FDP: A teaching and demo platform for P4-based SDN

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Problem
VM-based methods for P4-based SDN demonstration:  
- Require effort and adequate client-side resourcing  
- Give tool-centric rather than network-centric view  
- Do not give a visualization of running SDN

Solution
- Zero-effort in-browser interactive visualization  
- Easy to use, easy to host  
- Reliable replay for many concurrent users  
- Generic and portable  
- Amenable to animation and customization

Fig. 1 FDP Network Animation

Fig. 2 Example running on FDP

FDP's Design
Experiment outputs  
Metadata  
Topology  
MININET  
P4

Backend  
Frontend

Example
Fig. 2 shows screenshots of two instances of an experiment on a fat-tree topology (k = 2). Host p0h0 pings p1h0, and the latter replies.

Upper pane:  
- The network is functioning correctly  
- Graph shows that pings and replies are equinumerous

Lower pane:  
- Same setup with a lossy link between p0e0 and p0a0  
- Fewer ICMP replies compared to requests over time