Session 1: Technology Development

August 15

NSF Workshop

What problems are we trying to solve…

With our network simulation and modeling tools?

- The primary focus is on research, including research in network management, configuration tools, congestion control, routing, security, QoS, web and other application-level infrastructures, possibly the interactions of large adaptive networks applications, etc.

Multiple simulators?

- It is clear that a single simulator for the network research community would not be desirable.

- One of the goals is for an architecture where it is easy for researchers to add their own components.

- NSF could encourage research in simulation technology to promote interoperability in network simulators.

Simulation technology needs advancement.

How do we increase the confidence from our results?

- Validation and verification.
- Increasing the critical user base.
- Research results from simulators still holding when carried over to the real world.

What are the properties that we want from our simulation tools?

- Scalability,
- Interoperability (composing elements from different simulators),
- Extensibility,
- Heterogeneity within the simulator,
- Different layers of abstraction,
- Usability.

For what network research problems are simulator a useful tool?

- Congestion control;
- Defense about denial of service attacks, viruses, and worms;
- Wireless (Manet, routing, mac protocols, transport protocols over wireless)
- QoS,
- Tradeoffs between security and effciency (e.g., information passed from on end to another),
- Routing (Manet, MPLS-based routing).

- Would simulator tools be useful for exploring replacements for BCP?

Best Current Practice Scenarios

- The NSF could promote the development of Best Current Practice scenarios for simulations and test-bed experiments.

- After Best Current Practice scenarios for congestion control research, they could also be developed for routing research and other areas.

- Evaluating the BCP scenarios includes evaluation tools with a measurement component, i.e., the distribution of connection sizes and round-trip times.