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