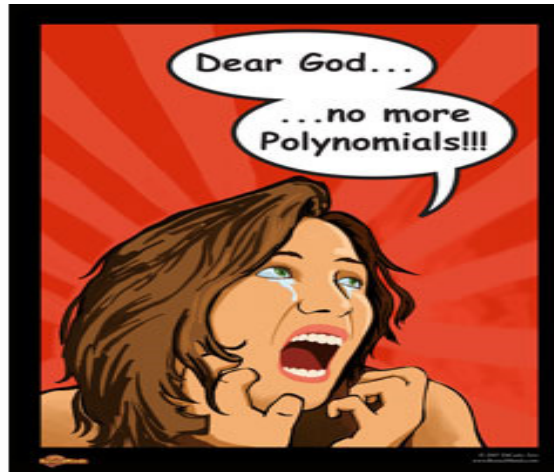
- ◆ Large amounts of very important data
- ◆ Uptime is a priority
- ◆ Potential hardware or software failure

Solutions?

Case Study 1: File Systems /Data Integrity

Solution (RAID):

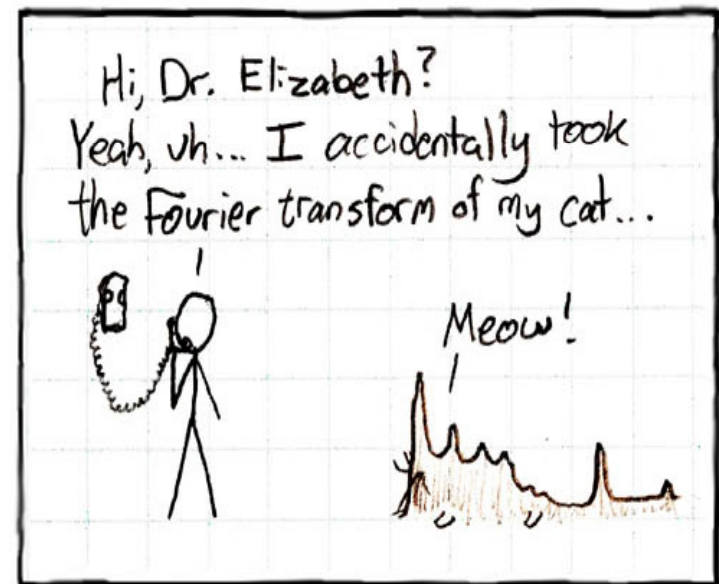
- ◆ **Redundant Array of Inexpensive Disks**
- ◆ Introduce smart redundancy in data, relies on simple number theory
- ◆ Can be implemented in either software or hardware



Case Study 2: Wireless Networks

Problem:

- ◆ Majority of network nodes will be wireless
- ◆ Speed vs. Reliability
- ◆ Security
- ◆ Unpredictable connections
- ◆ Noise and Interference



Case Study 2: Wireless Networks

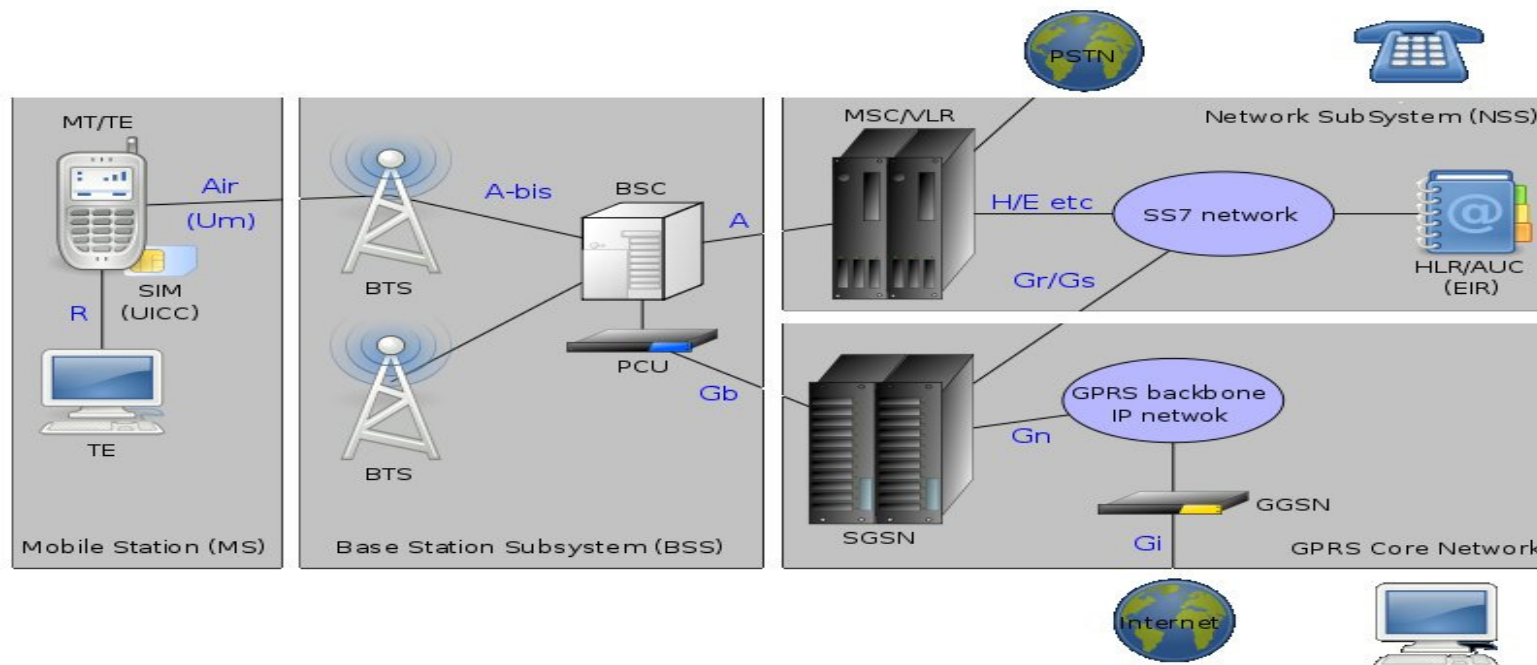
Solution 1 (**WLAN**):

- ◆ **Wireless Local Area Network** (recall Networking Lecture)
- ◆ Use of multiplexing technologies like **Orthogonal Frequency Division Multiplexing**
- ◆ Error Coding
- ◆ Short range, high speed

Case Study 2: Wireless Networks

Solution 2 (GSM):

- ◆ Global System for Mobile Communications



Case Study 3: Clusters

Problem:

- ◆ “Cloud” based computing puts computational strain on servers.
- ◆ Would like to pool resources together
- ◆ Hide this from user

Case Study 3: Clusters

Solution (Clustering) :

- ◆ High Availability
- ◆ Beowulf
- ◆ Grid

If you are interested:

<http://www.kerrighed.org/>

