ICN Development and Evaluation Framework

- Emulation
  - Controlled evaluation scenarios
  - Emulate larger scale
  - Emulate corner cases (e.g., attacks)
  - Reproduce error conditions

- Live Deployment
  - Realistic evaluation scenarios
  - Capture realistic traffic characteristics
  - Validate production software

**a) Experiment Description**

- An abstract topology is a high level representation of the ‘shape’ of a network experiment
- A concrete topology (or executable experiment description) includes all necessary information to instantiate the experiment (e.g., what concrete resources will be used, how to configure them, etc)
- The Experiment Controller entity represents an executable experiment and can map an abstract topology to a concrete Emulated or Live Topology

**b) Experiment Deployment**

- The Experiment Runner automates replication (re-execution) of a same experiment until a metric defined by the user converges according to a law
- The compute_metric_callback argument is a user defined function that, based on the experiment metrics, determines whether the experiment has been repeated enough times to be statistically representative

**c) Experiment Monitoring**

- Errors on critical resources during deployment will cause controlled interruptions of the experiment
- Errors are notified on standard output
- Results can be scheduled for automatic collection at the end of the experiment using a Collector resource (see log excerpt below)
- Results can be downloaded at any time using the trace primitive

**d) Data Collection**

- Data processing can be done with standard Python libraries, after the Experiment Runner run() method terminates, using the data collected during the execution of the experiments

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**DEMO**

Demonstrating a Unified ICN Development and Evaluation Framework

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