

Interface to the Routing System (I2RS) for Service Chaining: Use Cases and Requirements

draft-bitar-i2rs-service-chaining-00.txt

N. Bitar (Verizon),
G. Heron & L. Fang (Cisco)
R. Krishnan (Brocade)
N. Leymann (Deutsche Telekom)
H. Shah (Ciena)
S. Chakrabarti & W. Haddad (Ericsson)

IETF87 - Berlin

Outline

- ❑ Objective and Scope
- ❑ Use cases and requirements

Objective and Scope

- ❑ **Objective:** describe service chaining use cases and the corresponding required information that could be controlled via i2rs

- ❑ **Scope:**
 - ❑ Multi-tenancy service chaining

 - ❑ Service topology discovery and maintenance

 - ❑ Service node monitoring

 - ❑ Controlling the routing on a service chain

 - ❑ Opaqueness to actual service provided

Service Topology and Resource Discovery/Representation and Maintenance

- ❑ **Use Case:** Representation/discovery of services topology and associated resources
 - ❑ Can be used by an orchestration system to map an abstract service chain applied to a packet/flow to a service path
 - ❑ Aid in monitoring of services resources
- ❑ **Needed Information:**
 - ❑ Service Node ID
 - ❑ Non-composite (autonomous) services offered by a service node: Service type
 - ❑ Various node and resource attributes, e.g.:
 - ❑ Customer ID or list of (customer ID, VRF)
 - ❑ Number of virtual contexts
 - ❑ Per service node, customer ID, and service type
 - ❑ Packet and bit rates supported
 - ❑ Available RIB and FIB size
 - ❑ Numbers of supported ACLs per ACL type
 - ❑ Number of supported flows
 - ❑ Etc.
- ❑ Called out the need for discovering/representing customer virtual network topology, including access ports

Service Node Monitoring

- ❑ **Use Case:** Monitor the liveness of a service node and its resource utilization to:
 - ❑ Detect node failure
 - ❑ Select an uncongested service path
 - ❑ Add resources or service nodes, or re-groom resources as needed

- ❑ **Needed Information**
 - ❑ Per service node, service context, and service type, and per hosting system as it applies
 - Bandwidth and packet rate utilization overall and per CoS
 - Memory utilization
 - RIB and FIB utilization per address family
 - Flow resource utilization per flow type
 - CPU Utilization
 - Available storage

Traffic Classification and Service Chaining Control

- ❑ **Use Case 1:** Control the action(s) taken on a packet/flow based on multi-field classification. Actions include:
 - ❑ packet/flow direction on a service path – using hop-by-hop policy based routing
 - ❑ Actions: mirror, mark, route, steer packet to a VRF, insert source or source + service header with format to be defined, etc.
 - ❑ **Needed functionality:** Define and program classification rule and associated actions

- ❑ **Use Case 2:** BGP-based traffic redirection along a service path
 - ❑ **Needed functionality:** Define and program BGP policy that effects traffic redirection

Scalability Requirements and Security Considerations

❑ Scalability:

- ❑ Discussion on transaction scale requirement based on different scenarios

❑ Security Considerations

- ❑ Authenticated and secure communication channel between nodes on the service path and the control system
- ❑ Customer privacy preservation
- ❑ Avoid congestion-triggered denial of service

Next Steps

- ❑ Comments and input from the WG
- ❑ Address comments received from Alia Atlas
- ❑ Update the draft completing some sections, and potentially adding use cases