Simulation

Emulation
Network Testbed..

- TEST TOOLs: VINI, Emulab
  - Too slow!
  - Scalable?
Network Testbed...

- We can build a testbed that is embedded into every switch and router of the production network with no additional hardware.
This Paper Focuses on it!
That's FlowVisor

control logic 1
control logic 2
control logic 3
control logic 4

Slicing Layer

Forwarding Logic

Alice's Logic
Bob's Logic
Cathy's Logic
Another Logic

FlowVisor

Forwarding Logic
FlowVisor

Translation
Isolation
Resource Allocation Policy

Forwarding Logic

Alice’s Slice Def.
Bob’s Slice Def.
Cathy’s Slice Def.
FlowVisor does..

• Runs on deployed hardware.
• Operates on deployed networks.
• Allows real users to opt-in on a per-flow basis
• Enforces strong isolation between slices.
Details

• How to Design.

• How to Implement.
How to design

• Network resources are sliced by bandwidth, topology, forward table entries

• Flowspace

• Each slice has its own control logic

• Slices are defined by ‘slice definition policy language’.
How to implement

- Implementation is on openflow.org
- 8,000 lines of C code.
- Transparent, Isolation parts are important.
Deployment

- Stanford Univ.
- 40+ devices.
- 25+ users.
- 30 wireless APs.
- 5 switches.
- “OpenFlow”