Resource Management in Service Chaining

draft-nfvrg-resource-management-service-chain-01

Seungik Lee (ETRI)

Sangheon Pack (Korea Univ.)

Myung-Ki Shin (ETRI)

EunKyoung Paik (KT)

Rory Browne (Intel)

Change Log

- Adopted as RG draft in April 2015
- -00
  - initial base RG document
  - revisions in NFV terminologies
- -01
  - document structure re-organized
  - resource management issues elaborated
  - new use case: load balancing b/w NFVI-PoPs

Recall

- Problems
  - VNF-I placement/scheduling in building/maintaining service chains to satisfy given policies

- Use cases
  - Redundancy, load balancing, path optimization, traffic optimization, energy efficiency

- Goals
  - Build a framework, algorithms, contributions to SFC

Document Structure

- 1. Introduction
- 2. Terminology
- **3. Resource management in service chain**
  - 3.1. Resource scheduling among network services
  - 3.2. Performance coupling within a service chain
  - 3.3. Multiple policies and conflicts
  - 3.4. Dynamic adaptation of service chains
- 4. Use cases
  - 4.1. Fail-over
  - **4.2. Load balancing**
  - 4.3. Path optimization
  - 4.4. Traffic optimization
  - 4.5. Energy efficiency
- 5. Framework
- 6. Applicability to SFC
  - 6.1. Related works in IETF SFC WG
  - 6.2. Integration in SFC control-plane architecture
- 7. Security Considerations
- 8. IANA Considerations

Resource Management Issues

- Resource scheduling among network services
  - NFVI resources (VNFs, VLs) need scheduling to optimize KPIs of multiple network services
- Performance coupling within a service chain
  - A single VNF-I or VL of service chain may affect the performance of network service
- Multiple policies and conflicts
  - Different NS policies on shared NFVI resources, conflicts with NFVI (resource) policies[*]
- Dynamic adaptation of service chains
  - Dynamic update or adjustment of NFPs to optimize KPIs of network services

Refer to draft-norival-nfvrg-nfv-policy-arch

Gi-LAN Use Case

- Service chain load balancing with NFVI-PoP interconnects
  - at overload or failure in the local NFVI-PoP and/or NFVI-PoP interconnect links
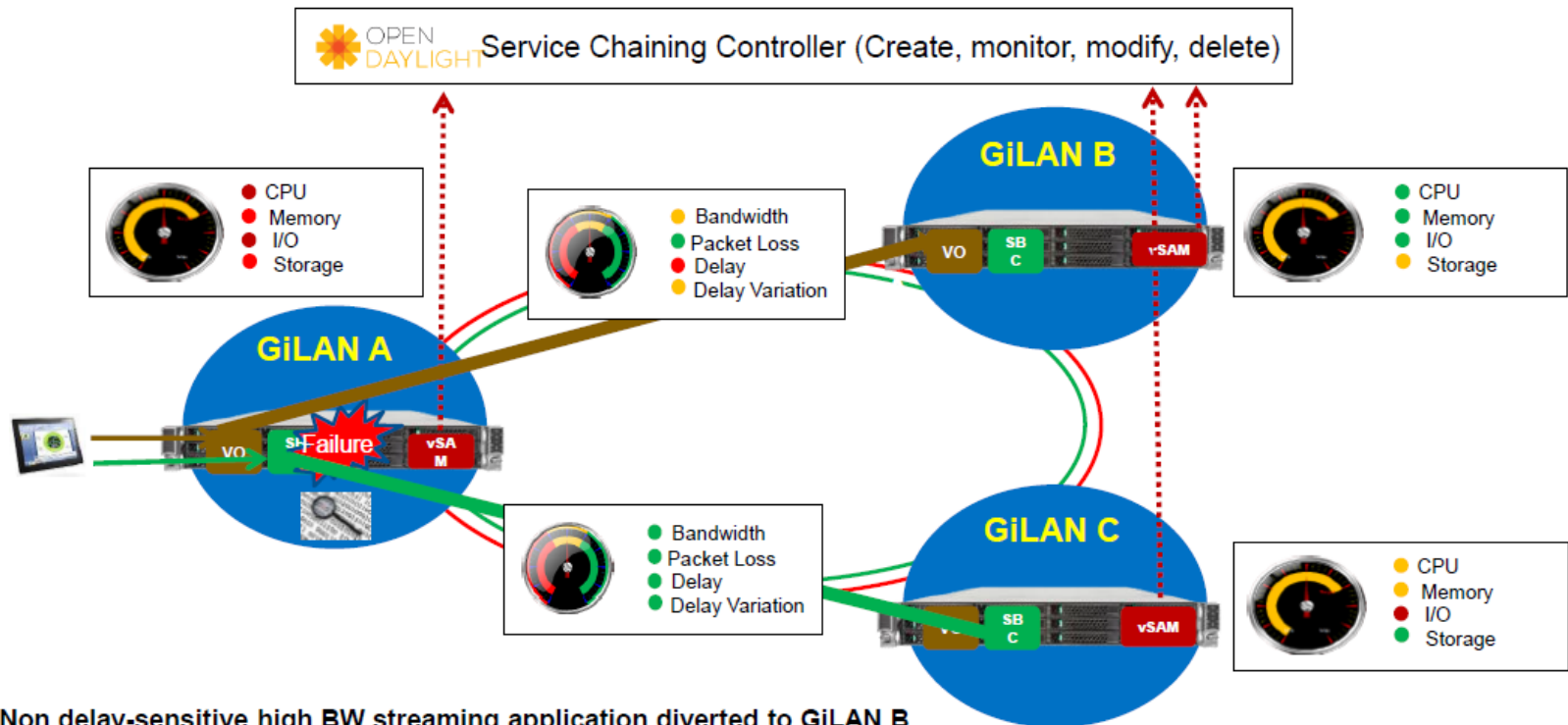
Non delay-sensitive high BW streaming application diverted to GiLAN B
Delay sensitive, low BW voice application diverted to GiLAN C

Next Steps

- Build a framework and heuristic algorithms
- Implement a prototype for evaluations
- Collecting more use cases
- Comments and contributions are welcomed