

One Internet – Living together

Or Can't we all just get along?

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Growing number of P2P systems

- Powerful model based on end-systems' give-and-take
- Tons of interesting applications – data sharing, voice-over-IP, video streaming, ...
- Wide-range of sizes – from 100x to millions
- Overall – ~70% of Internet traffic worldwide

Most adopt an overlay approach

- Assuming zero knowledge of underlying infrastructure
- Each independently probing its environment
 - To identify better paths or route around problematic links
 - To pair up with nodes that are close
 - To find good hosts to replicate content,
...

Independent measurements

- Impact accuracy of measurements
- Limit scalability, number & variety of such systems
- Architecturally hard to defend
- Fundamentally unsustainable

Grand challenge – Sustainable scalability for large-scale systems

- Approach – 3R for the Internet
- Examples
 - Reuse CDNs ' net views to reduce P2P net costs
 - Recycle P2P traffic to create an early warning system for network anomalies
- Some obvious open issues
 - Identifying reuse/recycle opportunities
 - Define viable economic, incentive models
 - Security for providers/adopters of recycle views