

Service Chaining Problem Statement

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Presenter: Navindra Yadav [Dist.Eng, Insieme Networks]

Author List in [draft-quinn-sfc-problem-statement](#)

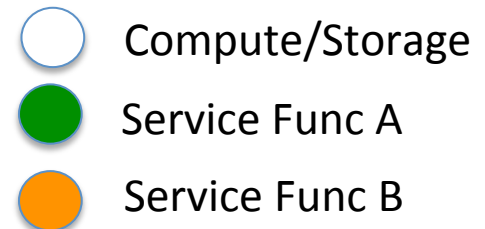
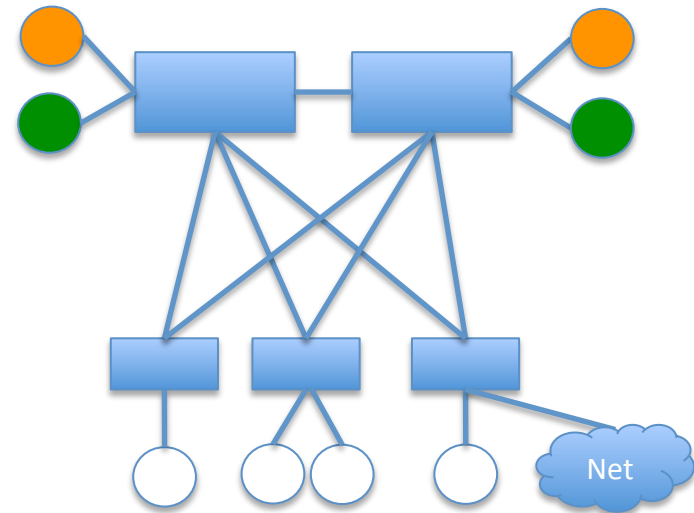
Acknowledgements

- All the authors and contributors on the SFC/ NFC list
- Details see the problem stmt
 - <http://tools.ietf.org/html/draft-quinn-sfc-problem-statement>
- Authors and Contributors
 - Checkout the Problem stmt draft

BASIC ISSUES

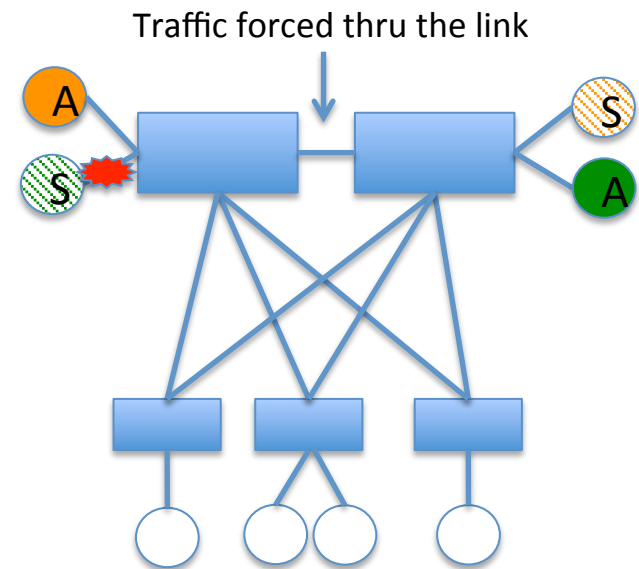
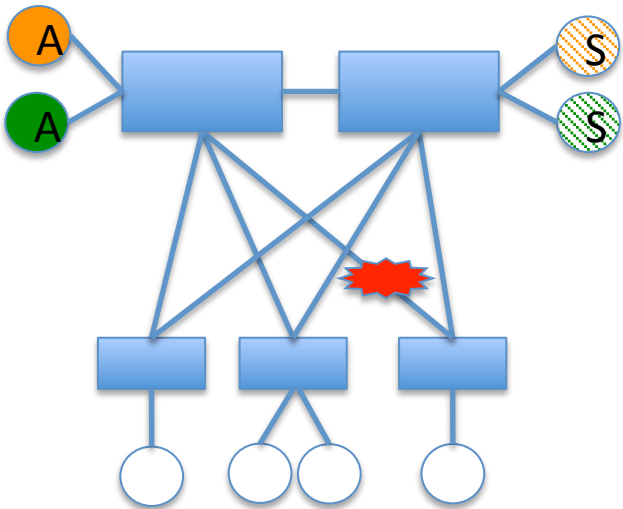
Topology and Config Complexity

- Topology Dependency
 - Sub optimal fwding
 - Services have to be deployed inline
 - Services cannot be applied 'intra' BD traffic
- Configuration Complexity
 - Vlan Stitching
 - Vlan number space
 - Resource reuse
 - VRF Stitching
 - Prefix Replication
 - Protocol exports
 - Service appliances run switching/routing instead of focusing on 'their core functions'
 - Hop by Hop, Policy Based Routing
 - Operations nightmare
 - Expand the Network
 - Forces provider to buy more service appliances, whether they need more service or NOT!!



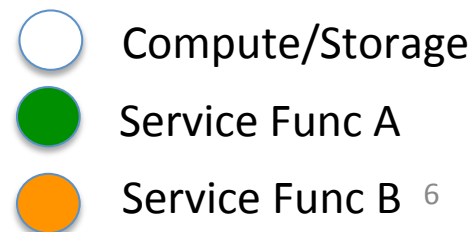
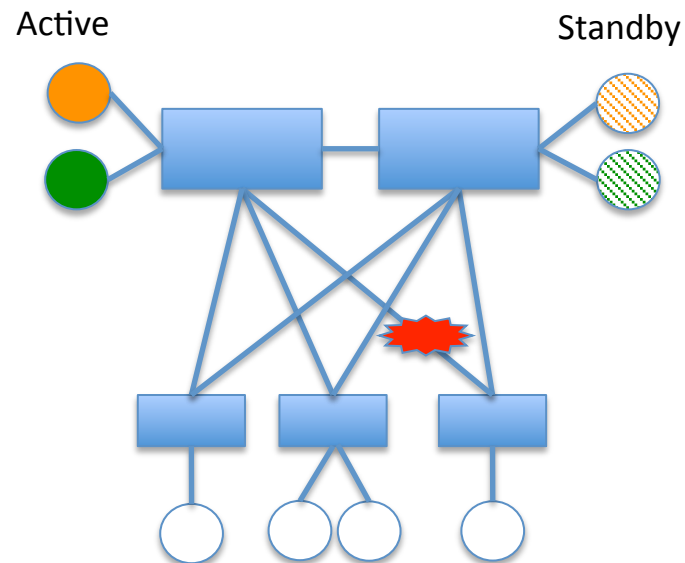
Network Topology changes inter-twined with Service HA

- Network and Services are tightly coupled
 - Constrained HA. Example
 - Failure of Link to Agg switch means sub optimal forwarding or Loss of service



Rigid Service Ordering

- Goal
 - Application A \rightarrow B order service order is
 - Green, followed by Orange
 - Application A \rightarrow C service order is
 - Orange
- Approach
 - Vlan stitching
 - All traffic from A forced thru Service Green
 - Waste processing capacity for Green
 - PBR
 - Fragile/Operationally complex
 - Pkt fragments??
 - Multicast??
 - Assumes all "Cs" can be summarized with prefixes



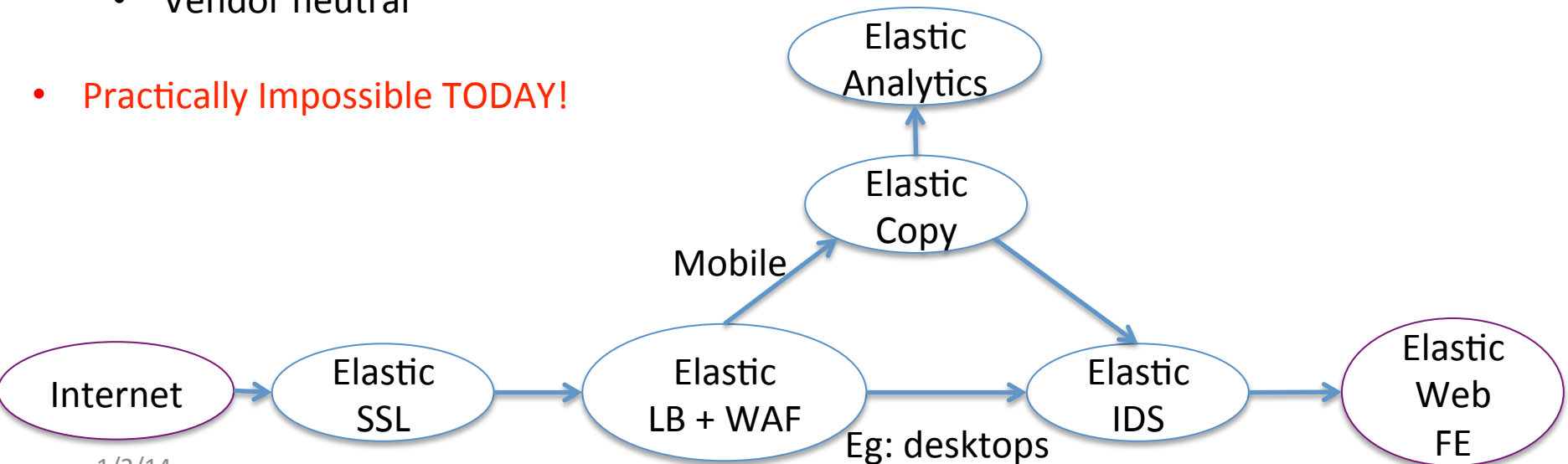
Multi Vendor interoperability/Context Sharing
Elastic Service Deployment
Service Graphs
Simplicity of Operations and Provisioning
Directionality of services
E2E visibility

NEXT TIER OF ISSUES

Try rendering a business policy like...

- All traffic btw Internet and Web Front end servers, apply
 - De/Encryption with highest throughput/low latency and least \$ cost
 - Copy all 'Mobile' only transactions to a Big Data Analytics system
 - Perform copy at most optimal pt (\$ cost and least latency impact)
 - Send all traffic thru a SLB+WAF and an IDS
- Additionally deploy this policy with other caveats like
 - Compute elasticity
 - Compute mobility
 - Service elasticity
 - Service functions are both virtual and physical
 - Vendor neutral

- Practically Impossible TODAY!



Some of the Issues holding us back...

- Service and Network Topology Intertwined
- Configuration Complexity
- Rigid Service Ordering (eg.. chains but no graphs)
- Dynamic workload provisioning
 - Network topology
 - Service
- Interoperability of Vendors
 - No standards for service Meta Data format
 - Meta data is encoded and exported in Transport layer
 - Can't break service functions based on optimal \$ cost
 - No service + network Multi vendor standards
- Elasticity
 - Service Elasticity
- Operational Complexity
 - No end to end trouble shooting

Multi Vendor interoperability/Context Sharing
Elastic Service Deployment

ANOTHER SCENARIO CASE

Say there is a business policy like...

- All traffic btw Internet and Web Front end servers, apply Reputation Security and SLB, followed by IDS functions
 - LB load balances to Pool
 - Security appliance looks for anomalies and reputation based on some 'global' telemetry data
- Further the policy is
 - If the Web FE pool is overloaded, de-prioritize transactions from sources with 'Bad' reputation
- Impossible across multiple vendors and independent of transport
 - No meta data standard
 - No transport independent std

• Impossible TODAY!

