

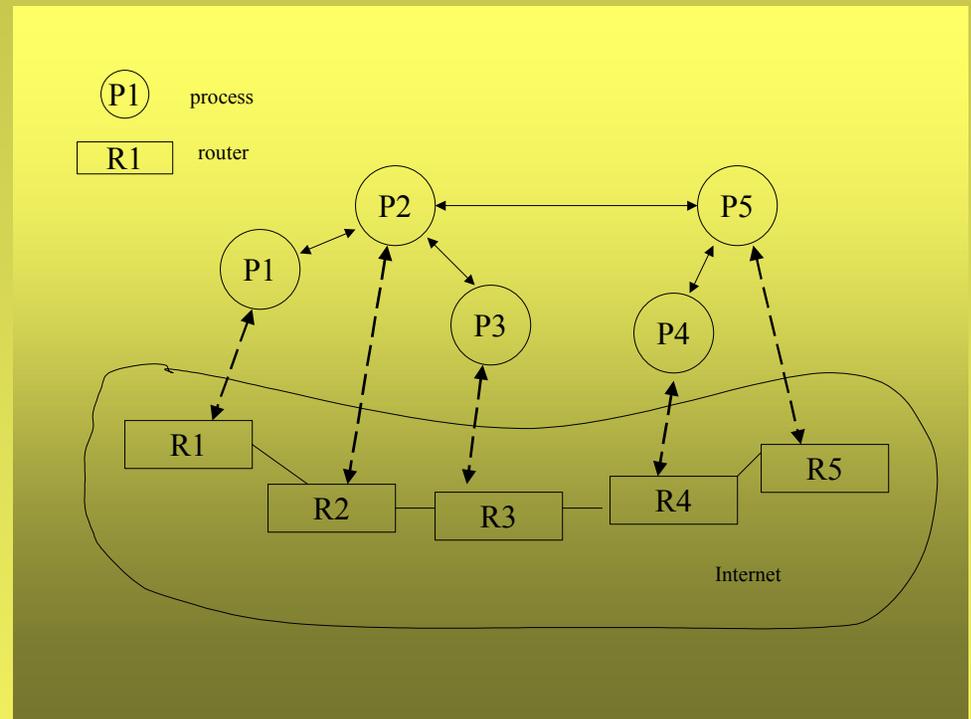
Analysis of End-to-End Delay in Computer Networks

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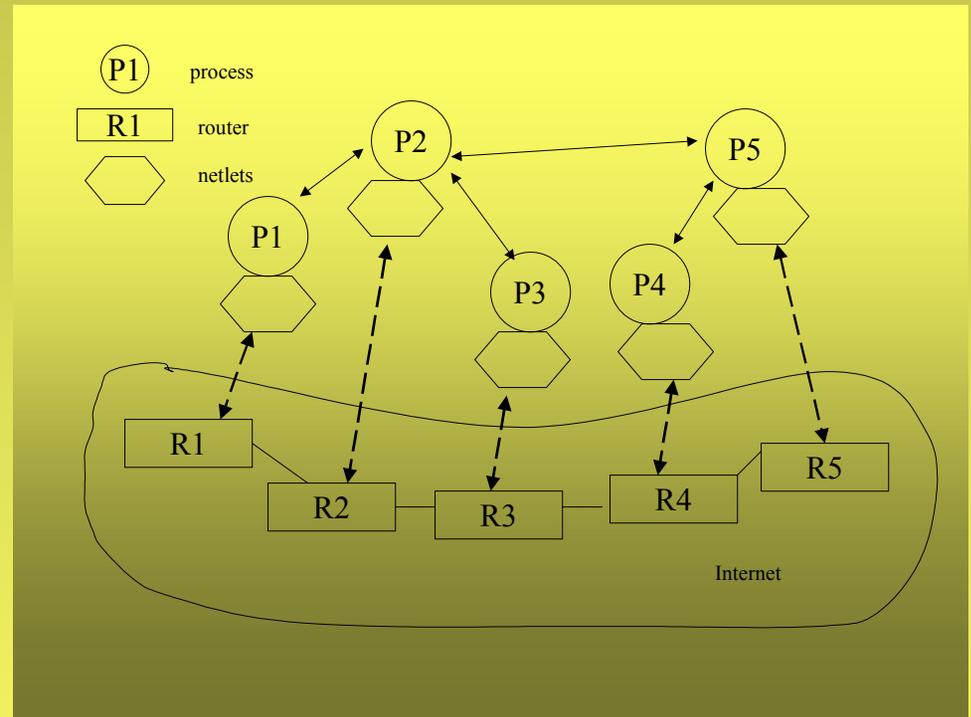
Present Day Networks

- Very little quality of service guaranteed
- Internet packets routed according to best-effort mechanism
- Once a packet is sent very little can be done about how it is sent
- Process-to-process communication achieved as peer-to-peer mechanism
- Parallelism in networks not taken advantage of



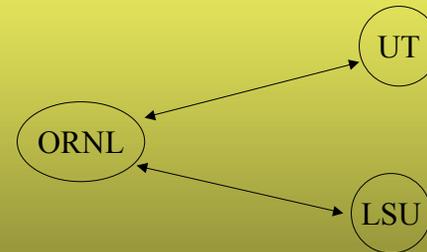
Netlets

- Process-to-process communication handled through netlets which run as daemons on the hosts
- Netlets collect measurements, compute optimal paths and route messages to ensure probabilistic end-to-end quality of service
- Netlets use both configuration and state of network



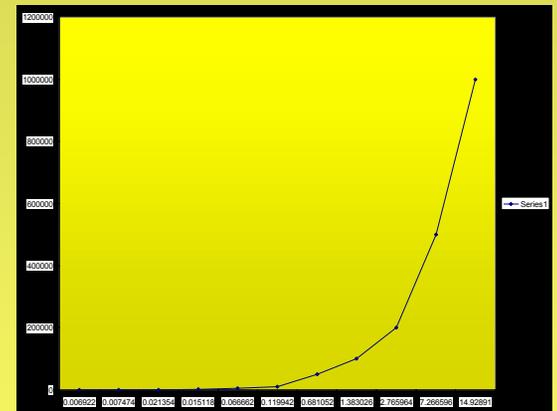
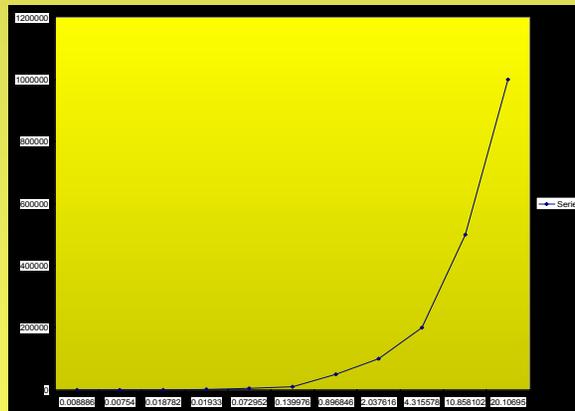
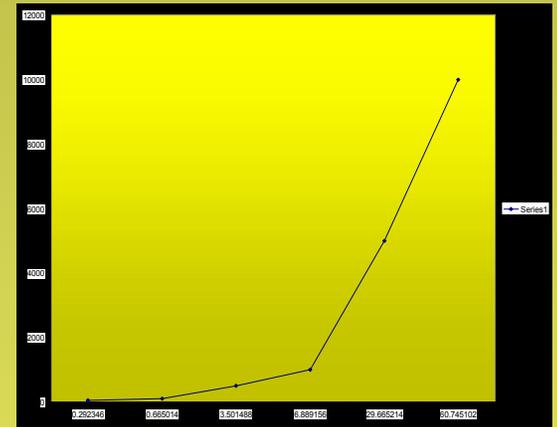
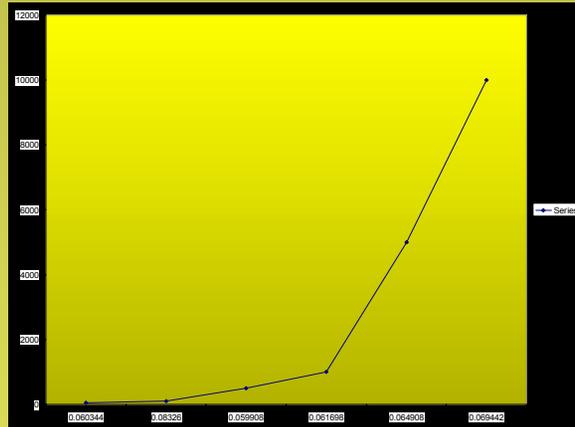
Network Measurements

- Packet distribution size essential to ensure maximum speed of data transfer
- End-to-end delay computed between several hosts using different data transfer sizes.



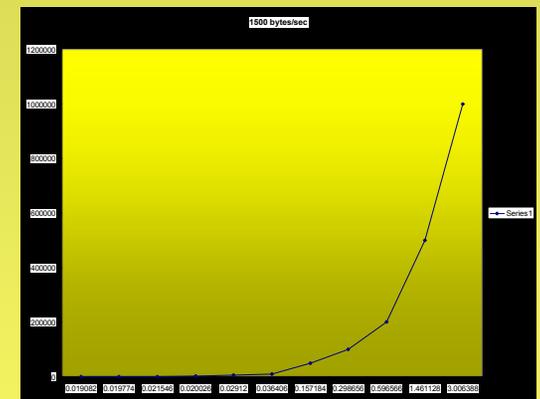
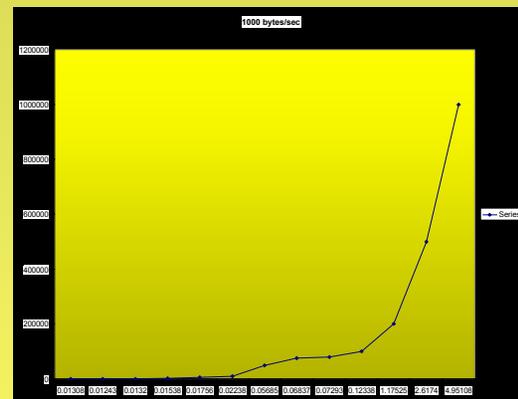
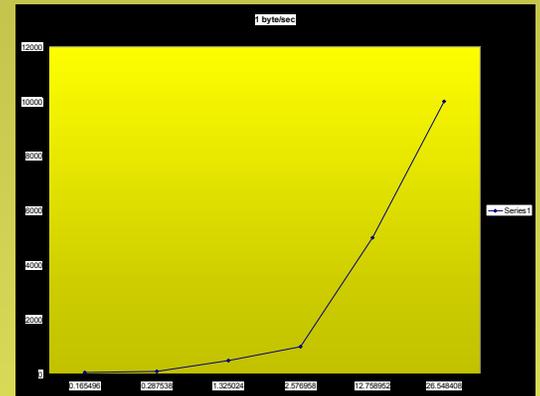
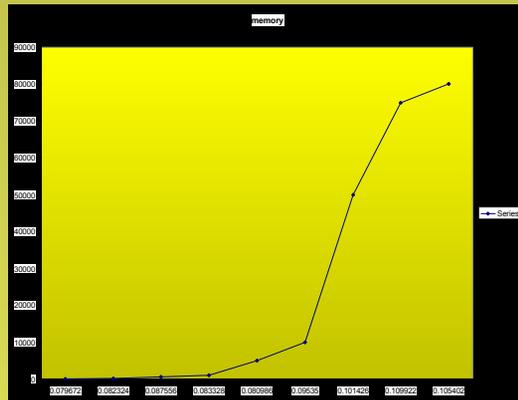
Network Host

- End-End delay
- Client and server on the same network but different machines
- Data transfer rate vs. time graph plotted



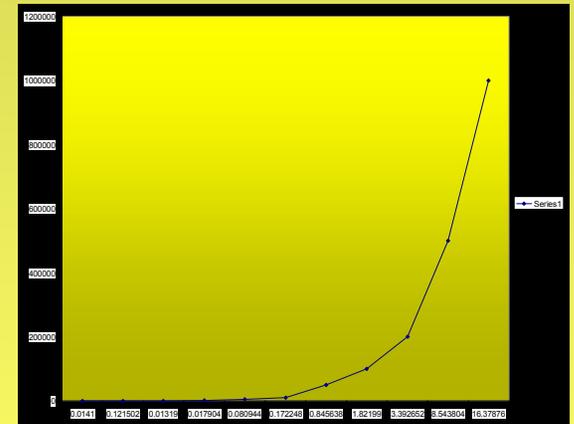
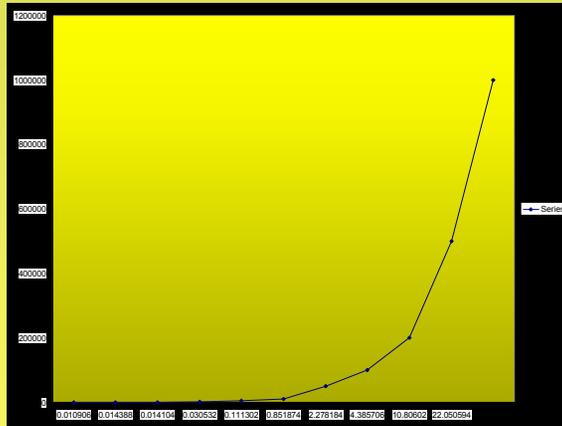
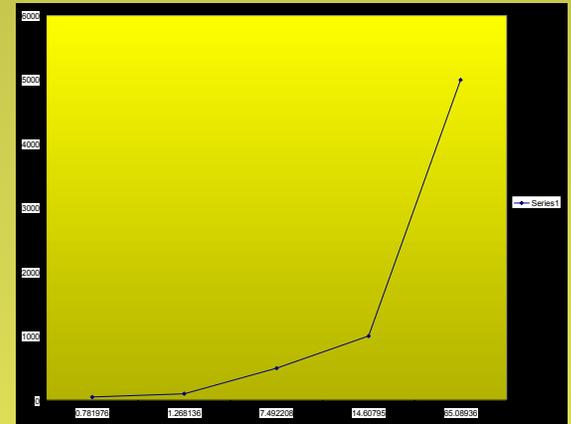
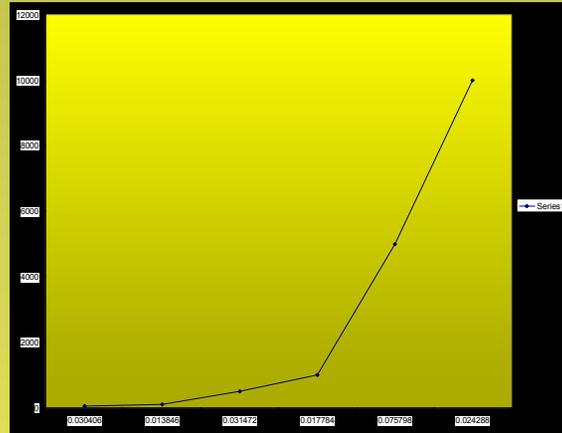
Local Host

- End-End delay
- Client and server on the same machine
- Data transfer rate vs. time graph plotted



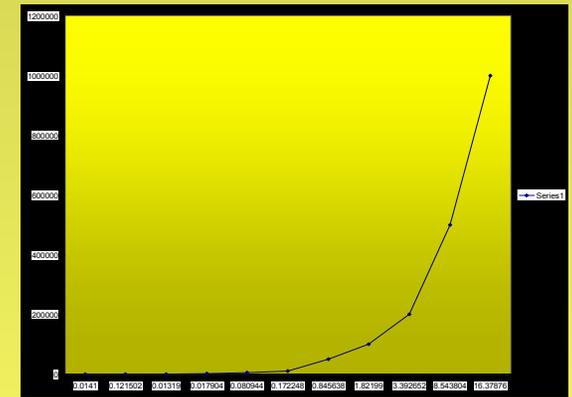
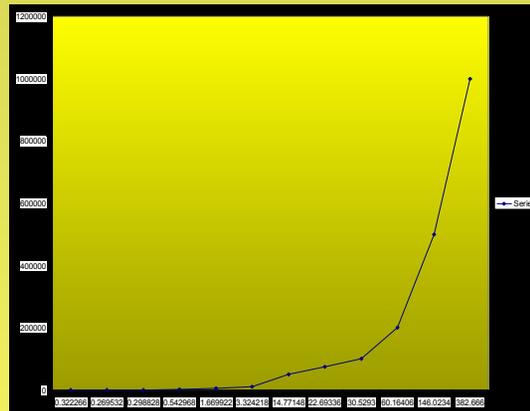
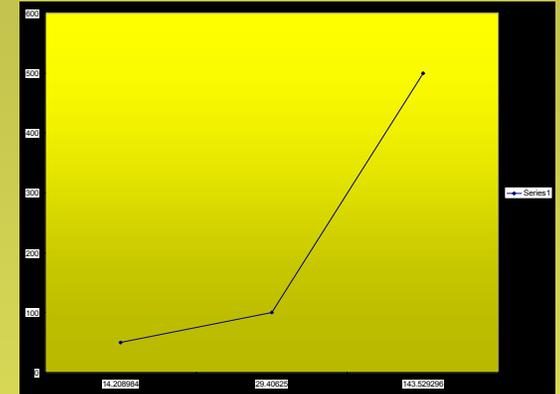
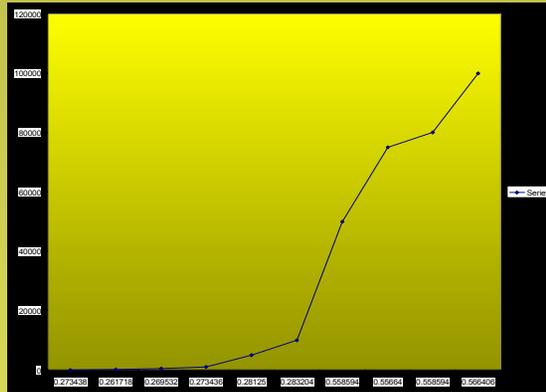
Remote Host-UT

- End-End delay
- Client at UT and server at ORNL
- Data transfer rate vs. time graph plotted



Remote Host-LSU

- End-End delay
- Client at UT and server on LSU
- Data transfer rate vs. time graph plotted



Conclusion

- Best results attained at data transfer rate of 1500 bytes i.e. capacity of ethernet
- Higher value of data transfer rate shows irregularities in terms of time measurement and unpredictability in terms of data delivery
- Netlets act as middleware i.e. work between the application and the network
- Netlets perform all the networking tasks needed to achieve the end-to-end performance

Continuing Work....

- Analysis of End-to-End delay measurement between two hosts connected by netlet routers
- Message break up and sent on different routes to ensure minimum end-to-end delay

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