SFC DC Use Cases

draft-kumar-sfc-dc-use-cases
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Objective

Provide requirements for evolving SFC architecture in datacenters

- Demonstrate via general DC use cases, the need for an SFC architecture that
  - Supports hybrid datacenters
  - Frees SF deployment from topology
  - Enables end-to-end metadata passing thru SFC
  - Enables flexible multi-tenancy models
  - Allows for building composite SFCs from sub SFCs
  - Supports SF/C capacity scale-out

Traffic Types & Topology

Emerging DCs are designed for scale, performance and resilience

- North-South traffic
  - Branch Office, Remote Worker
  - Tenant

- East-West traffic - *predominant traffic!*
  - Three-tier: Web, App, DB
  - External storage access, VM migration

- Mobile (Gi-LAN)
 - Subscriber

Service Nodes/Functions

Emerging Service Functions on commodity hardware & virtual form factor

- Physical vs. Virtual Service Nodes
- Service Nodes vs. Service Functions
  - FW: ACL, Inspection, VPN, NAT, …
- SN Instances vs. SF Instances
  - Inspection@FW5 vs. Inspection5
- Build SFCs with static or dynamic selection
  - Need SF-type1 from FW-type3: resolve dynamically
  - Need SF-type1 from FW-type3-instance-pool
  - Need SF-type1@FW-type3-instance5

Typical Service Function Chains

Share the same service functions across different service chains

- ## Access SFCs
  - Service traffic entering/exiting DC
  - One per tenant

- ## Application SFCs
  - Service traffic destined to Apps
  - Many per tenant

- ## Need a combination of SFCs
  - App SFCs alone for north-south
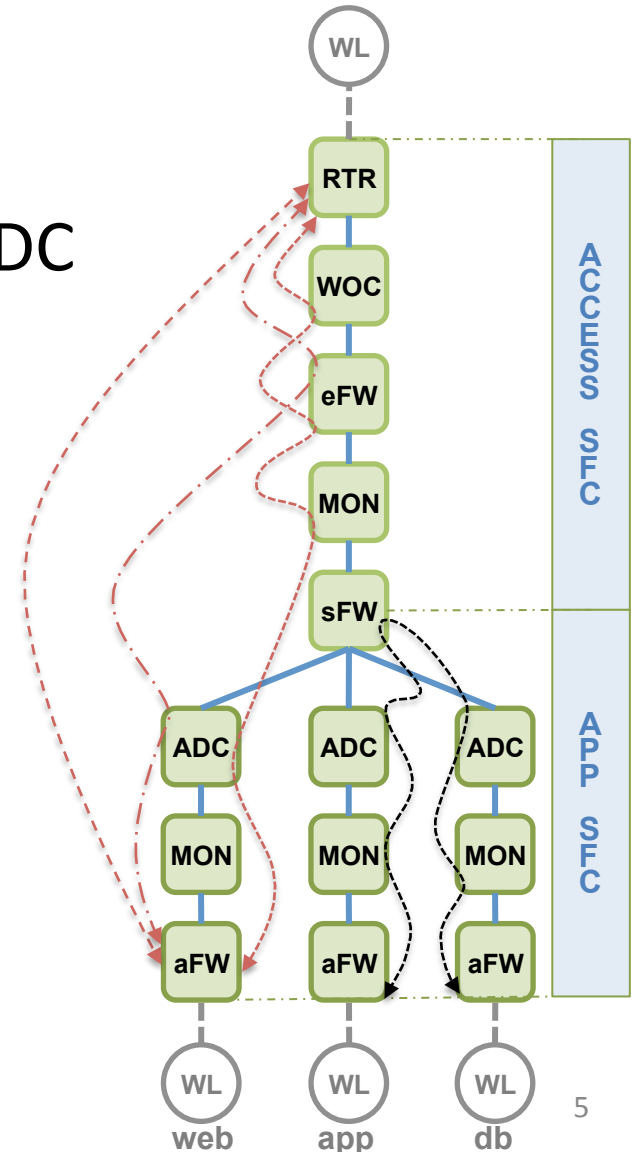
Traditional Method Inadequacies

Static, rigid, complex methodologies can't serve dynamic environments

- VLAN stitching is no longer a Panacea
- PBR does not help either
- Source NAT need not be a requirement
- Capacity scaling is non existent/complex
- Tenant ID cannot be tied to topology
- Absolutely no metadata capability
- Mixing virtual and physical SFs is problematic

Next Steps

Adoption of this draft ...

- Authors would like to
    - Solicit feedback/comments
    - Add more use cases
    - See the requirements become architecture guides
    - Request a WG doc for DC Use Cases