Outline

- Background
- SDN vs Traditional
- Dependability concerns
- Fault tolerance
- Proposed solution
- Prototype
- Future work
Background

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Scheme1

Scheme2

Preliminary Results

Future work

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Sept. 20th, 2018  3/13
**SDN** is a network paradigm in which:

- Control plane is physically separated from data plane.
- Single (logically centralized) control plane controls several forwarding devices.
Dependability is an umbrella concept that subsumes a set of attributes such as reliability, availability and fault tolerance.

Dependability Impairments

Faults
Error
Failure
Procurement
Validation
Availability
Reliability
Safety
Security

Attributes

Means

Fault Prevention
Fault Tolerance
Fault Removal
Fault Forecasting
Fault tolerance is a property that enables the networking system to continue functioning properly in a presence of failure.

**Techniques:**
- ✔ Reactive (Restoration)
- ✔ Proactive (Protection)

**Issues:**
- ✗ Reactive (Time)
- ✗ Proactive (Space)
THRFITY is a scalable fault tolerant system with aim to reduce the TCAM storage space of forwarding elements with the following properties:

- Edge-Core based routing
- Single network controller
- Scalable to large-scale networks
The prototype implementation can be found online: http://csie.nqu.edu.tw/smallko/sdn/mysource_routing.htm
Cont...

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Sept. 20th, 2018 9/13
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Sept. 20th, 2018
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<table>
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<tr>
<th>Switches</th>
<th>Scheme1</th>
<th>Scheme2</th>
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0 2 4

No. of flow entries

Scheme1
Scheme2
Traditional

Ali Malik THRIFTY Sept. 20th, 2018 11/13
Future work

- Building a general framework.
- Dependability attributes.
Thank You