P2PRG: Peer-to-peer simulation survey
draft-gurbani-p2prg-simulation-survey-00

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Motivation

● Peer-to-peer protocols are complex.
● Even minor changes introduced in the wild may have unintended consequences.
● However ...

● Research community needs tools and simulators to study p2p protocols in a controlled environment.

● Many simulators ... many assumptions!
● Results sometimes not reproducible.
Aim of document

- Provide state-of-art survey on p2p simulation frameworks available today.
  - Existing surveys [naicken, p2prg-core] are outdated.
  - New simulation frameworks are becoming prevalent (ns-3, ProtoPeer [protopeer])
- Allow researchers to choose the right simulation framework according to their level of abstraction.
- Provide guidance to researchers who want to develop their own simulators.
Criteria for evaluating simulators

- draft-gurbani-p2prg-simulation-survey lists > 15 criteria for evaluating simulators:
  - Type of simulator (flow-level, message-level, packet-level).
  - Statistics collection primitives.
  - Modeling link-level and host-level attributes.
  - Visualization components.
  - Turning simulated models into production code.
  - Distributed simulation models.
  - Scalability.
  - Parametrized p2p simulators (or how to specify same scenario in different simulators)
  - ...

(Very rough) work plan

1. Taxonomize these criteria (major work!)
2. Determine which p2p simulators are used widely (questionnaire by Fleming et al. [questionnaire] may help).
3. Evaluate the chosen simulation frameworks according to the taxonomization.
4. Other miscellaneous items (to be decided).
List discussion

• Very positive.

• Received private emails as well as list emails on volunteers.
  • New co-authors in next release of the draft: Mario Kolberg, Matthias Waehlisch, Thomas C. Schmidt, Anirban Basu, Simon Fleming, and James Stanier.
  • Anirban Basu, Simon Fleming and James Stanier are compiling the p2p-hackers questionnaire [questionnaire] for an ACM survey paper.

• Riccardo Bernardini: consider p2p streaming as a use case?
Next steps

• Synchronize with authors of [questionnaire] (agreement to move p2prg and ACM survey work jointly).

• Adopt this as a RG deliverable?
References


