NLANR AMP

Lessons Learned

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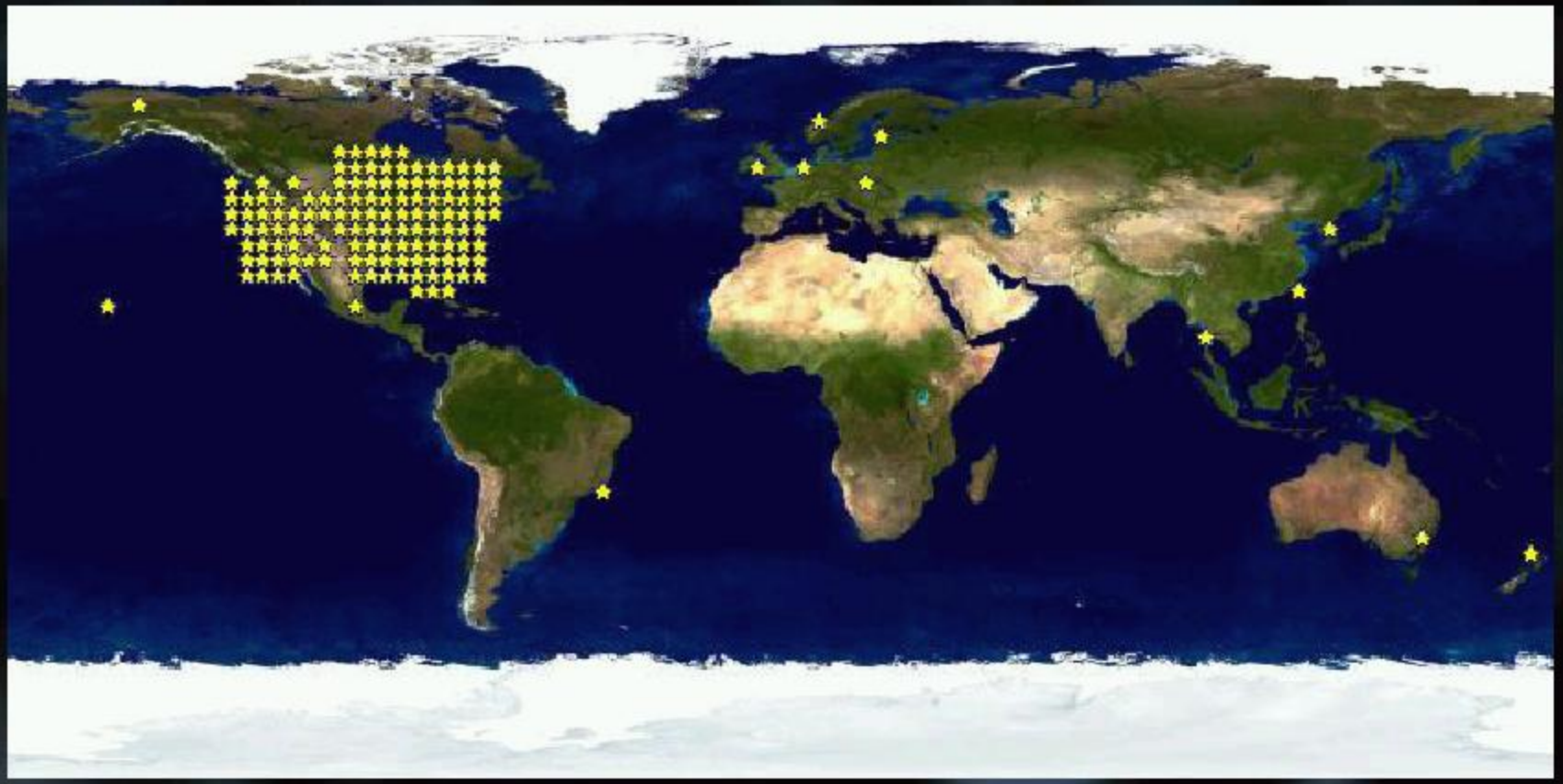
Outline

- Intro to the existing NLANR AMP mesh
  - (optional)
- The Lessons

Introduction the the NLANR AMP Mesh

- AMP is the active measurement component of NLANR's NAI project
- Monitors are inexpensive FreeBSD based boxes

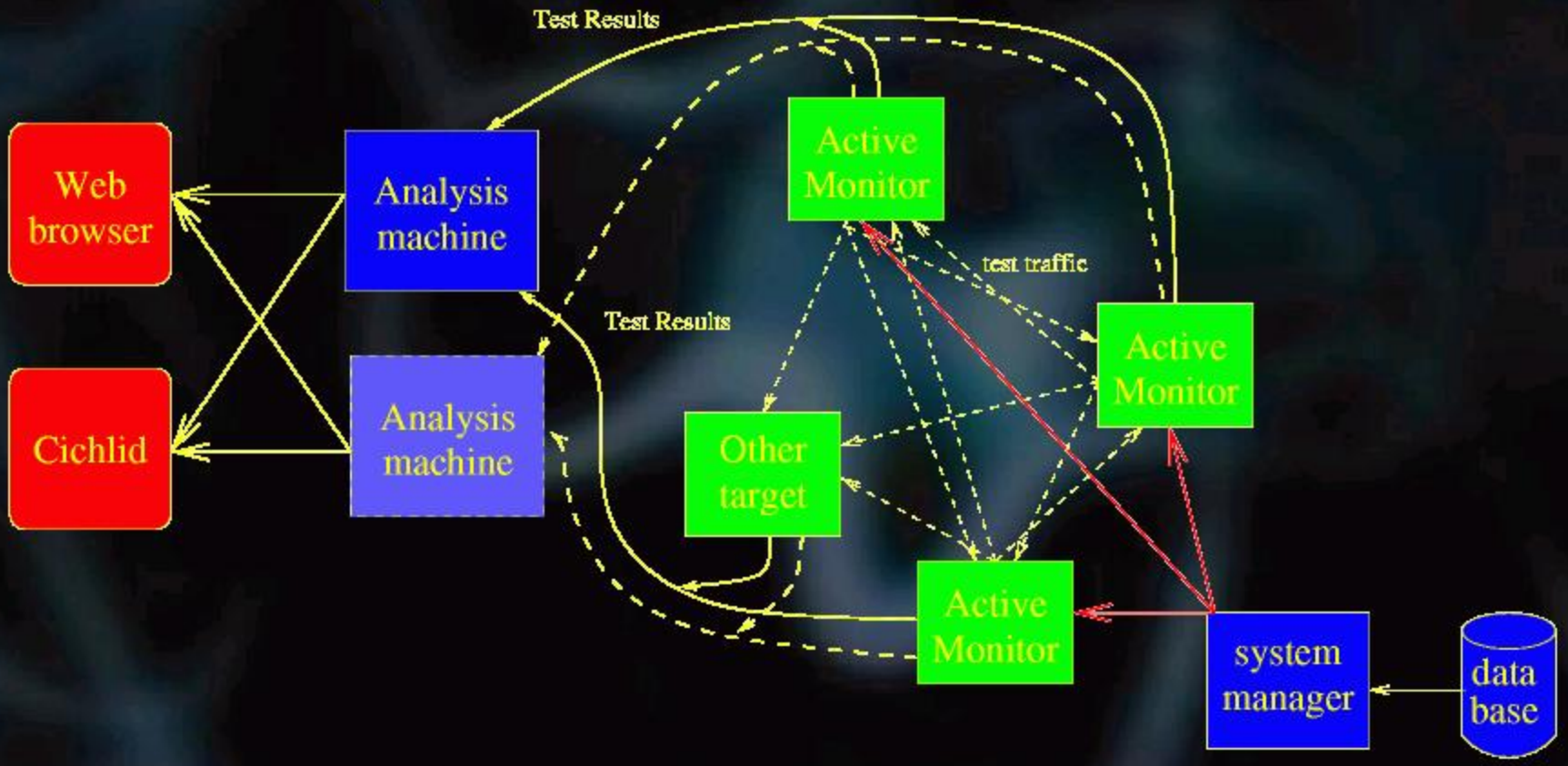
Introduction



- Aim to deploy
  - a monitor at all HPC sites in the US
  - one monitor in each other country with an HPC connection to the US
- Currently 151 monitors deployed

AMP System Architecture

- (Mostly) Full mesh of measurement probe machines
  - Some destination only machines



- Central data repository and visualisation machines
- Data available through
  - Web pages
  - An NLANR developed 3D animation tool (Cichlid)
  - Raw Data (web and webservices) Interface

Re-implementation

People would like to replicate AMP:

- in other countries
- within their own network
- on a campus
- in a distributed computing environment

But:

- Original AMP wasn't designed with portability in mind
- The code base was experimental

Highlights of the AMP package

- Packaged (tarball, GNU configure, make, make install, CVS etc)
- More tests and test options
- Modular -Can easily add new tests
- More flexible scheduling
- Open SSL based certificates, CA and encryption
- IPv6 aware
- Better web interface

Lessons

- Cost/Complexity per monitor vs Depth of Deployment Tradeoff
  - c.f. Metcalf and/or Reed
  - 1ms is ushally enough, RTT will mostly tell the story
  - the more samples the less history
- Large scale infrastructure is difficult but doable
  - 96/4 rule
  - solid state
- Reputation matters if you want people to deploy your box
- There is a big demand for active measurement
  - lots of network operators
  - the more general you try to be the less likley you'll fly
- Humans can be useful too

More Lessons

- There's never enough time for analysis if you do infrastructure
  - there's never the infrastructure if you do analysis

- It's hard to be right all the time
  - mostly right is easy but not very useful

  - "High Precision Traffic Measurement by the WAND Research Group", Cleary, J.G. and Graham, I. and McGregor, A. and Pearson, M. and Ziedins, I. and Curtis, J. and Donnelly, S. and Martens, J. and Martin, S. IEEE Communication Magazine. Mar 2002, 167-173

- Diurnal variation cancellation is important
  - event detection and network tomography need it to work well

- If it's not on the web forget it

- Good coders are gold