Demonstrate RINA Using the GENI Testbed

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Outline

- Recursive InterNetwork Architecture (RINA)

- Demonstrate RINA Using GENI
  - Experiments setting
  - Experiments result
  - Lessons learned
 - Future work

Problems of Current Internet

- Manageability:
  - lack of scoping so inability to provide predictable service
- Mobility:
  - naming the interface rather than the process
- Security:
  - addresses are exposed to applications/users

Our Solution

Recursive InterNetwork Architecture (RINA)

– Networking is Inter-Process Communication(IPC)

– Distributed IPC Facility (DIF) *is* the layer

– DIF is policy based and can be dynamically instantiated
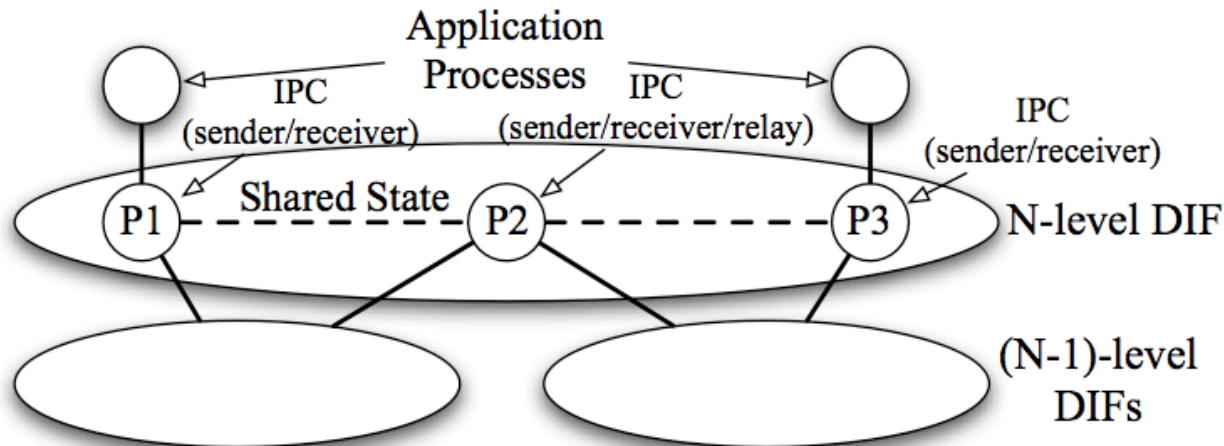
# Demonstrate RINA Using GENI

- Goals:
  - Test our RINA prototype
  - Enable users to opt-in and benefit

- Resources and tools used:
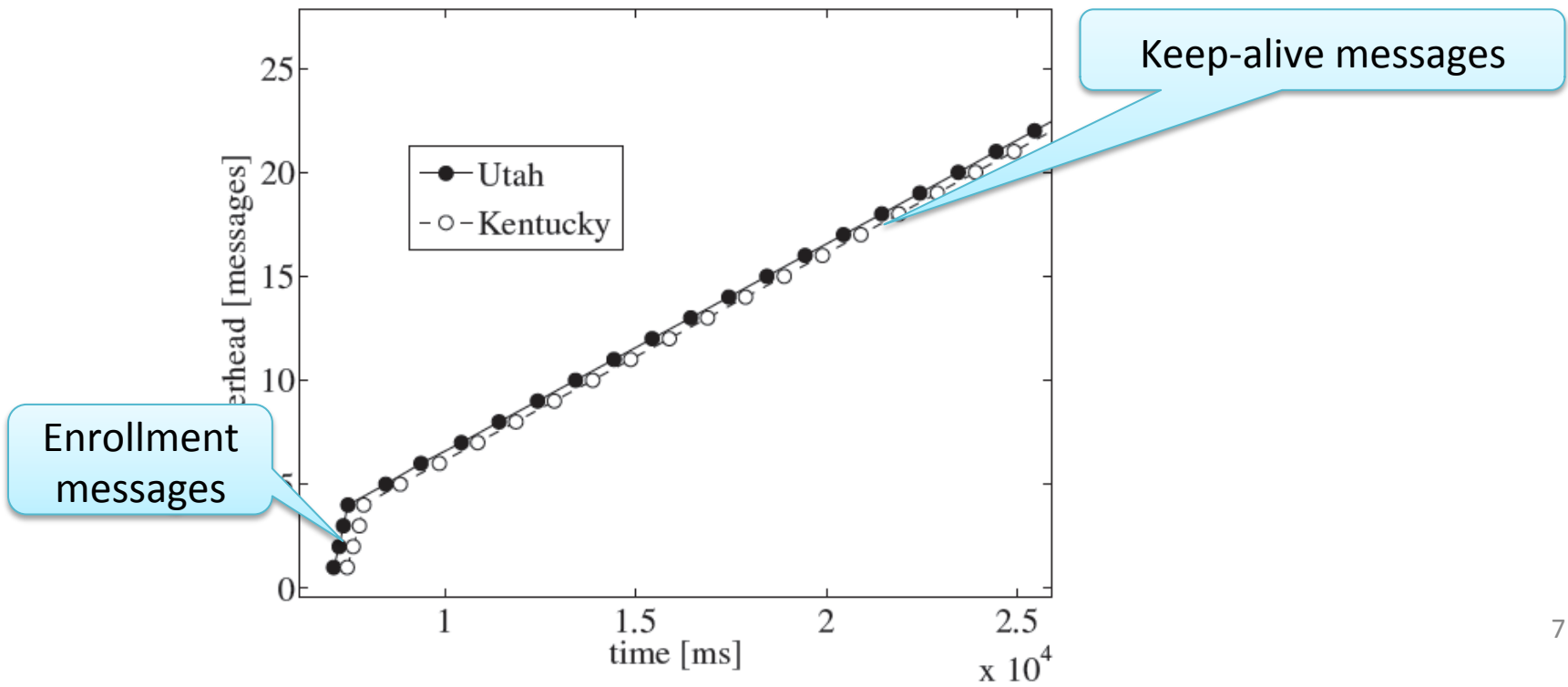 - ProtoGENI
  - Flack and Omni

RINA Experiments

- Enrollment procedure:
  - An enrollment creates, maintains, distributes information within a DIF

- Dynamic layer (DIF) instantiation:
  - High level DIF layer is formed to provide communication service over a wider scope
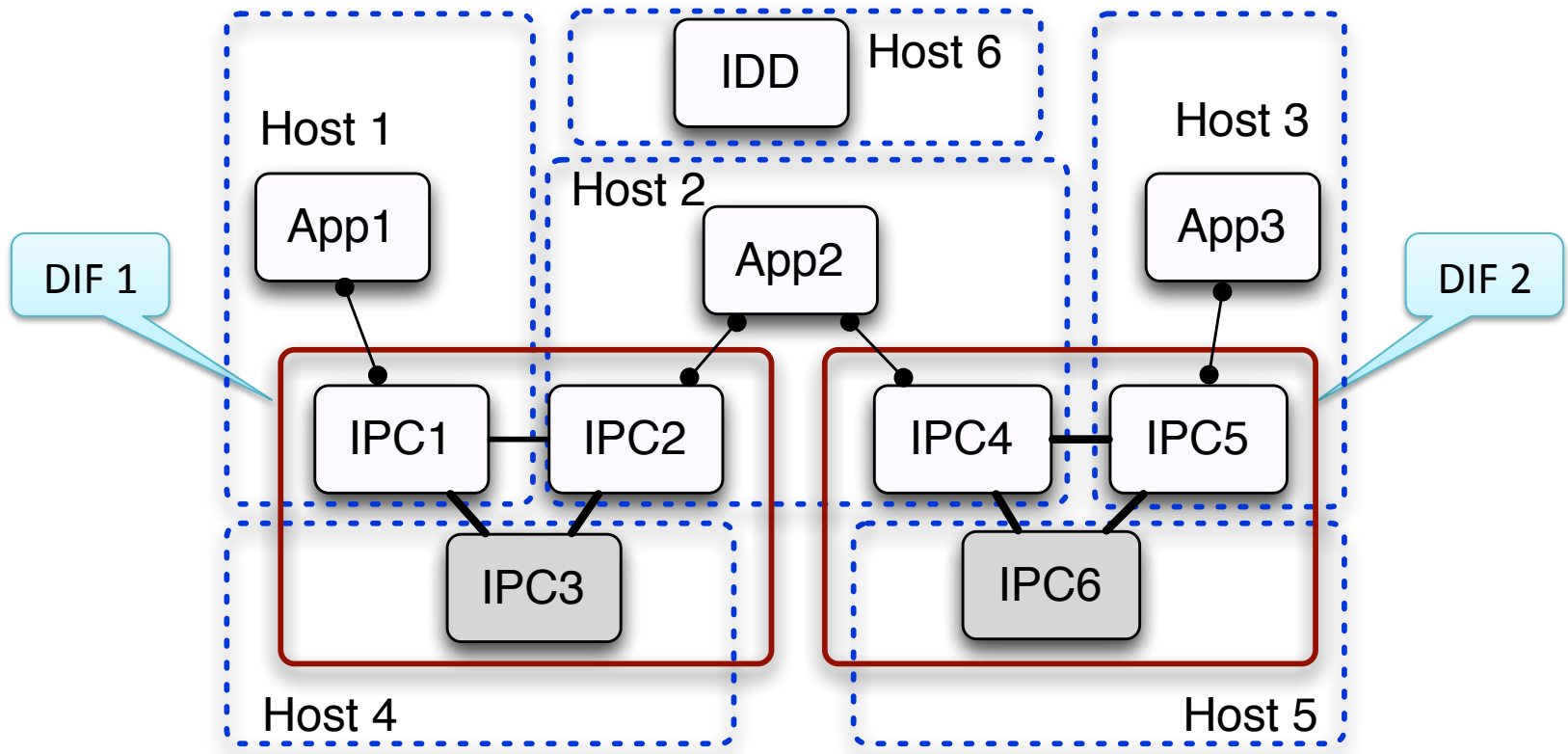
Enrollment Procedure
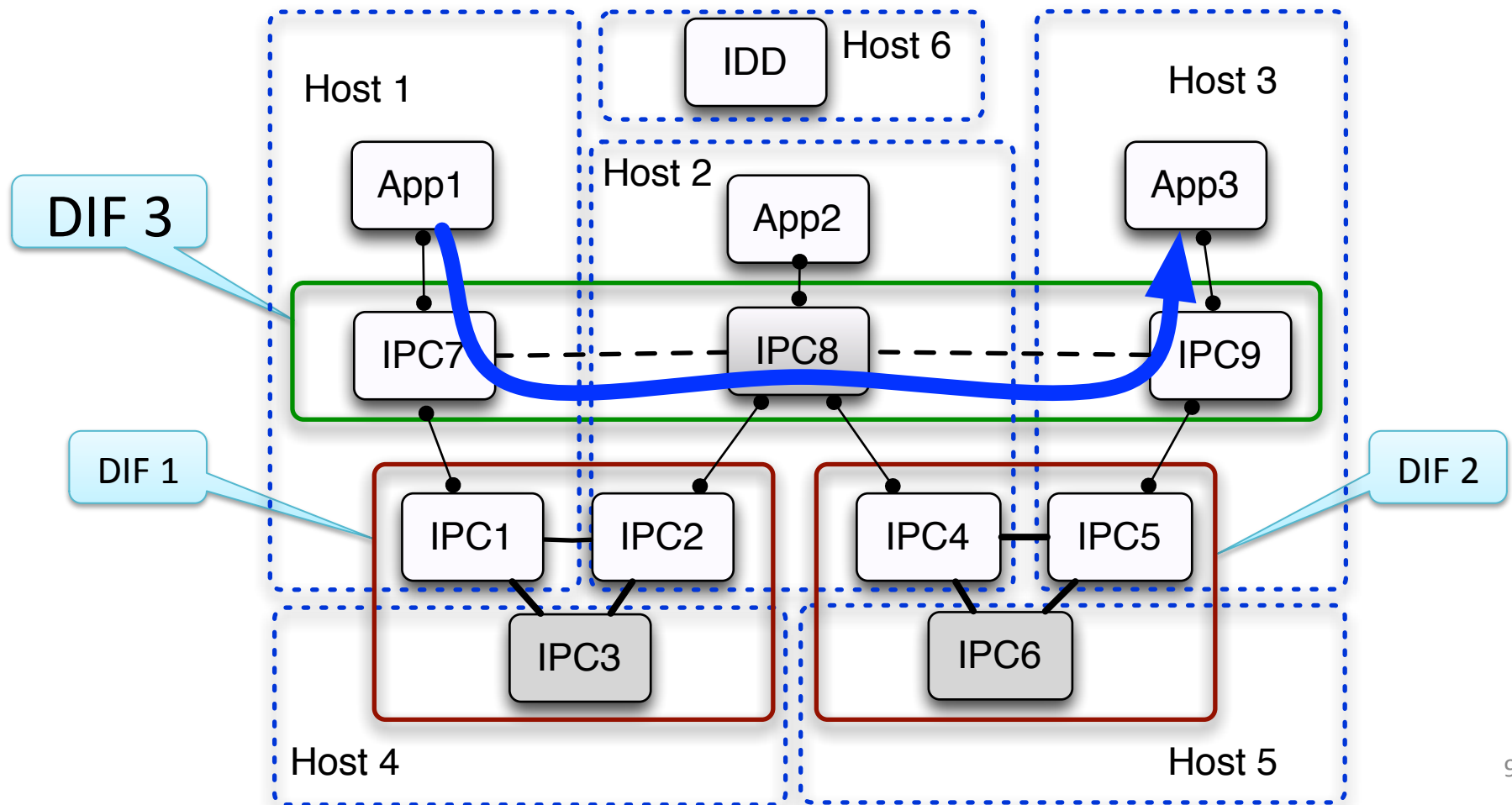
- Network topology:
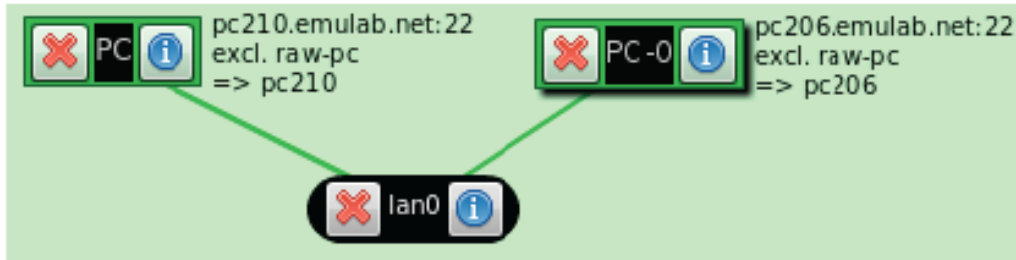
- Experiment result:

Dynamic Layer (DIF) Instantiation

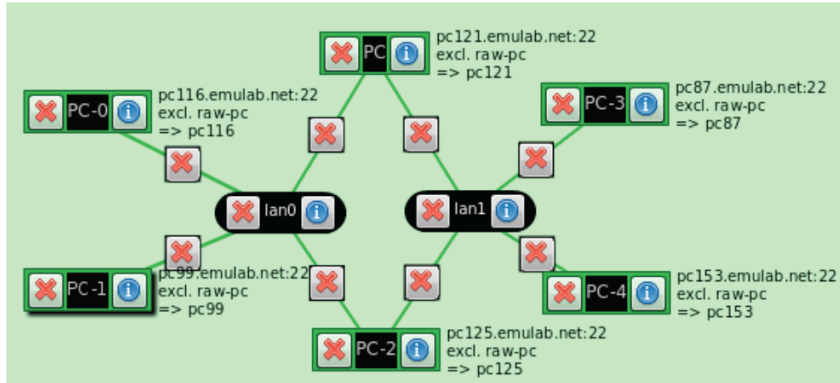- App 1 wants to establish a flow to App 3 to communicate

Dynamic Layer (DIF) Instantiation

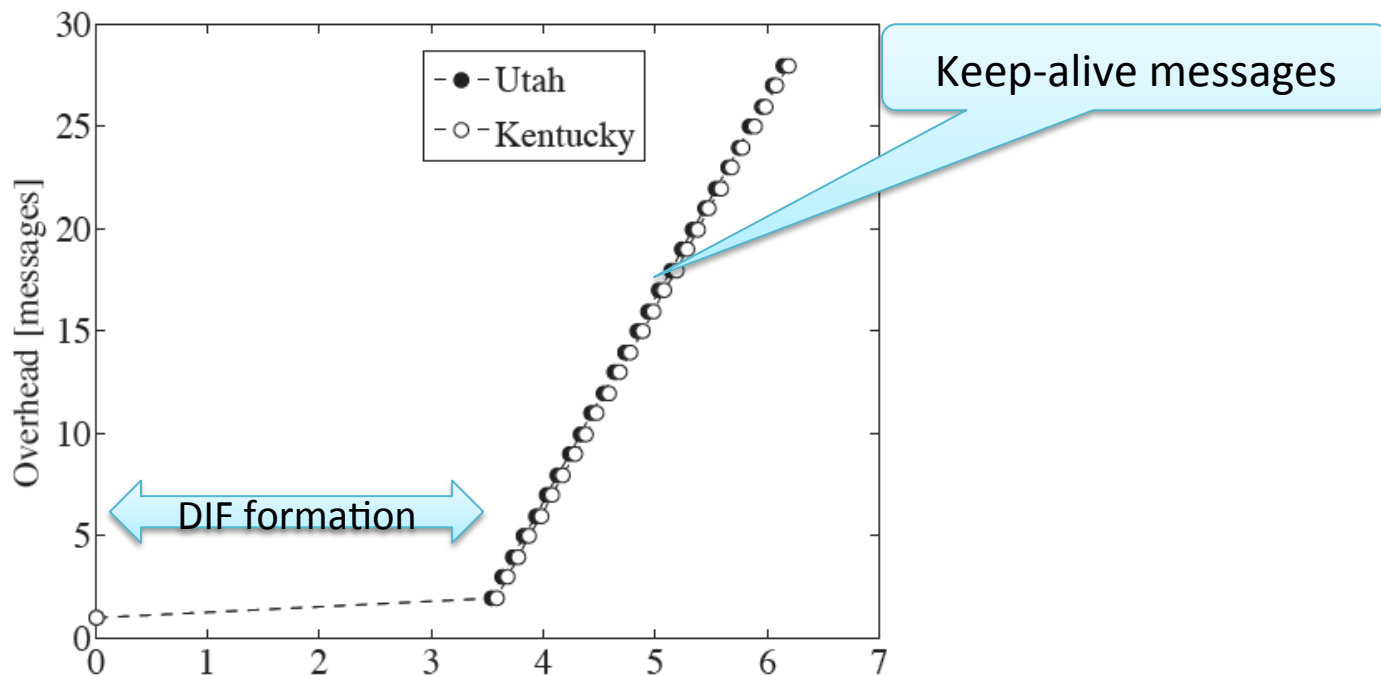- DIF 3 is dynamically formed to provide communication service

Dynamic Layer (DIF) Instantiation

- Network topology:

- Experiment result:

Lessons Learned

- Connecting slivers across different aggregates is seldom successful

- Slice with many slivers requires several attempts to be created

- Long-term experiments need to renew slice all the time

Future work

- Having RINA constantly running on a GENI slice

- Testing the scalability of RINA over a large-scale GENI slice

Thank you !