Easy CCNx experimentation on PlanetLab using NEPI

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Objective

- Realistic experimentation on top of the Internet is necessary to explore co-existence of CCN and TCP/IP architecture.
- Deploying live experiments on the Internet is a difficult and error prone task to perform manually (i.e. creation of deployment scripts, node synchronization, tunnel creation, etc..)
- To enable easy CCNx Internet-live experimentation, we propose a solution that combines the PlanetLab testbed with the NEPI experiment management framework.

NEPI & PlanetLab

- NEPI enables to automate deployment of CCNx experiments on PlanetLab.
  - Can use user-modified CCNx source code.
  - Can build overlay networks on top of PlanetLab, for more controlled CCNx experiments.
  - Can choose PlanetLab nodes based on user specified criteria or use reservable/whitelisted nodes for high reliability.

WE want to observe the effects of CCNx caching when simultaneously retrieving a video stream along several PlanetLab nodes associated in series through UDP unicast FIB entries.

The experiment is organized as follows:
1. A video is published on the first node.
2. It is immediately retrieved on the last node.
3. Some seconds later it is retrieved again on the previous node.

What are the perceived effects of CCNx caching when retrieving the video each time?
- The first time we observe visual artifacts and freezing of the scenes in the video.
- These problems are not present when retrieving the video a second time since CCNx has already cached the content in the node.

NEPI provides an Experiment Controller (EC) to automatically provision nodes and deploy custom applications. The EC takes as input an Experiment Description XML file, which can be reused to re-run an experiment many times.

Web Site: http://nepi.inria.fr

More Information at:
http://nepi.inria.fr/wiki/nepi/CCNxPlanetLab