

Multicast Beacon NG

Ladislav Lhotka

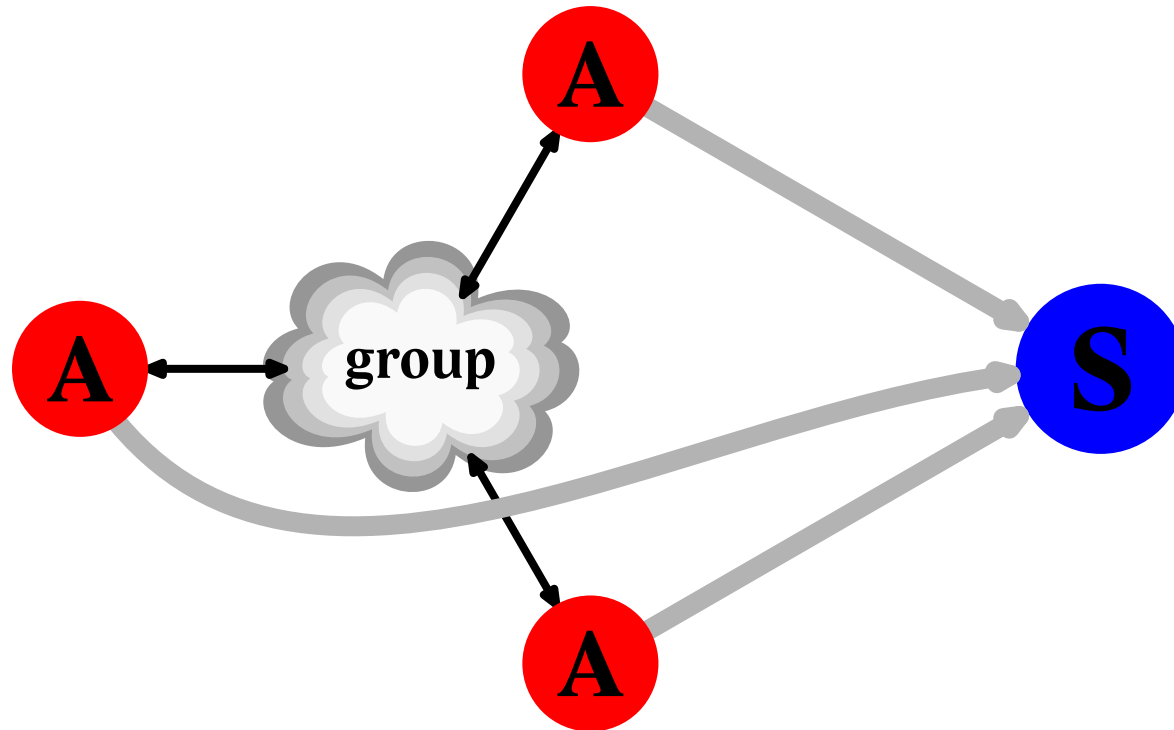
⟨Lhotka@cesnet.cz⟩



Multicast Beacon

- Simple but useful tool
- Routers are not involved
- Available under BSD-like license from NLANR,
<http://dast.nlanr.net/projects/beacon/>
- GÉANT: two instances
 - *<http://beaconserver.geant.net:9999>*
 - *<http://beaconserver.geant.net:19999>*

Beacon operation



- Probe packets: every 100 ms
- Report packets: every 4 s

Probe packets



- magic string: *“beacon0600”*
- sender name: *user@host*
- sequence number
- timestamp

General info

- session ID: “233.81.229.200:56465”
- sender name: *user@host*
- sender IP
- OS name, version, architecture
- Java VM version

For all peer agents:

- last receive time
- average delay
- average jitter
- average loss rate
- average number of out-of-order packets
- average number of duplicate packets

Problems

- no control over agents (access, coordination, session parameters)
- no authentication
- underdocumented protocol, too tightly bound to the implementation
- questionable message format
- slow and unpredictable development

Proposed features



- use of RTP
- XML instead of HTML
- More flexibility in parameters and operation modes (bursts, pauses, ...)
- Some server-based control
- Multiple agents per host
- ...

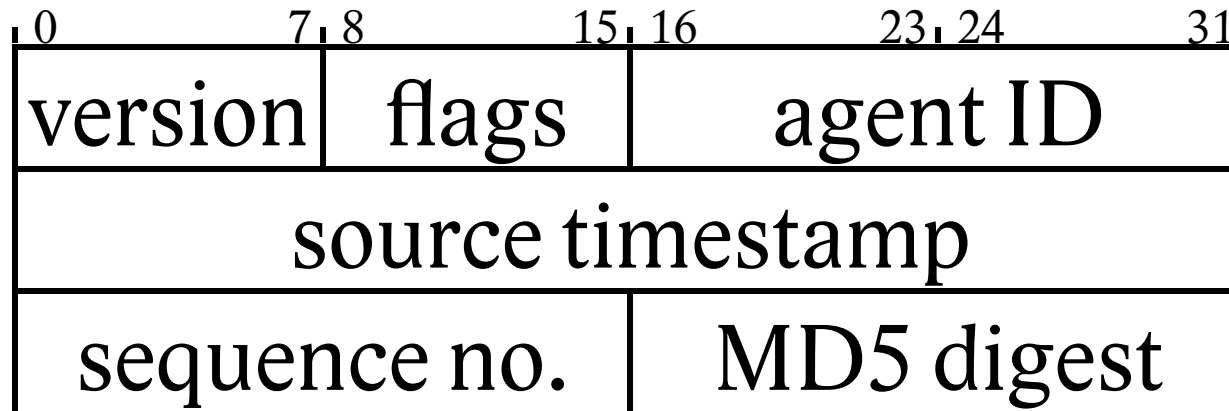
What else?

- protocol separated from implementation
- server-controlled environment
- optional message authentication
- fixed format of probes
- transmission separated from reception (SSM)
- extensible agent-server protocol
- IP version agnostic

- knows all agents (preconfigured or registration procedure)
- manages agent IDs and keys
- controls all agents (start/stop/pause/resume, parameters, modes)
- does not care about presentation

- pairwise MD5 authentication between agents
- keys distributed by the server
- SSL/TLS between agents and the server

Probe packet



Agent-server protocol



- bidirectional communication: commands from the server and reports from the agents
- messages encoded in XML – easy extensibility
- server has to generate and distribute agent IDs and keys

Discussion

- Generalization beyond multicast?
- Standardization (IETF?)
- Open-source project