

Multilevel configuration

draft-bogdanovic-multilevel-configuration-00

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Motivation

- Network device configurations grow along the time for several reasons
 - Addition / removal of services and customers, sometimes without proper clean up of previous configs
 - Debugging sessions for fixing operational problems
 - Dynamic evolution of traffic flows, protocols, peers, etc.
- All the config information on the device is multiplexed into a single file, hard to manage
- Central databases, with all the network configuration files, have not remedided the problem

Where multi-level configuration could help? - some use cases

- Service assurance
- Network slicing
 - Mean of instantiation, operation and decommissioning of IETF Network Slices
- Network migrations and merging
 - Split of the migration/merging problem in smaller pieces, dealing with the issue per configuration/service level instead of considering the whole configuration
 - Allowing incremental execution of the process by acting on particular levels each time
- Zero touch provisioning
 - Incremental deployment of configuration levels following a similar auto-installing approach

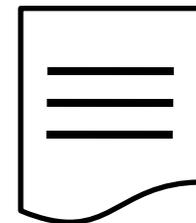
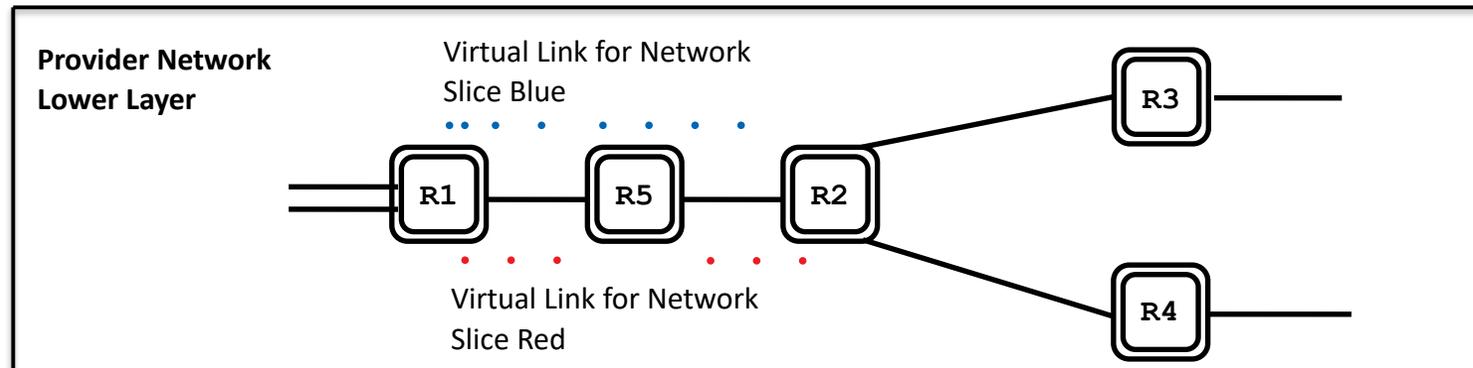
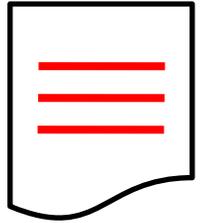
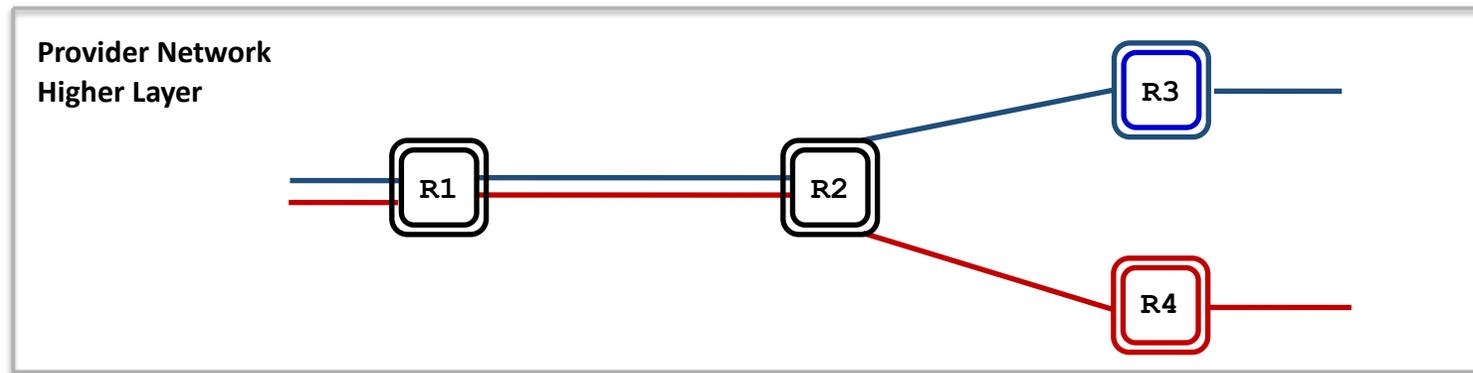
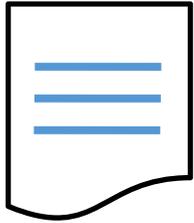
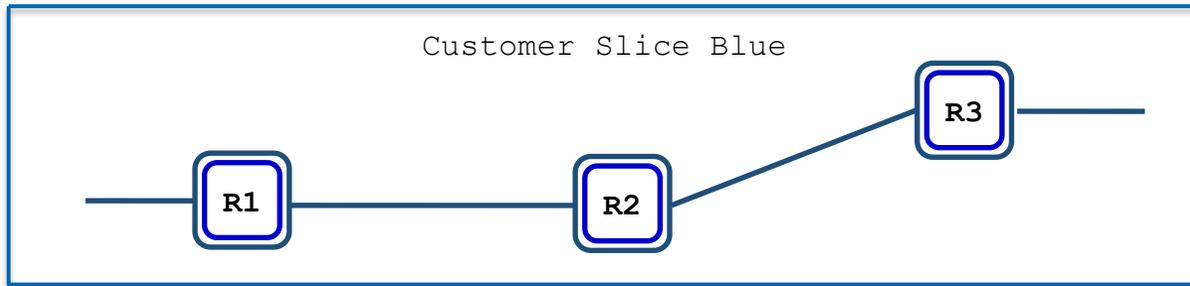
Service Assurance

- draft-claise-opsawg-service-assurance-architecture
 - Closed control loop system that modifies the running configuration according to the intent and the network operational state
 - Requires lot of dynamic configuration changes
- Help on identifying by design the correlation among services and atomic functions in the network

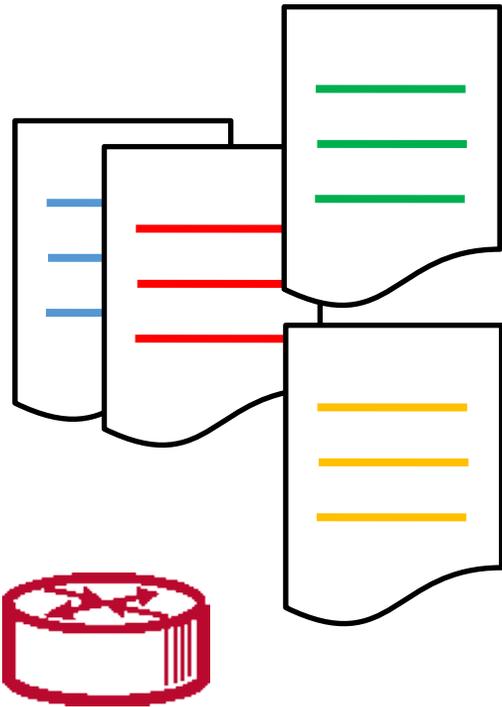
IETF Network Slicing Configuration

- Slicing can be hierarchical
 - Resources allocated for a slice can be at different layers
 - A slice can be over other slices
- Slicing configuration can be hierarchical and recursive
 - Slicing architecture covers multiple layers
 - Slicing architecture covers multiple domains
- Multilevel configuration
 - Each layer is configured independently
 - Each domain is configured independently
 - Each layer and each domain can be considered as a subservice
 - Configurations of layers and domains are coordinated

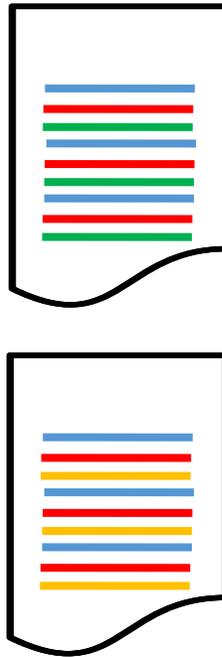
Multilevel Configuration for Slicing



Proposal



- Level 0
- Level 1
- Level 2.1
- Level 2.2



- Incremental configurations can be viewed as multiple panes of glass in a systematic manner
- Each level can be handled in an independent manner, minimizing the impacts in other levels
- Each level is autonomous and cooperative

Next steps

- Presenting at RTGWG and NMRG
- Complete the description of the proposal and identify viable solutions / approaches
- Collect feedback / comments from the WG
- Prepare a new version for IETF#110