Uncovering Differences in Backbone Networks

Lindsey Poole  Vivek Pai - Princeton University
Ming Zhang  Ratul Mahajan - Microsoft Research
Challenge

• Uncover differences in backbone ISP performance
  • Help customers to make peering decisions
  • Create incentives for ISP performance improvement
• In reality, hard to quantify performance
  • What are the right metrics?
  • How do we obtain information?
State of the Art

• Service Level Agreements (SLAs)
  • Typically within an ISP’s network
  • Not related to end-user application performance
  • Comparison among ISPs is difficult

• Third-party systems
  • Broadband
    • CompareISPs.com, ISP-connections.com
  • Backbone
    • Keynote
Netdiff Goals

• Relevant to customers and applications
  • Measure end-to-end path
  • Target destinations of interest
  • Allow query customization

• Fair comparison across ISPs
  • Account for size and geographic presence

• Helpful to ISPs
  • Internal vs. external metrics
  • Expose bad points of presence (PoP)
Netdiff Methodology
Netdiff Deployment

• Measurement harness deployed on PlanetLab
  • 300+ sites
  • 700+ nodes
• Measuring 18 backbone ISPs
  • AT&T, Sprint, Level3, BT...
• Active since Feb 2007
  • 15 minute measurement cycle
• Web query interface
  • http://www.netdiff.org/