



GENI Cinema: An OpenFlow-Based Live Video Streaming Service



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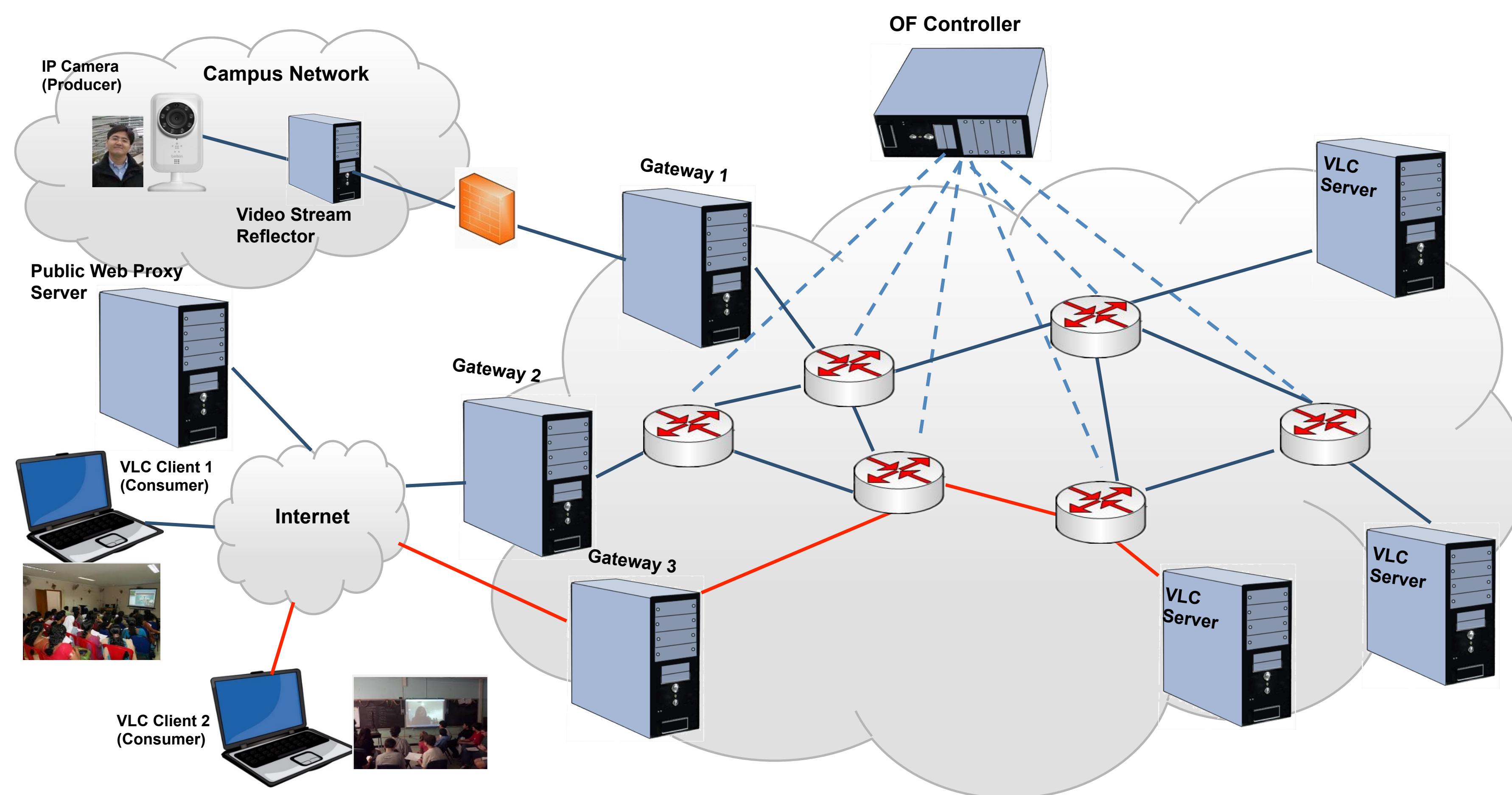
geni
Exploring Networks
of the Future

Goals and Motivation

Video streaming over the Internet, be it static or live streaming, is rapidly increasing in popularity. Many video streaming services exist to serve a variety of needs, such as video conferencing, entertainment, education, and the broadcast of live events. These services rely heavily on the server application to adapt to increasing and decreasing demand for a particular video resource. Furthermore, they require the reallocation of resources and the restart of the stream when a client stops, starts, and/or switches to a different stream.

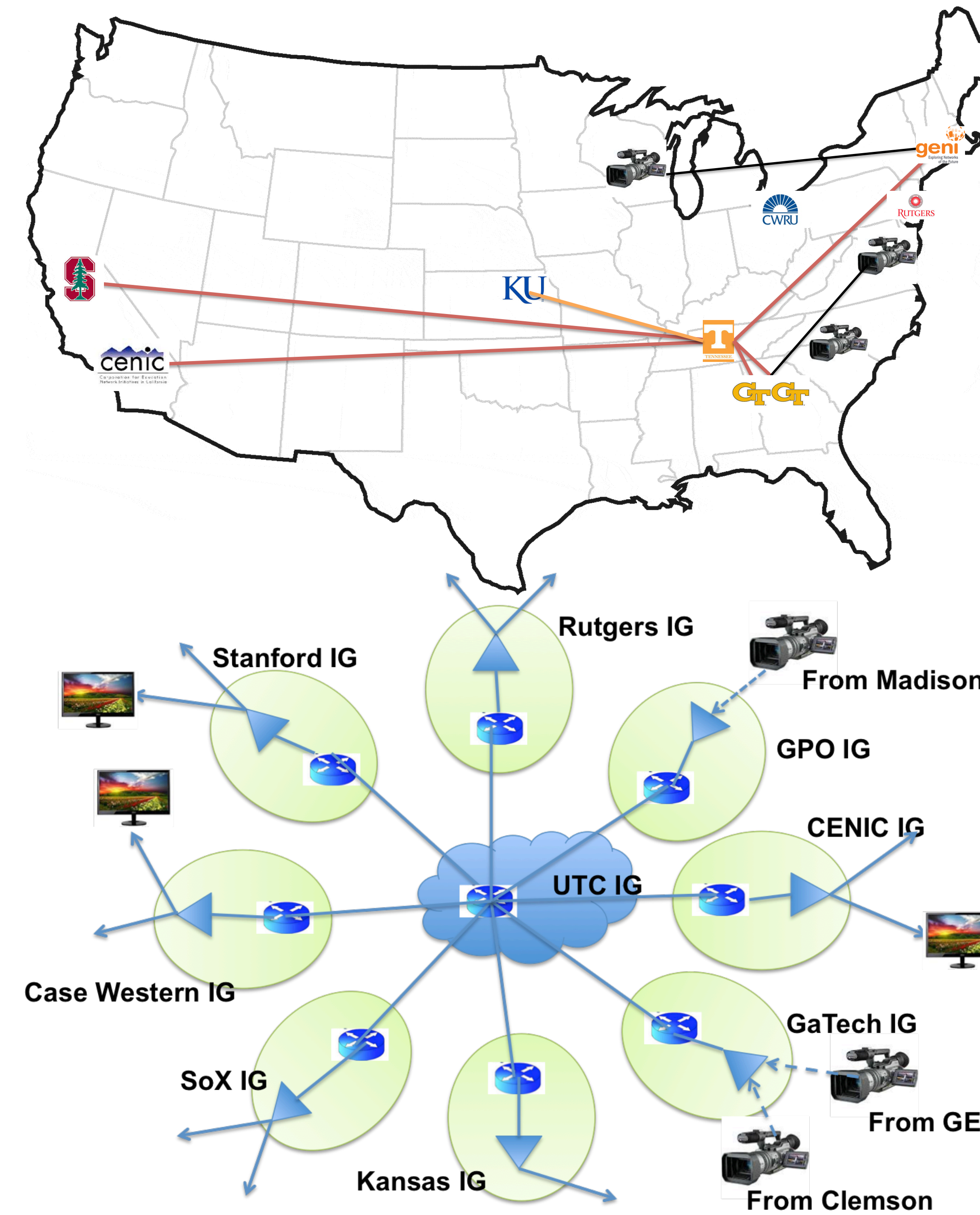
Our goal is to provide a scalable service for GENI that supports the broadcast of live video streams from an arbitrary number of video-producers to an arbitrary number of video-consumers, where video-consumers can change “channels” without disrupting their existing stream and without affecting the load on a particular video stream source.

GENI Cinema Architecture



- Network streaming relays at GENI aggregate sites
- InstaGENI racks with Gateways, Open vSwitch, and VLC machines
- Stitching used to interconnect GENI aggregates
- Web server hosted publically for video selection and streaming
- OpenFlow 1.3 version of Floodlight controller managing network

Demonstration Scenario



Video Upload Procedure:

- 1) RTSP video streaming from camera
- 2) Stream relayed to gateway
- 3) Gateway relays video stream to back-end VLC video server
- 4) Floodlight disables video stream until clients connect

Video Request Procedure:

- 1) Client connects to public web server and queries for, and selects video of interest.
- 2) Floodlight checks and modifies OpenFlow switches to send selected stream to client
- 3) Floodlight sends address and port to website where the client's video stream will be available
- 4) Website connects and displays stream for client, or website provides client with gateway IP and port to view the video with its own application (e.g. VLC)

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Please visit <http://cinema.smartfuture2015.net> for the GENI Cinema experience!.

