Linux Porting

ESM consists of three parts for the viewers:
- the overlay node, a QuickTime player, and
- the program that coordinates the interaction between the other two.

**Problem:** Find a QuickTime player for Linux:
- Has to support a video and an audio codec we can broadcast
- Has to support receiving the broadcast in a RTP stream

**Possible Solution:** Open source players
- They support codecs we use
- They don't support the encapsulation in RTP streams.

**Solution:** Emulate the Windows Apple QuickTime Player.
- Not "true" emulation.
- ISA is the same just the system calls that are different
- Wine wraps Windows system calls to their Linux equivalents.

**Not a problem:** ESM’s overlay code is UNIX native
- it works in Windows by using the Windows analog of Wine: Cygwin.

**Problem:** Program that coordinates all the individual components that make up our system was Windows specific
**Solution:** Rewrite the code to be more portable

Online Monitoring System

**Problem:** How do we “view” the overlay network?
- Ideally, want to know n^2 bandwidth, delay, etc.
- Want an easy way to spot errors in the system, aid debugging.

**Solution:** Dedicated machine that receives feedback from all components of the system
- Each ESM Node sends UDP packets reporting their status.
- Information is parsed and presented in graphical format instantly. (~10 sec.)
- Web access to information, ubiquitous monitoring of the system.

Robustness of Key Components

**Solution:** Source Monitor and Esms Monitor serve as process restart agents.
- Detects unusual activity. (e.g. source process / Esms process died)
- Auto-Recovery! Restarts process, automatically adjust logging mechanism immediately (~5 sec.)