Easy CCNx experimentation on PlanetLab using NEPI

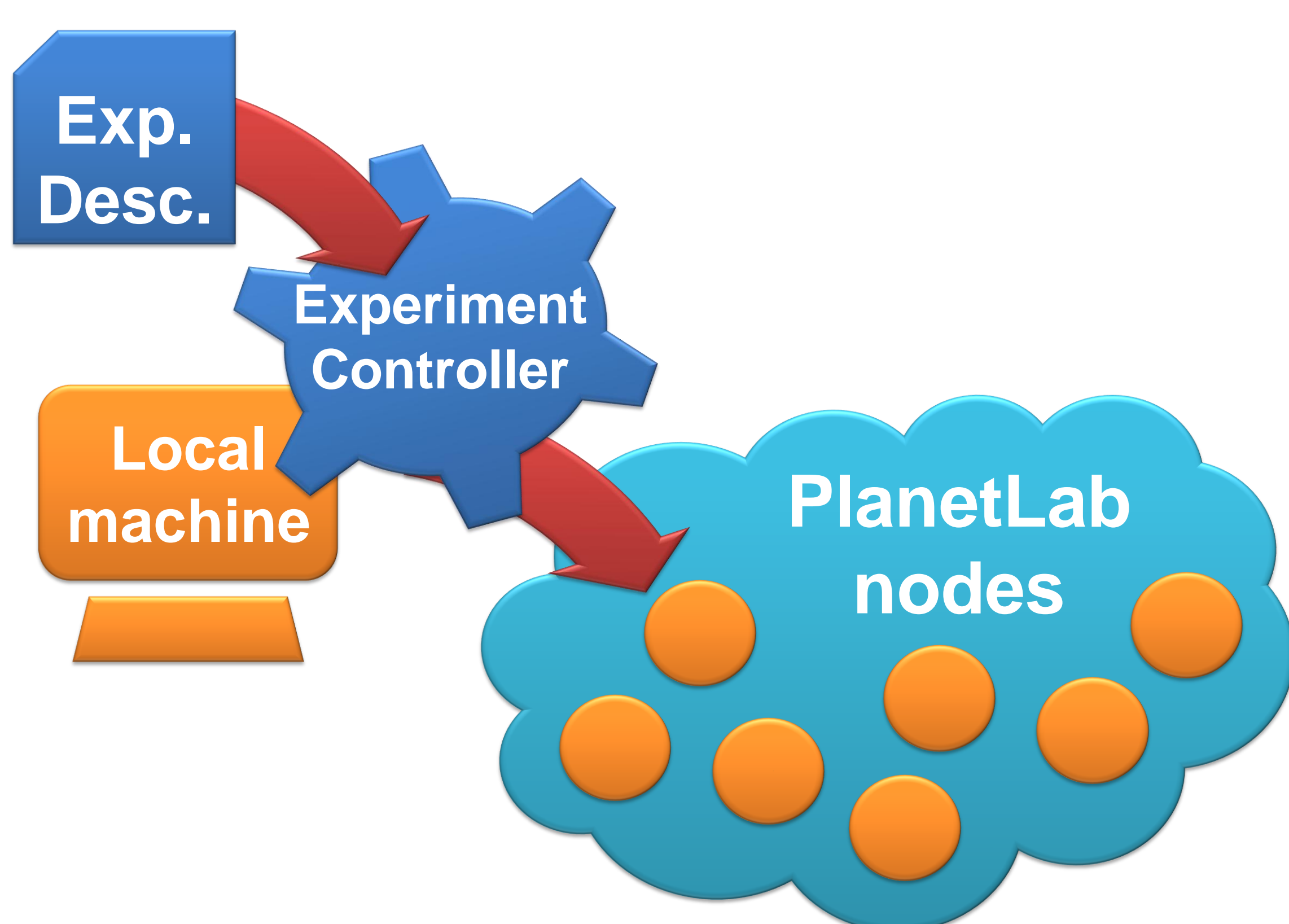**Alina Quereilhac, Anshuman Kalla, Thierry Turletti, Walid Dabbous**

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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.
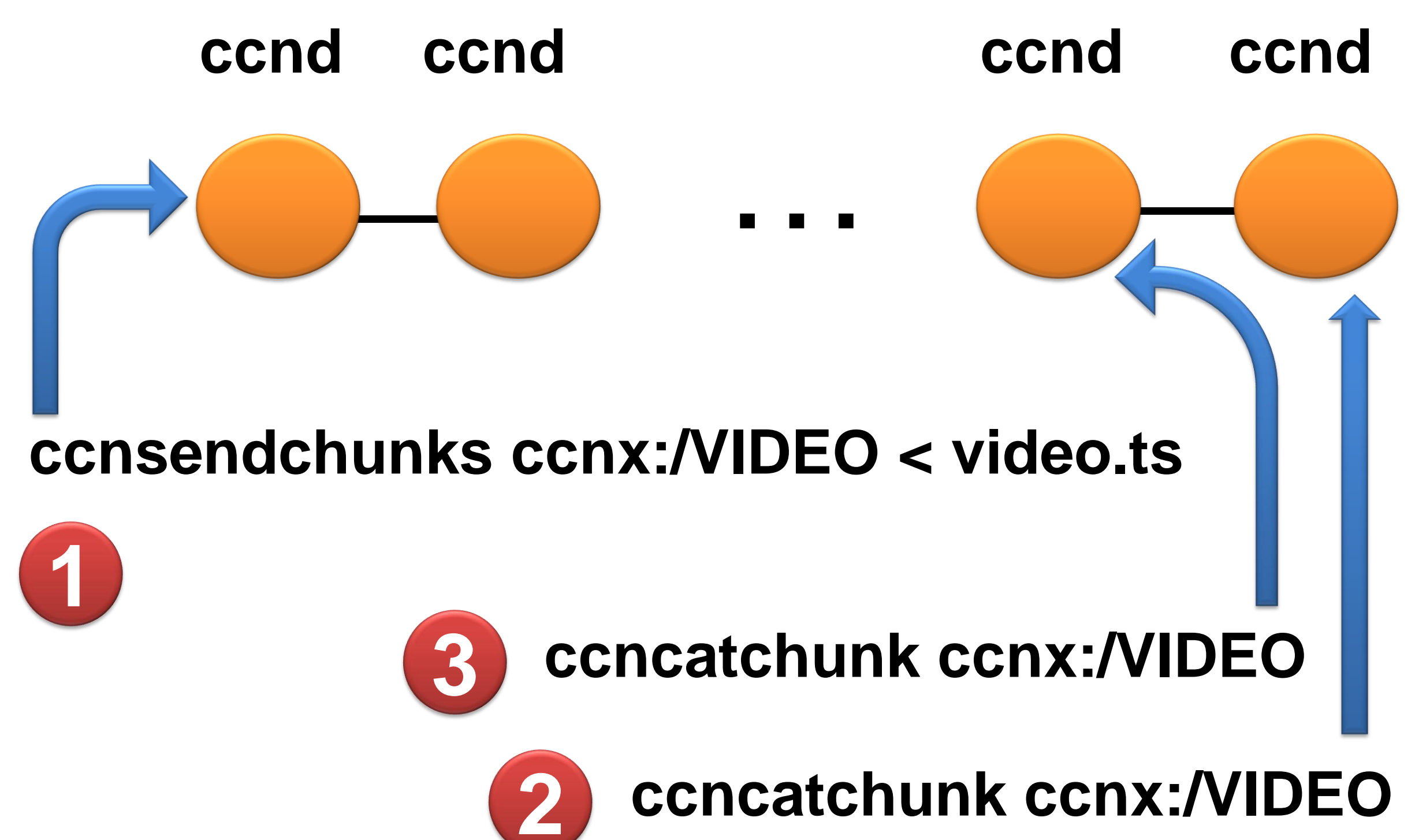

➢ NEPI provides an Experiment Controller (EC) to automatically provision nodes and deploy custom applications. The EC takes as input an Experiment Description XML file, which can be reused to re-run an experiment many times.

➢ Web Site: http://nepi.inria.fr

CCNx experiment case

➢ 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.
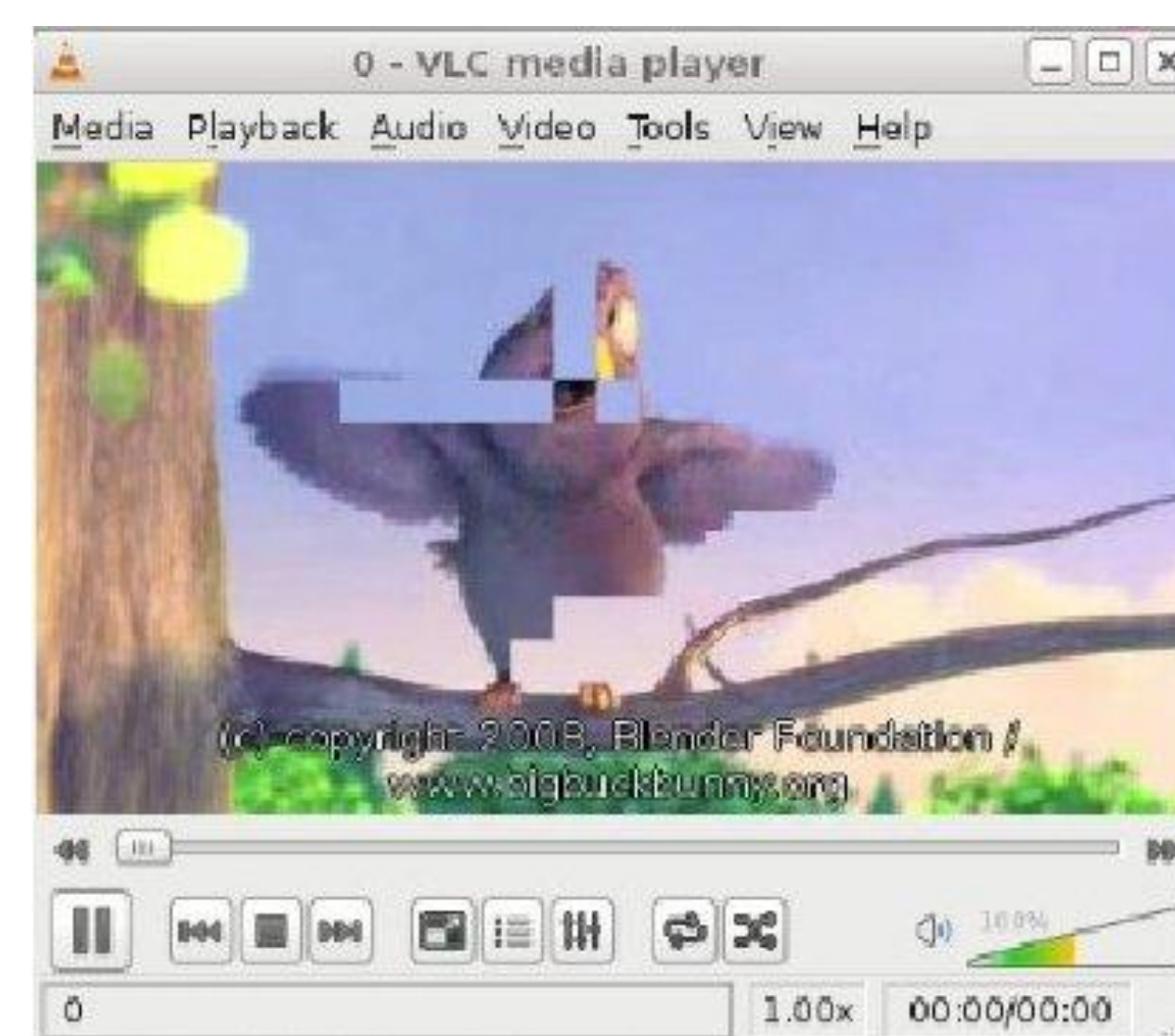

ccnsendchunks ccnx:/VIDEO < video.ts

①

③ **ccncatchunk ccnx:/VIDEO**

② **ccncatchunk ccnx:/VIDEO**

➢ 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.

➢ **More Information at:**

http://nepi.inria.fr/wiki/nepi/CCNxPlanetLab