



## Network Tool Analysis Framework (NTAF)

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Net100

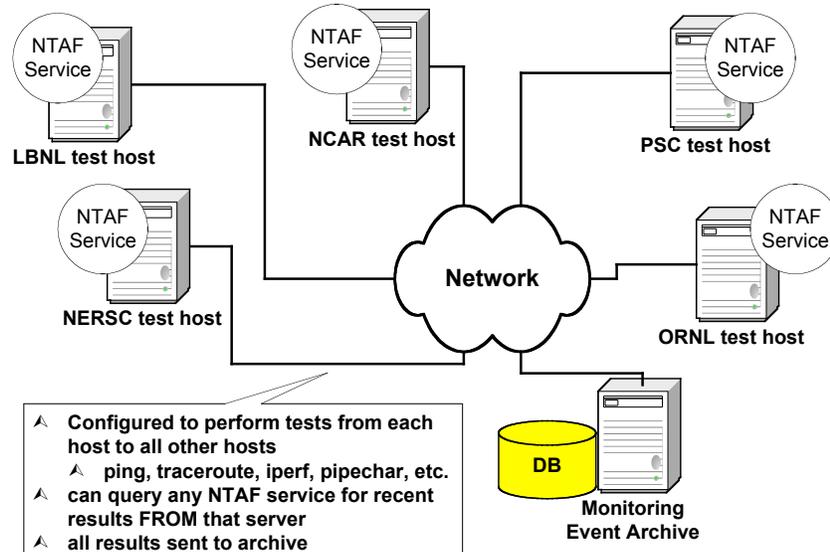
## Network Tool Analysis Framework (NTAF)



- Configure and launch network tools
  - measure bandwidth/latency (*jperf*, *pchar*, *pipechar*)
  - augment tools to report Web100 data
- Collect and transform tool results into a common format
- 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
- Uses NetLogger to format and send data to archive

Net100

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## NTAF Use Case



- The NTAF is configured to run the following network tests every few hours over a period of several days:
  - ping -- measure network delay
  - iperf -- actively measure TCP throughput. Multiple *iperf* tests could be run with different parameters for the number of parallel streams {e.g.: 1,2,4} and the method of tuning the TCP buffers {Linux 2.4 auto-tuned, hand-tuned}
  - Netest: LBNLs new network available bandwidth estimation tool
  - GridFTP: for testing WAD autotuning, etc.
  - pathrate/pathload: measure network capacity and available bandwidth
- All tools use the Web100 TCP-KIS interface to collect TCP information from the Web100 kernel, and then use NetLogger to format and send this data to the archive.

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## 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

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## Sample Web Interface



NTAF Database Query

Select source, destination, limit, display

Source	Destination	Limit	Display
ORNL	PSC	3 days	General plot

Events

- bandwidth.available
- bandwidth.capacity
- bandwidth.achievable.TCP.singleStream
- bandwidth.achievable.TCP.multiStream

Submit

Events from ORNL to PSC

Bandwidth comparison

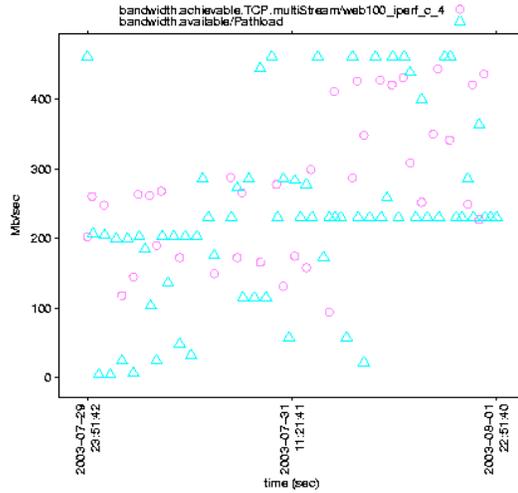
bandwidth.achievable.TCP.multiStream/web100\_perf\_e\_4

400

# Sample Web Query Results



Bandwidth comparison



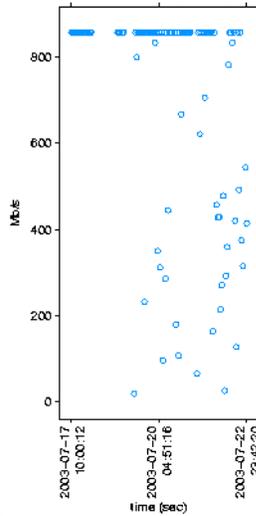
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# Sample Results

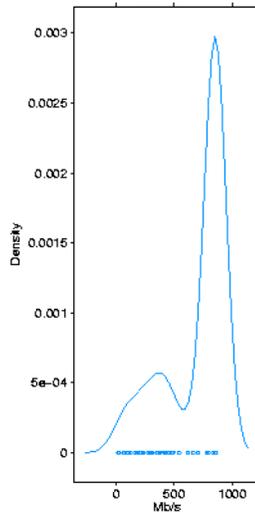


## Events of Pathload from LBL to ORNL

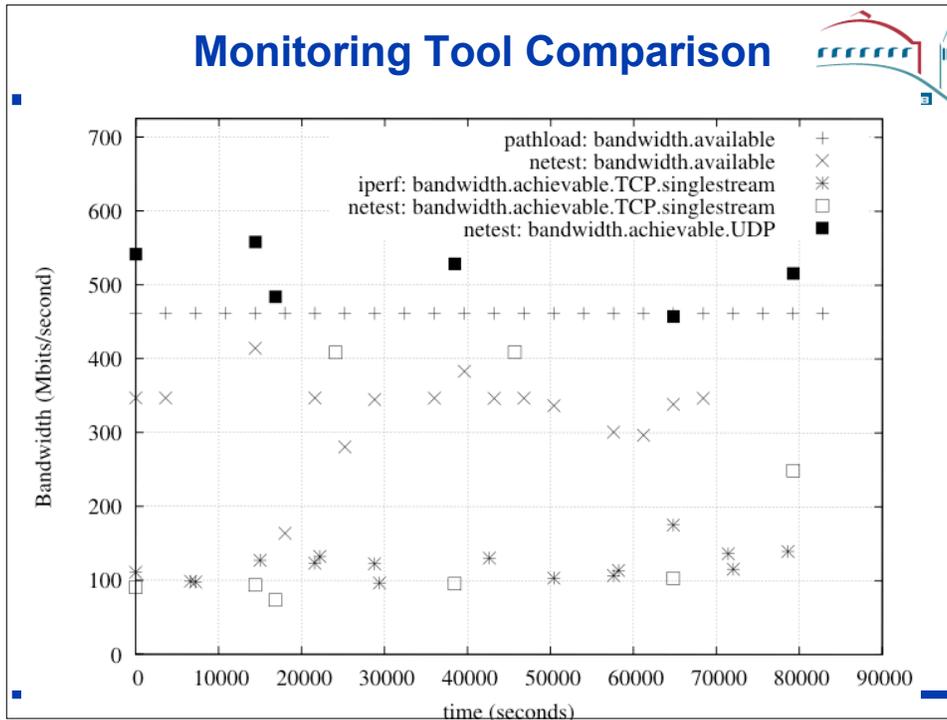
bandwidth.available (5.6 days)



Densityplot



## Monitoring Tool Comparison



## For more Information



- <http://dsd.lbl.gov/NTAF/>
- Email: [BLTierney@lbl.gov](mailto:BLTierney@lbl.gov)