Video Telemetry using SDN

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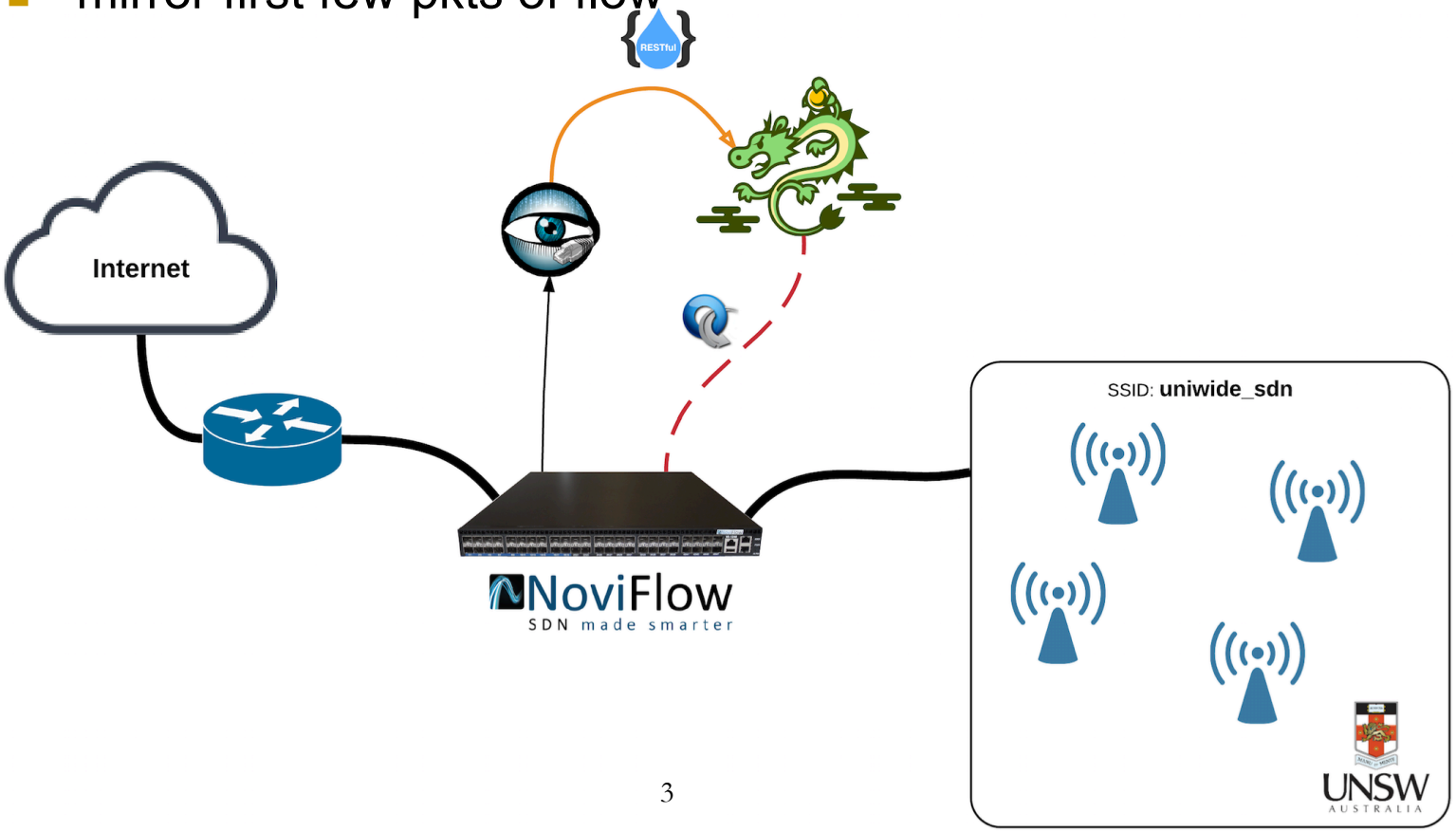
Problem

- Video traffic growing exponentially
  - Netflix, Youtube, iView, Stan, etc.: >50% of network traffic
  - Augmented reality / virtual reality likely to grow dramatically
  - Adaptive bit-rate: expands to fill space available!
- Challenge:
  - “Understand” video traffic in the network
    - How many flows? What resolutions?
  - “Manage” video traffic while being aware of user-experience
- Current solutions:
  - Sampling (sFlow): trade-off accuracy / cpu-load on switch
  - Middle-boxes / “appliances”: special-purpose, expensive!
- SDN: flexible (flow-level) telemetry under software control

TeleScope Architecture

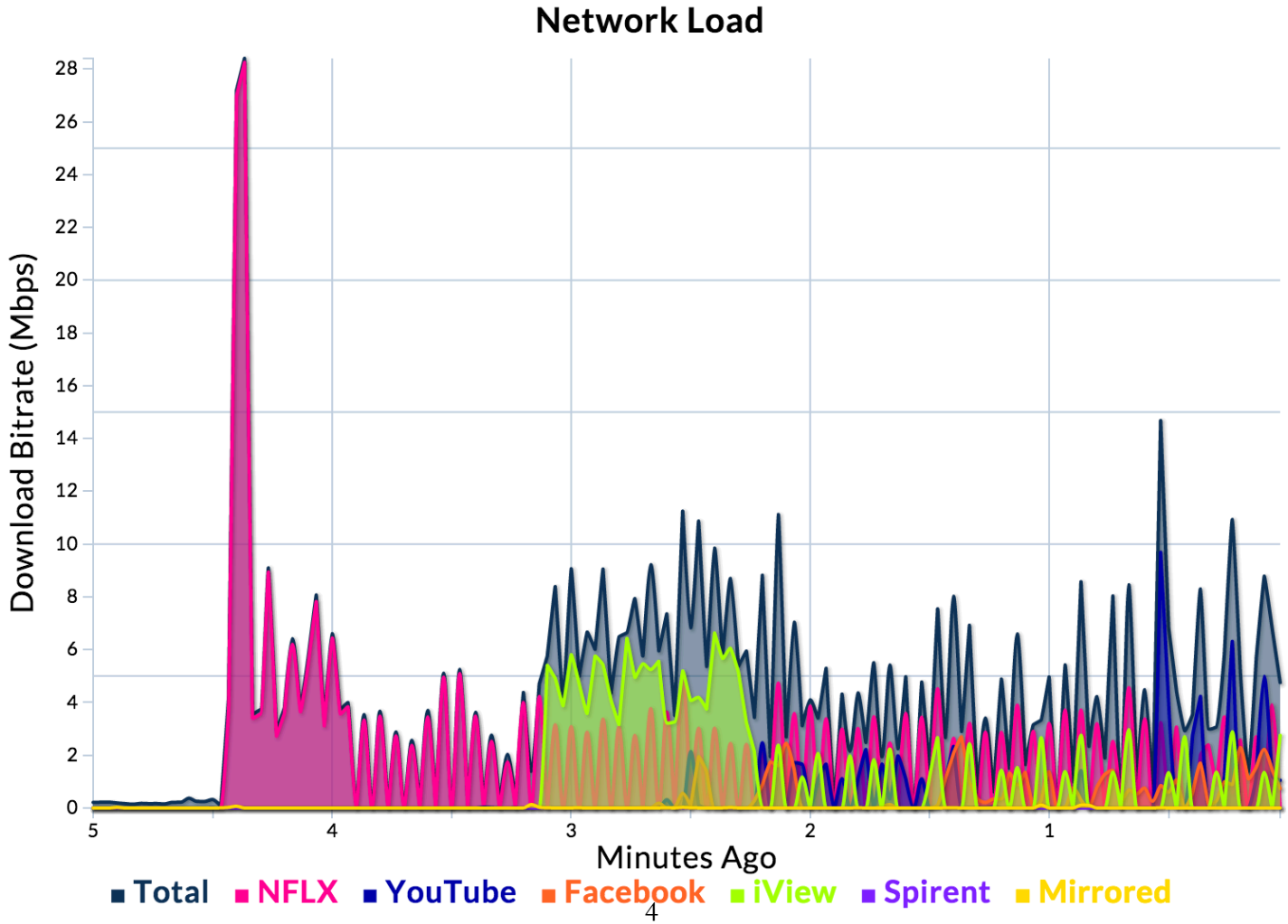
- Bump-in-the-wire:
  - SDN switch + Bro analyzer + Ryu SDN App
  - Dynamically manipulate flow-table rules:
    - mirror first few pkts of flow



Real-time Traffic Visibility

Shows flows properties (src/dst, web/mobile, b/w, quality)

InfluxDB + ReactJS



TeleScope: Benefits and Roadmap

- Works on UNSW campus SDN-WiFi network
  - Applying to UNSW dorm network
- Scale-tested to 32k flows
  - Limited by test-flow generator!
- Safe solution:
  - Can work as “bump-in-wire” or with mirror traffic
  - Data-plane resilient to controller failures
  - Fraction of cost of “middlebox” solutions
- Looking for enterprises/operators to do trials!
- Paper at EW-SDN (The Hague, Netherlands, Oct’16): http://www2.ee.unsw.edu.au/~vijay/pubs/conf/16ewsdntelescope.pdf