DRAM Errors in the Wild: A Large-Scale Field Study

Offense:
Clint Sbisa
Sankalp Kohli
Contribution

- DRAM errors don’t depend on cluster size.
  How is the study different from previous studies.
  How many machines they used?

- Large data analysis
  Is this there only work?
  Others companies can do it too.

- Obvious results with no use!!
Usefulness!!

- What is the architecture of the Processors?
- What is the size of the DIMMS?
- Manufactures of these DIMMS?
- Age of the platform?
Insufficient Data Set

- Memory Utilization Data
  Memory Allocation cannot be used.

- Physical Addresses
  Why are they not logged?

- Only one source of data
  The dataset used is only from Google.
Insufficient DataSet Contd..

- Electrical and Magnetic interference
  One of the most important factor which is ignored.

- How many bits were corrupted in each error.

- Cannot distinguish hard and soft error.
  A soft error can cause a DIMM to be replaced.
Problems in DataSet

• Untracked Errors
  Errors which cannot be tracked by counters.

• Motherboard Errors
  How do you differentiate between DRAM and motherboard error?
  How to do this?
Problems in DataSet Contd...

- System Crash
  How is data collected in case of crashes.

- Scrubbing Rate
  The exact scrubbing rate is not given.
  This can affect the number of errors and influence the results
Questions

- ECC is costly. Alternatives? Fault Tolerance!!
- Only used IBM chipkill.
- New generation DIMMS. No Graphs
- Definition of soft and hard error.