

Use Case for Distributed Data Center in SUPA

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draft-cheng-sup-a-ddc-use-cases

draft-xie-inter-dc-traffic-optimization

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Sub-use case 1: Inter-DC Connectivity Service Definition

- Attributes of (virtual) links (bandwidth, QoS & availability parameters)
- High level requirements like routing strategy (via and not via)
- Policy rules that drive the security requirements

```

module: ietf-supa-ddc
  +-rw ddc-service
    +-rw ddc-service* [name]
      +-rw name string
      +-rw tenant-name string
      +-rw dc-name* string
      +-rw interface-name* string
      +-rw connection-type? enumeration
      +-rw connection-name string
      +-rw vlanId? uint16
      +-rw bandwidth uint32
      +-rw latency uint32
  
```

Yang Service Data Model

Service Policy Examples

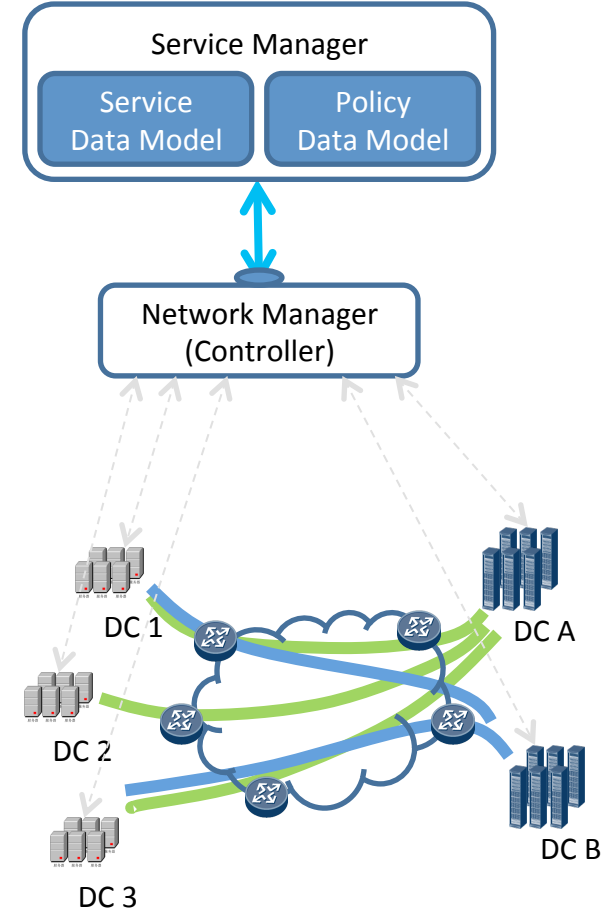
➤ Ensure that the links interconnecting two DCs together guarantee a minimum bandwidth, certain QoS parameters, and provide availability guarantees.

➤ For traffic from DC2 to DC B, if the load on a link exceeds a threshold (e.g., 90%), some (new) traffic can be redirect another link

```

module: ietf-supa-policy
  +-rw ddc-policy
    +-rw adjust-flow-paths
      +-rw adjust-flow-path* [vpn-name]
        +-rw vpn-name string
        +-rw vpn-type? enumeration
        +-rw flow-name? string
        +-rw traffic-steering-policy
          +-rw bandwidth* [type]
            +-rw type enumeration
            +-rw value? uint32
            +-rw threshold* [load]
              +-rw match enumeration
        +-rw adjust-path
          +-rw constraint-node* [nodeId]
            +-rw nodeId string
            +-ro constraint-type? enumeration
            +-rw sequence? uint32
          +-rw constraint-site* [siteId]
            +-rw siteId string
            +-ro constraint-type? enumeration
            +-rw sequence? uint32
  
```

Yang Policy Data Model

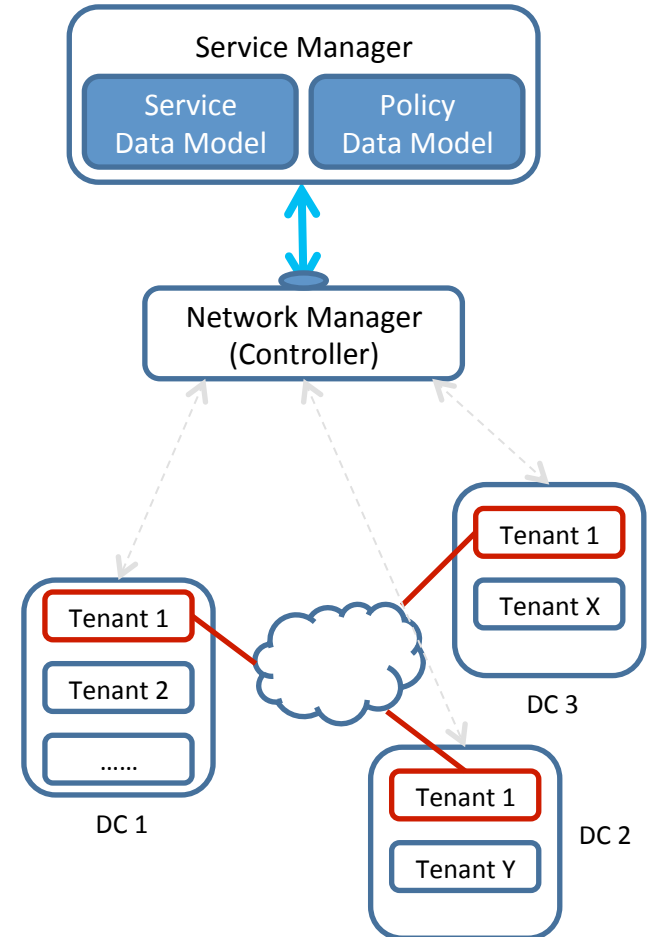


Sub-use case 2: Virtual DC (VDC) Connectivity

- Connectivity between resources owned by a tenant in multiple DCs
- Tunnels that need to be dynamically established, managed, released
- Attributes of tunnels (bandwidth, QoS & availability parameters)
- Interaction with policy systems that dynamically scale the DC resources assigned to a tenant
- policy rules that drive the prioritization of resource assignments

Service Policy Examples

- Ensure that the networking resources assigned to a tenant scale proportionally to the compute resources assigned to a tenant
- Prioritize traffic to resources owned by tenants that offer interactive services according to the time zone the DC is located in

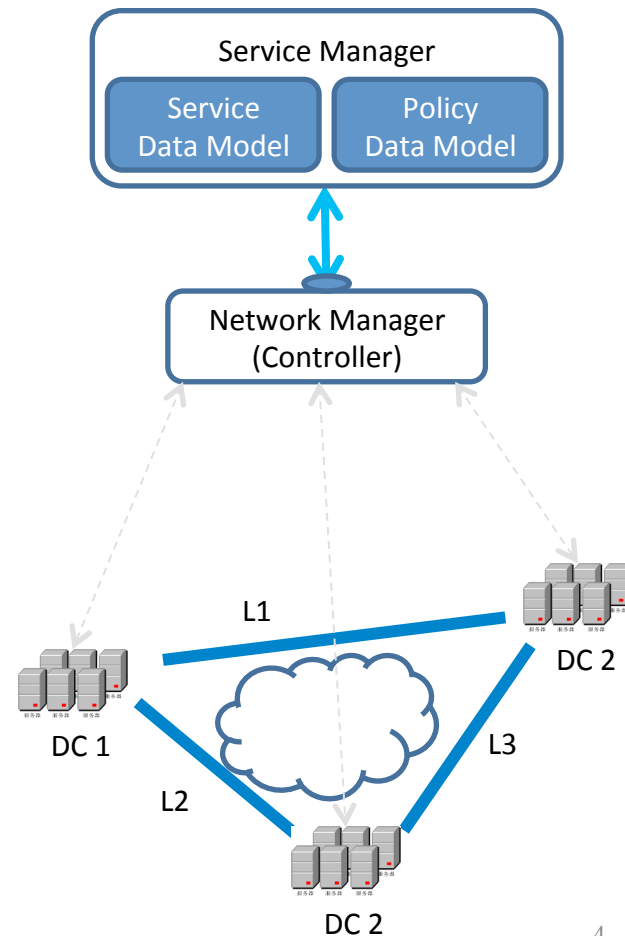


Sub-use case 3: Dynamic Link Configuration for DC

- Creating short-term dedicated links for backups and migrations
- Attributes of links (bandwidth, QoS & availability parameters)
- Policy concerning strict and soft bounds on the lifetime of such links
- Policy concerning the scheduling of dedicated links (e.g., based on the current load) and the services using the dedicated links

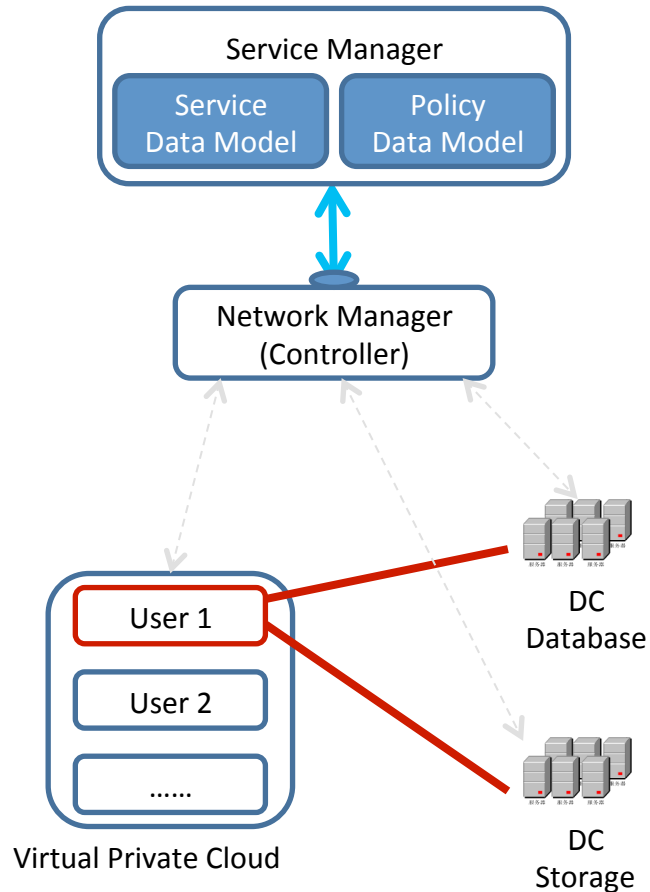
Service Policy Example

➤ When the traffic volume between DCs exceeds a certain threshold, the policy-driven service manager requests that traffic schedules may be adjusted within bounds in order to balance load on the links (e.g., delay backups and migrations until the network has the necessary capacity)



Sub-use case 4: DC Connectivity for Virtual PCs

- Running virtual PCs in clouds connected to internal services
- Creating and managing VPNs to internal services
- Policy controlling authentication and authorization concerning access to data
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- Creating and managing VPNs to internal services
- Policy controlling authentication and authorization concerning access to data



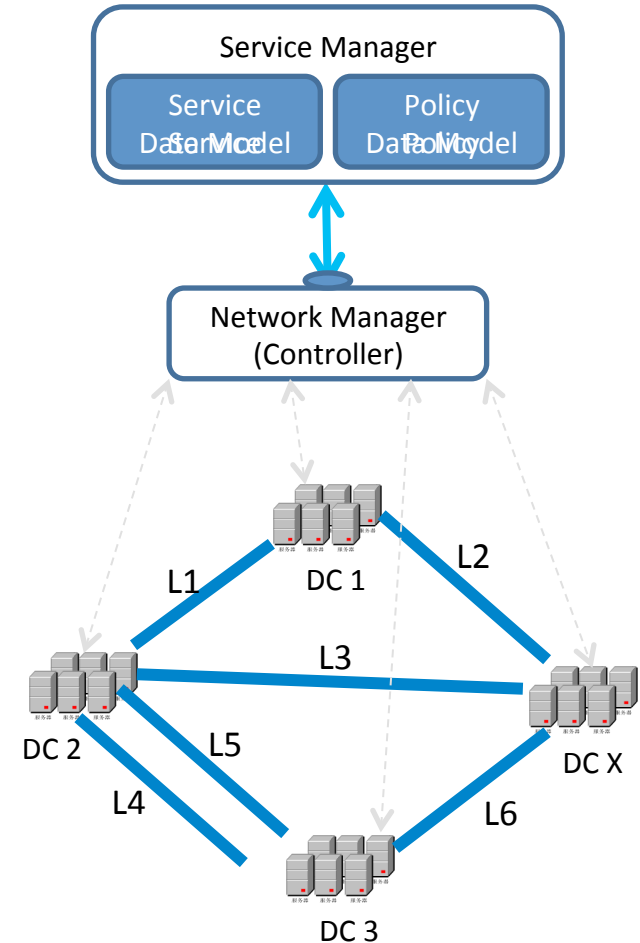
Sub-use case 5: Link Based Traffic Optimization

on load on links

- Attributes (bandwidth, QoS, etc) of links; Be able to monitor load on links
- Traffic classification capability
- Policy for traffic redirecting when load on a link exceeds threshold

Service Policy Examples

- For traffic from DC2 to DCx, if the load on link L3 exceeds a threshold (e.g., 90%), some (new) traffic can be redirect through link L5 + L6, via a third party DC.



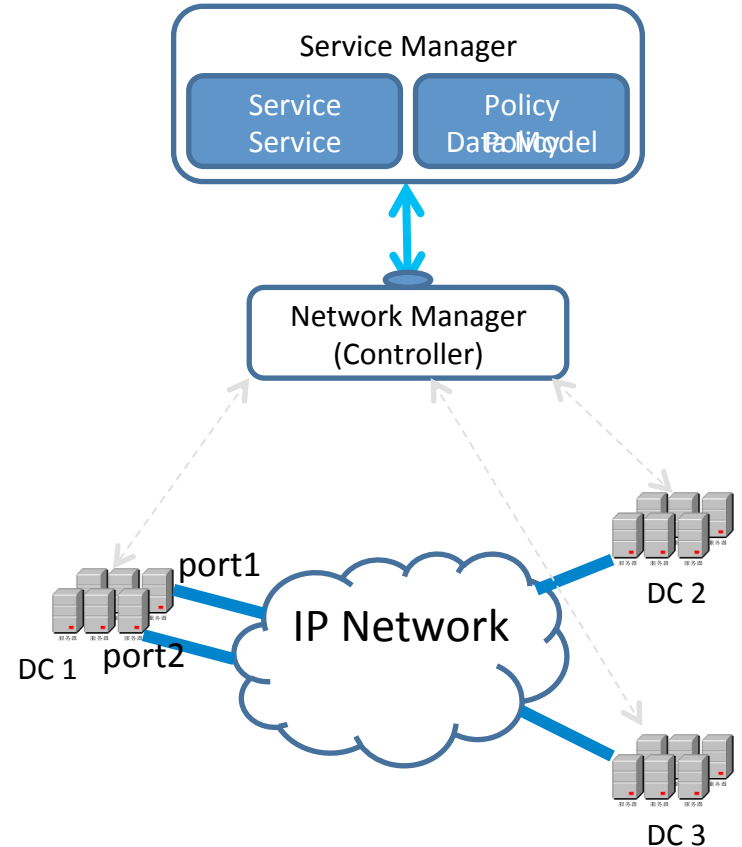
Sub-use case 6: Port Based Traffic Optimization

operator(s) network, attributes (e.g., bandwidth, QoS, etc) of links can not be guaranteed

- Attributes of port include less parameters than that of link
- Dynamic Traffic steering based on ports rather than links

Service Policy Examples

- If the load on port1 exceed a threshold (e.g., 90%), some (new) traffic will be redirected to port2



How Does SUPA Work for Above Cases

improves operation efficiency

Thanks!