Towards an IETF IP Provider Metrics Effort

Guy T. Almes

Advanced Network & Services

Context: Growing Complexity of the Internet

- The Size/Complexity of each Internet component network grows exponentially
- The number of separate Internet component networks grows similarly
- Applications vary in their demands
- Demanding applications span multiple component networks

For today:

- Background
- Review of progress since Danvers
- Discussion of technical/operational needs for IP Provider Metrics, particularly from a European perspective
- Discussion of guidelines for IPPM effort

Criteria for IP Provider Metrics

- Concrete and repeatable
- No bias for identical technology; understood/fair bias for non-identical
- Useful to users/providers in understanding the performance they experience/provide
- Avoid inducing artificial performance goals

Hierarchy of Metrics

- Vague, gut-level concept: e.g., delay
- Precise, but possibly not measurable, concept: e.g., delay of 3000-byte packet from a to b
- Precise, measurable, repeatable concept useful for ‘standard’ metrics

An Initial Set of Needs for Metrics

- Path performance
  - Delay
  - Expected flow capacity for a single application
  - Expected aggregate flow capacity
  - Reliability
  - Delay, packet loss *as they enable flow control*
  - Delay jitter *as it enables flow control*, *multicast*

Needed Metrics, continued

- Routing stability/robustness
  - End to end availability
  - Quickness of recovery
  - Stability
  - Coverage
  - CIDR Effectiveness

Needed Metrics, continued

- DNS performance
- Security of infrastructure
- NOC responsiveness

Existing Tools

- traceroute
- ping
- ttcp
- routing logs
- traffic logs

Examples of New Tools Needed

- Capacity measuring tool that doesn't swamp production traffic
- Long-distance AS-path analysis tools
- Better instrumentation of TCP

Relation to Emerging Infrastructure

- Potential use of NAPs as locus for placing measurement tools

Benefits

- To users, understanding when to hold the provider's feet 'to the fire'
- To providers, knowing how better to communicate with:
  - Users
  - Vendors
  - Competitors

Administrative Issues

- For the present, an effort within the Benchmark Methodology WG
- Reorganize the IPPM mailing list
- Meet at each IETF
- Possible meetings between IETF
- As we evolve, consider a separate WG

Typical Agenda

- Evolve consensus on needed metrics
- Share results on tools that measure these metrics
- Share results on applications of these tools
- Keep the community mindful of the best practices