STN: A Robust and Distributed Control Plane

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- How to realize distributed **policy composition**, with:
- Support for **multi-authorship** and **transactional semantics**, that is:
- Robust to a number of controller **stop-failures**

### SDN Policy Composition Review

Policy may originate from **multiple authors**, defined across **multiple functional modules**.

...necessitates policy composition prior to network update.

- Precedence must be defined across policy sources.
- Packet forwarding rule priorities must be defined, and respect policy source precedence.

### STN: Software Transactional Networking

Prototype implemented on pyre’tic as an interface that provides:

- distributed policy composition
- support for multi-authorship
- transactional all-or-nothing policy composition semantics
- per-packet consistent policy updates

### Problem: Distributed Policy Composition

Concurrent Policy Composition Gone Wrong

Linearizability (an equivalent sequential history) is the “holy grail” safety property

Wait-freedom is the “holy grail” liveness property

### Inspiration from Software Transactional Memory

### References
