Lies, Damn Lies, Statistics and Benchmarks

KHARDUNGLA
TOP
18380 FT
WORLD's HIGHEST MOTORABLE ROAD
16 TF HIMANK 54 RCC
WILD ANIMALS ARE OUR PR
HERITAG
THEIR PRESERVATION IS
NATURE HAS BLESSED OUR AREA WITH A WONDER
WILDLIFE (FLORA, FAUNA & AVI-FAUNA) OUR WILD ANIMA
OF OUR LAND, BESIDES MAINTAINING THE ECOLOGICAL
OF WILDIFE HAS SPECIAL SIGNIFICANCE IN OUR A
RECKLESSNESS IN THE PAST, SOME UNIQUE SPECIES ARE
EXTINCTION.
IT IS THEREFORE, THE SACRED DUTY OF ALL TO PRESE
HERITAGE OF OURS & ACCORD FULL CO-OPERATION T
PERSONNEL IN THIS CONNECTION.
DEPARTMENT OF
WILDLIFE DIVISION.
WILD
(LAH

The nature of the problem

Humans can't make sense
of large numbers of numbers

That's a feature

We all know Statistics

- 87.5% of all statistics are made up on the spot
  - This one was.
- You can use statistics to prove anything
  - Including the truth
    - Sometimes
- Statistics are hard, let's go shopping
  - What numbers would you like to buy today?

Understanding the data

Not all data is the same

- You have to ask yourself
  - What does this data represent?
  - What information can be extracted from this data?

What can data represent?

- Baselines
- Progressions
- Comparative numbers
- Nothing at all
- Worse, incomplete data can be misleading.

Representing data

- The representation is as important as the data itself.
  - People evaluate the representation, not the data.
- Charts are good.
  - Choosing the right chart is important.
- Not all representations should be charts.
  - Some should be maps.
- Sometimes the right way of reporting is a simple table of data.

Benchmarks

- The sole purpose of a benchmark is to provide a marker for comparison
  - This is a single number
- Operations people don't need benchmarks
  - We need detailed statistics
  - Operations is often about tradeoffs
  - Not everything can be reduced to a single number.

Running your own benchmarks

- Performance must be measured on the same hardware as production.
- Figure out the bottleneck of the system.
  - CPU
  - Disk I/O
  - Memory
  - Network bandwidth
  - Network latency
  - Data structures/algorithms.

The result of any benchmark is typically a curve which closely follows the curve

$$1-e^{-x}$$

Benchmarking tools

In no particular order:
sar, top, iostat, vmstat, dstat, tcpdump, vnstat, mrtg, cacti, htop, free, iptraf, ntop.

Oh Hai!
You can haz queschun?