Yallcast Research Topics

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Future Work
(Research and/or Development)

• Lots and lots of applications
• YIDP: Nat boxes, dynamic IP addresses, no domain name, etc.
• Tree forwarding issues:
  – Pushback
  – Fair queueing and priority queueing
  – Drop policies, etc....
Future Work

- Cluster (IP multicast) related:
  - “Reliable” transport: “yRMTP”, “yMRTP”
  - Kegs over clusters
  - Head election algorithm
  - Thin or no return channel (satellite, cable)
  - Larger clusters (admin scoped)
Future Work

• Content naming issues
  – More than just sequence numbers? Or leave “advanced” naming to app?
  – When to form new group versus sending new content over existing group---meta-group? (to manage multiple related groups)
  – Content types: spigot, bucket, keg, others?
Future Work

• Gross asynchrony:
  – policies for end-hosts (how long to stay in group, which groups to stay in, etc.)
  – policies for server-hosts (same questions, different answers)

• Neighbor aliveness overhead

• General work on looping algorithms
Future Work

• Effect on ISPs
  – Billing
  – Bursts of activity

• Security
  – Content integrity (strong and weak)
  – Group membership
  – New denial-of-service?
Future Work

• Tree configuration
  – Fan-out, diameter, fairness (of fan-out)
  – Neighbor policies
  – Different access speeds (put fatter members near core? form multiple groups?)
  – Other (put senders near core, receive-only members further out?)
Future Work

• Tree performance
  – Methods for finding proximal neighbors (hacks, pings, “HOPS” service, etc.
  – E2E constraints (latency, for instance --- far away members maybe simply can’t join)
  – Flakey/slow members (move to leaves, kick-out?)
Future Work

• “Proxy Server” infrastructure
  – Policy issues (when to use proxy)
  – Proxy discovery
  – Proxy selection (esp. with heterogeneous proxies, i.e. fast versus fat proxies)
  – “Edge” proxy topologies versus “middle” (router-like) proxy topologies
Future Work

• Mesh issues:
  – Mesh robustness
  – Use of mesh for content delivery---do we need two kinds of mesh?
  – Use of mesh for temporary repair of tree---algorithms?

• Nested Groups