



## Network Tool Analysis Framework (NTAF)

---

**Brian L. Tierney**  
([bltierney@lbl.gov](mailto:bltierney@lbl.gov))  
Jason Lee, Martin Stoufer  
Lawrence Berkeley National Laboratory

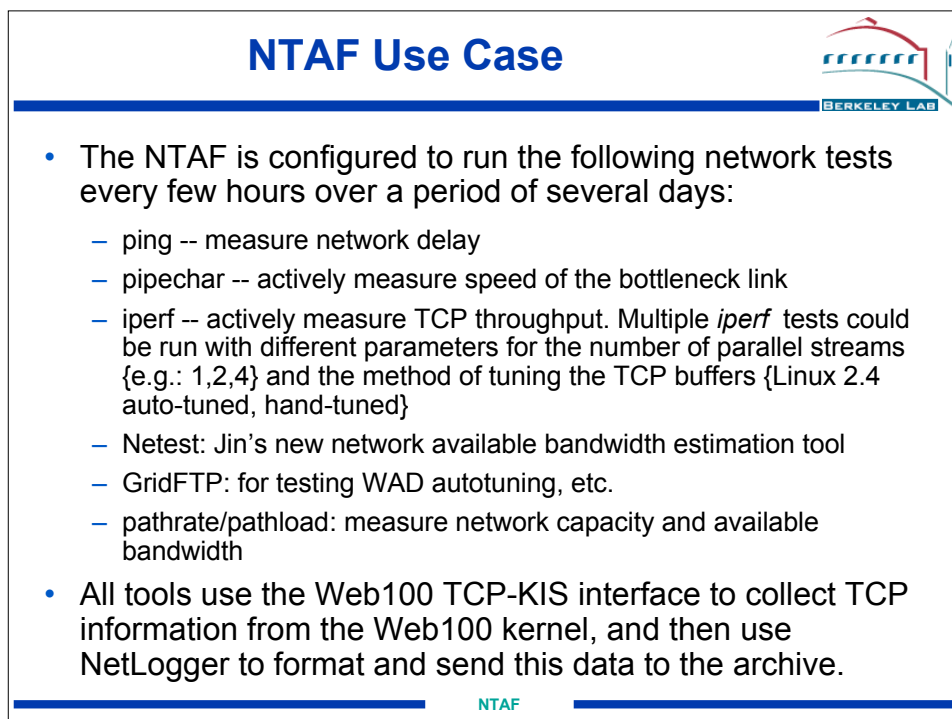
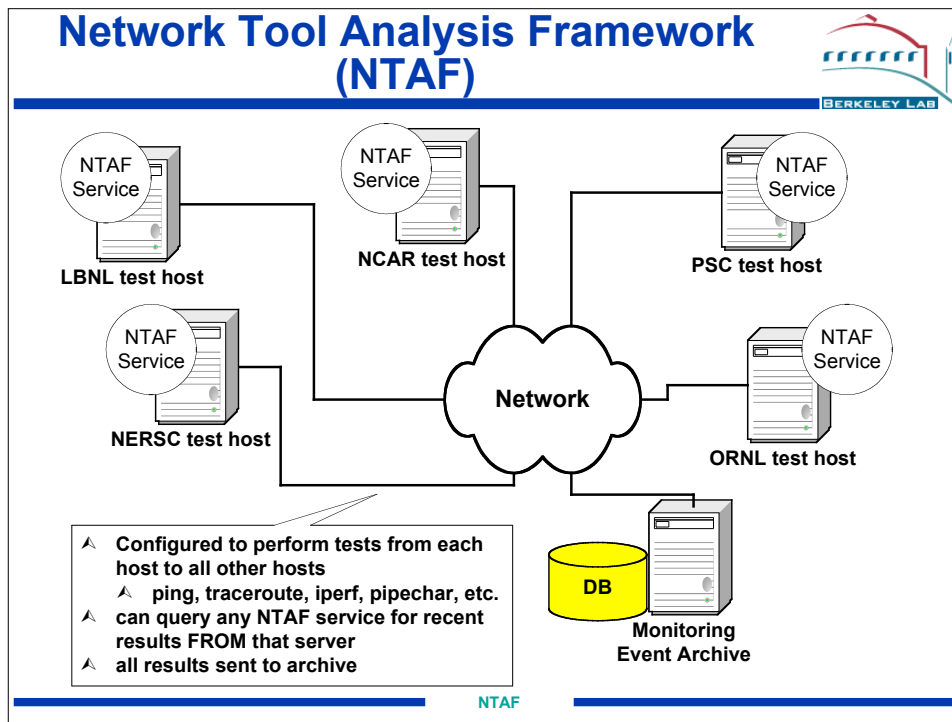
NTAF

## Network Tool Analysis Framework (NTAF)



- Configure and launch network tools
  - measure bandwidth/latency (*iperf*, *pchar*, *pipechar*)
- Collect and transform tool results into a common format
- Publication interface (GMA/OSGI)
- Save results for short-term auto-tuning and archive for later analysis
  - compare predicted to actual performance
  - measure effectiveness of tools and auto-tuning
  - provide data that can be used to predict future performance
- Use NetLogger to format and send data to archive

NTAF



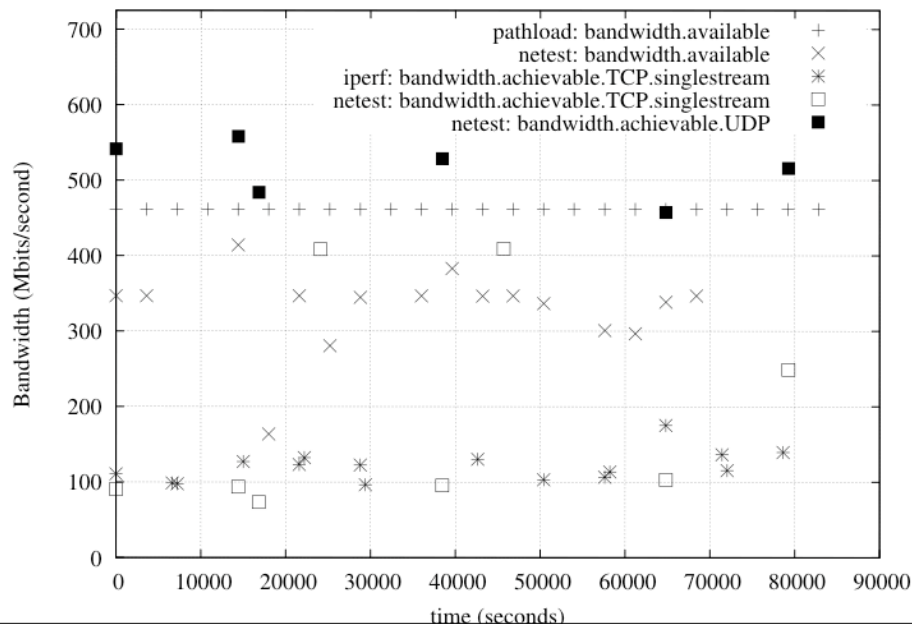
## Use Case (cont.)



- Analysis based on this test configuration includes the ability to, for **ANY path** being monitored, do the following:
  - compare WAD tuned throughput to hand-tuned throughput.
  - compare *iperf* bandwidth with application bandwidth.
  - determine the advantage, if any, of parallel data streams, using both hand-tuned and autotuned (Linux 2.4-tuned) TCP.
  - analyze the variability of the results over time
  - compare *pipechar* - *pathrate* to see which is most accurate.
  - measure the impact of tuned TCP streams on non-tuned streams

NTAF

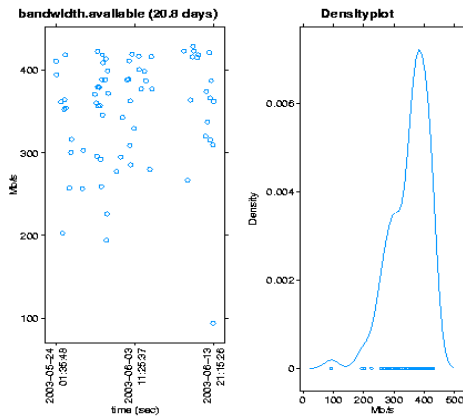
## Sample Results



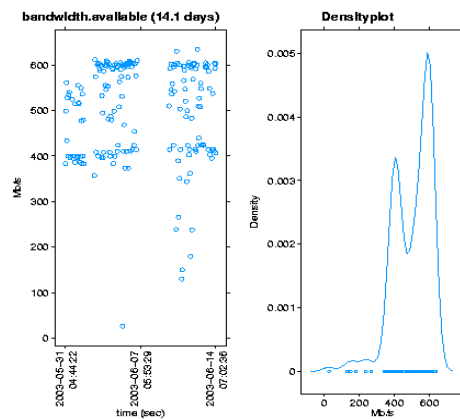
## Sample Results



Tool A



Tool B



NTAF

## The Problem



*What to believe as the most optimum observation.*

Use case:

Out of the last N observations of Network characteristic X, determine will yield the best results for decision  $\square$ .

NTAF

## Proposed Addition



In concert with the Measurement Methodology,  
a Measurement Rank is included.

### •Motivation;

- . Different logic models may be used in a single test.
- . Tests may generate different modes of results.
- . Guaranteed reliability of a test to generate results.

NTAF

## Proposed Addition



<u>Measurement Rank</u>	<u>Measurement Methodology</u>
Primary	FSE (URI?)
Secondary	Stochastic Estimation
Tertiary	Outside Source

The Rank value will be well defined, while the Methodology  
will be as descriptive as the test designer sees fit.

NTAF

## Justification



A measurement methodology does nothing to describe how reliable the observation is.

There is no apparent order of importance between unique methodologies.

NTAF

## Conclusion



- . Enumeration of the Measurement Rank will be the responsibility of the test developer.
- . Quicker access to better data from a relational data stores.
- . The end user or Network Entity provider will decide to use optimal observations.

NTAF

## For more Information



- <http://www-didc.lbl.gov/net100/>

NTAF