



OPEN NETWORKING
FOUNDATION

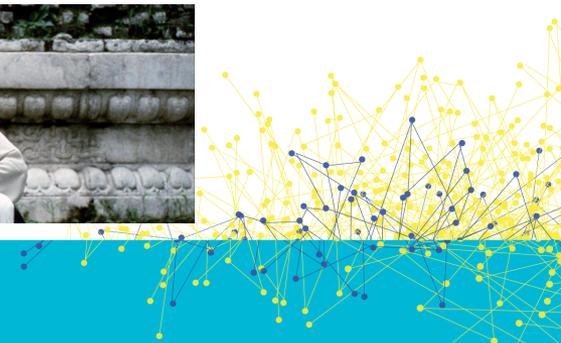
ONF Standards (A personal view)

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SDN Standards



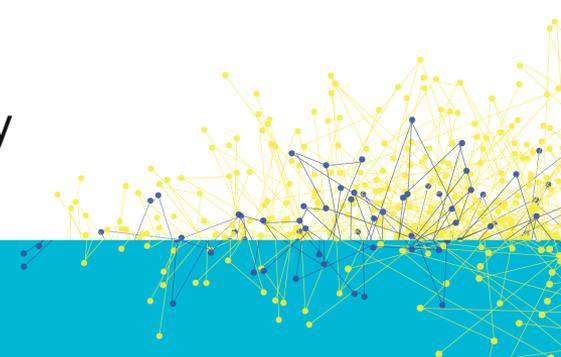
- Standards can be developed when
 - there is a community of interest
 - with sufficient experience
 - capable of reaching consensus
- The ONF
 - has a mission to support Open SDN
 - is a forum for developing SDN standards and open source SW
- The NREN community
 - has developed valuable experience in SDN network design, deployment and operation
- Are we ready to write standards?
Is more practical experience needed?



ONF Projects



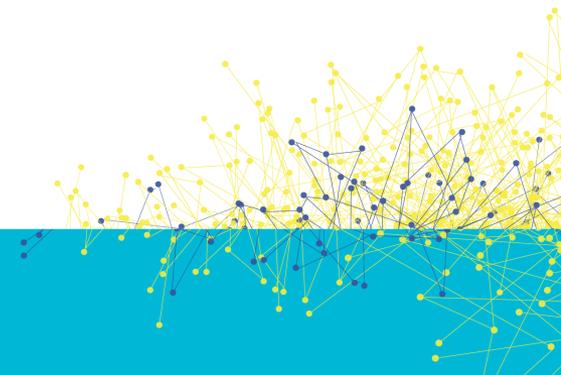
- The ONF has active projects addressing
 - application area datapath models
 - platform datapath models and programming
 - run-time control (OpenFlow)
 - intent APIs (northbound interfaces)
 - management and configuration
 - testing and interoperability
 - an open source framework for operational SDN solutions (Atrium)
 - (and more I am forgetting)
- The ONF is not actively addressing
 - SDN network planning
 - traffic engineering
 - technology specific fault detection/isolation/recovery
 - (and more I am forgetting)



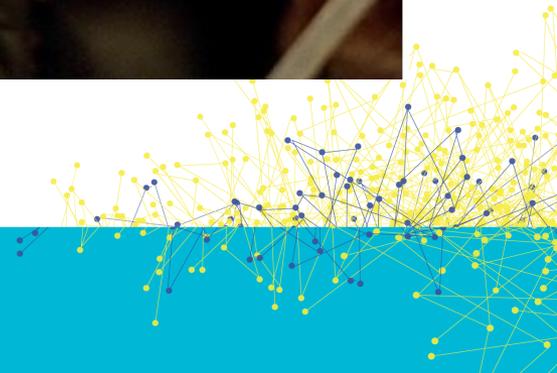
"Squishy Standard"



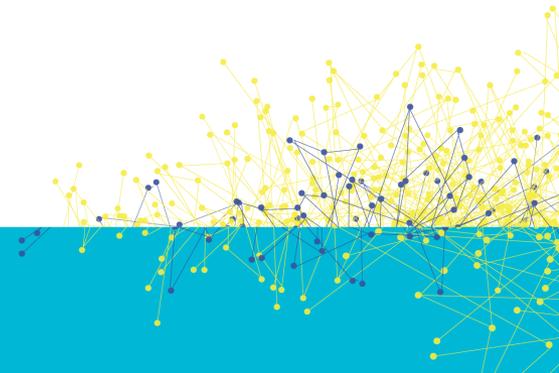
- OpenFlow as it stands is a result of
 - Research prototype to get the ball rolling
 - Extensions to support a broad array of application areas
- The (natural) result is
 - All features are not required for all applications
 - A "squishy" standard – lots of optional features, varied support
- Where do we go from here?
 - Move toward communities of interest (application areas) supported by a common substrate (MAT/GT)



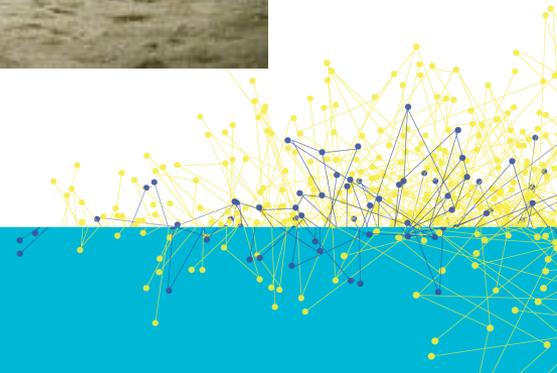
OpenFlow is rife with optional features



Clear out the chaff...



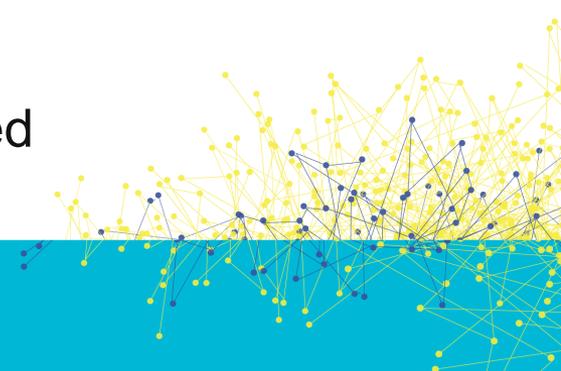
and focus on your problem area



When you can only have one



Choose something that covers every possible need



When you can be flexible



Cooking



Eating



Camping

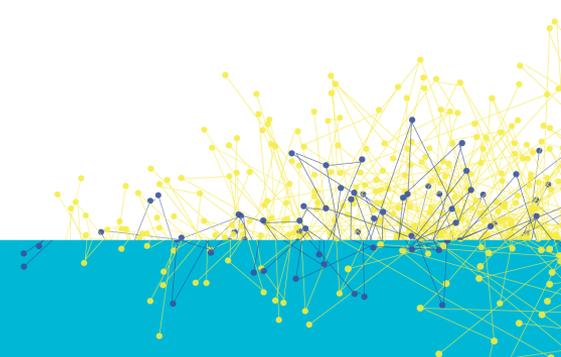


Fixing the bicycle



Fixing the universe (OK, that's handy)

Choose something suited to the purpose

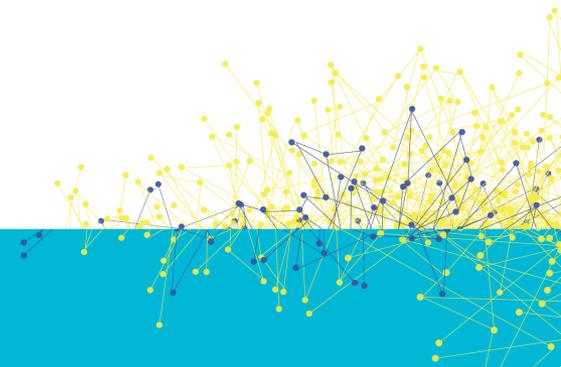


SDN Enables Simplicity (eventually)



- Software defined networking admits the possibility of using just what is needed (and blissfully ignoring everything else)
- Build a framework (ecosystem) and open source within which there is room for innovation in the creation of SDN products
- Build examples that demonstrate how interest groups can create standards and open source supporting a particular application area
- OpenFlow evolution – initially flow control, now working on delegation (autonomous functions), languages and tool chains...

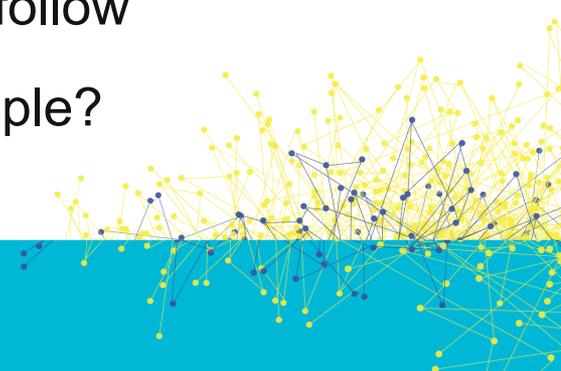
Still need flow control, but that is just one aspect of an operational solution.



A Solid Foundation (i.e., not squishy)



- How do we move forward?
 - Develop an example "application area" TTP (TTP = Table Type Pattern – an OpenFlow pipeline/profile)
 - Develop controller & switch support (e.g., in the Atrium framework)
 - Write a conformance test suite for the application area
- The application area should be broad enough to support a community of interest
 - But not so broad as to have too many optional features
- Provide a template for other application areas to follow
- Can the NREN community provide this first example?



Discussion