OpenFlow Slicer in GENI
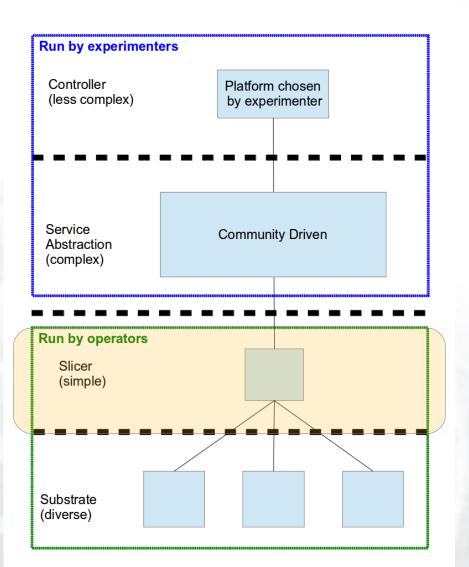
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- Goals

- Architecture

- Testing Status

- Deployment Status

- GENI Integration Issue

- Revisit GEC 21 Unmatched Traffic Question

- Continue to support OpenFlow experimentation with hardware switches in GENI

- Provide a recommendation for slicing software that is stable and does not disrupt experimenter experience

- Enhance system to improve experimenter experience

- Evolve design to support operator community requests

- Evolve design to align with changing GENI architecture

Run by experimenters
- Controller (less complex)
- Platform chosen by experimenter
- Service Abstraction (complex)
- Community Driven

Run by operators
- Slicer (simple)
- Substrate (diverse)

- Each aggregate with hardware OF support has a slicing capability
- Many aggregates have Flowvisor deployed
- FlowSpace Firewall deployed in I2 AL2S
- We'd like to update to software which is:
  - Actively supported
  - Has plans for supporting OF 1.3

- Summary:
  - We have been testing FlowSpace Firewall
  - For the most part, the software works fine for GENI
  - Reported bugs quickly resolved
  - Latest release needs a few fixes for GENI

- Requirements at:
  http://groups.geni.net/geni/wiki/OpenFlow/Slicer/Requirements
- Test plan at:
  http://groups.geni.net/geni/wiki/OpenFlow/Slicer/TestPlan
- Test results at:
  http://groups.geni.net/geni/wiki/OpenFlow/Slicer/TestPlan/Results

- Trying to run a limited test deployment outside GPO
  - Test with different types of hardware
  - Uncover different issues from different perspectives
  - Continue to build operational experience

- CENIC Deployment
  - Similar hardware to what is used in AL2S
  - Uncovered a few new issues along the way
    - Some were integration issues fixed in the switch
    - Some were filed as FSFW issues
  - We have been able to exchange traffic in a slice

- In progress setting up a deployment at NYSERNet

- FSFW knows about switches and FSFW slices through a static configuration file
- Set of switches modified by admin as needed
  - This may be fine for GENI
  - Add/remove datapath is rare in many aggregates
- Set of FSFW slices modified by admin as needed
  - This is not OK for GENI
  - Add/remove FSFW slices maps to GENI sliver creation and deletion, which is common in GENI
- GPO is working on a wrapper and API to let a GENI AM manage this configuration file (at least the FSFW slices)

- Should we drop unmatched traffic by default?
- General consensus: **yes**
- **I claimed:** "Experimenters can still install rules to forward unmatched traffic to their controller"
  - This approach won't work on all platforms
    - Some need a lowest-priority, fully wildcarded rule to drop traffic (no config option to drop unmatched)
    - All will need to support a low-priority, vlan-match-only rule that forwards to the controller
    - Some platforms do not respect priority
  - Paths forward:
    - Don't drop by default
    - Have policy for unmatched be aggregate-specific
    - Try to make slicer/abstraction layer handle this

Questions?