

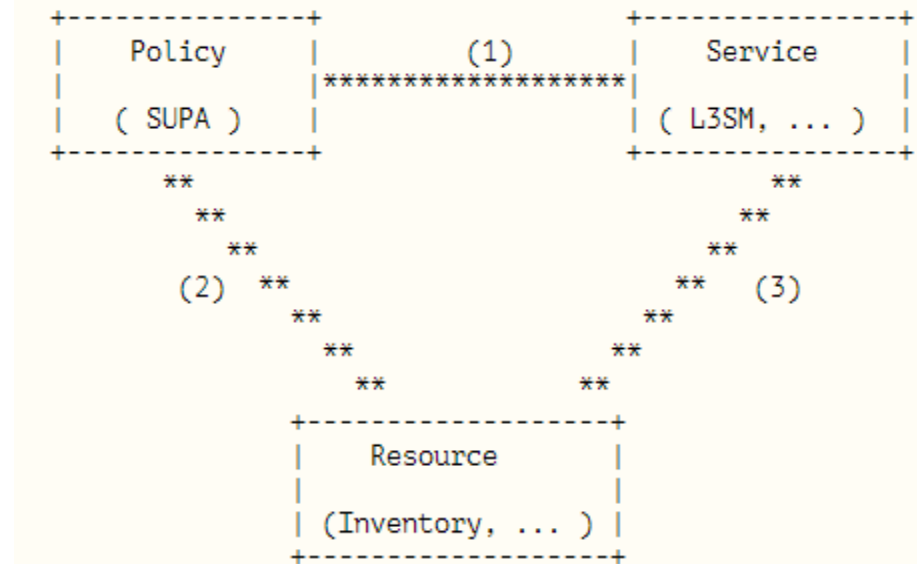
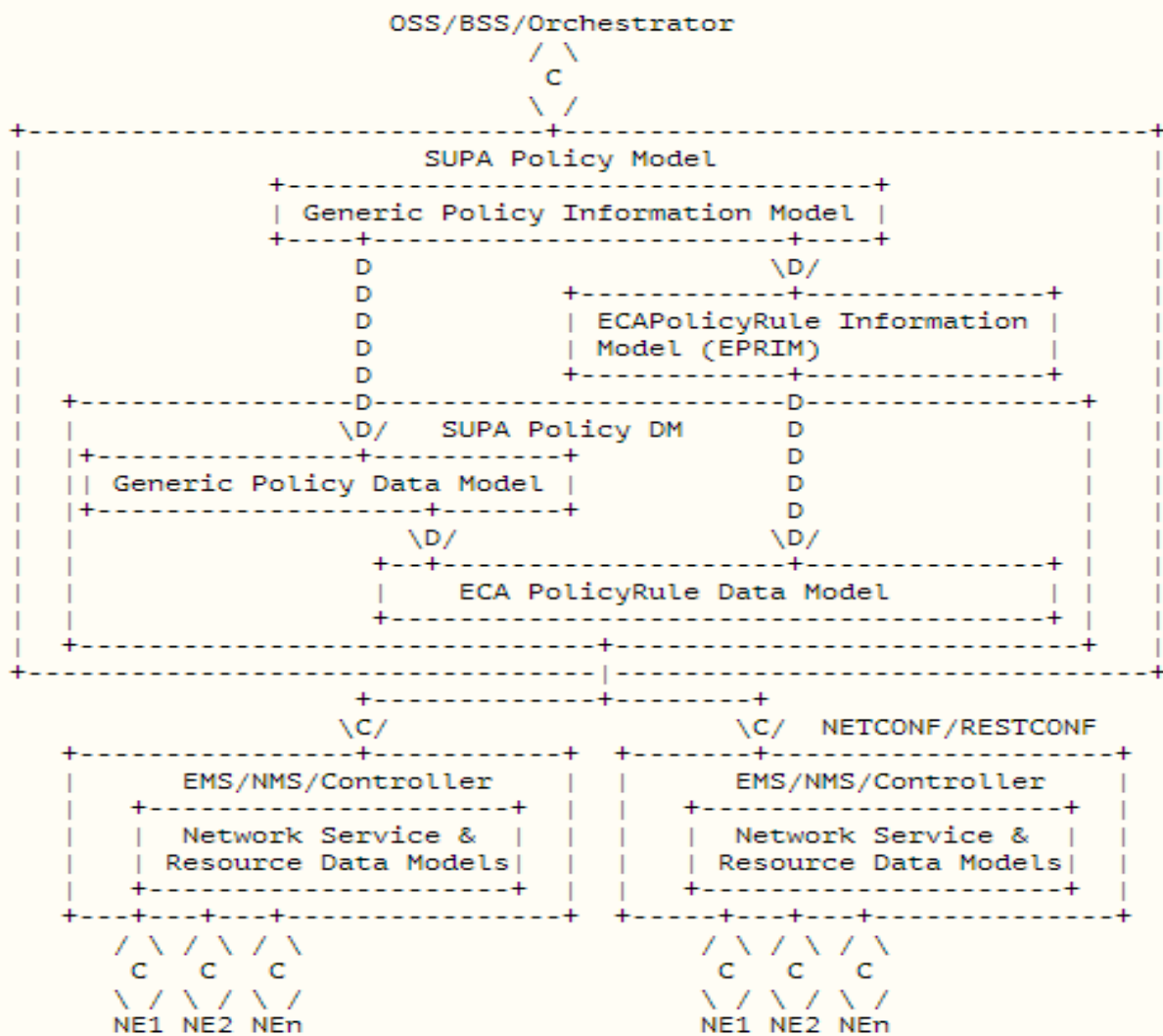
Intelligent Policy Controlled Service Management

- Introduction of SUPA Use Cases

(SUPA: Simplified Use of Policy Abstractions)

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SUPA Policy-based Model Framework



- (1) policy manages and can adjust service behavior as necessary
- (2) policy manages and can adjust resource behavior as necessary
- (3) resource hosts service; changing resources may change service behavior as necessary

- A double-headed arrow with C means communications.
- A double-headed arrow with D means derived from.

Use cases of SUPA

- **Applicability of SUPA** explores some typical use cases and demonstrates the applicability of SUPA policy models.
- <https://datatracker.ietf.org/doc/draft-cheng-sup-a-applicability/>

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VPC (Virtualized Private Cloud)

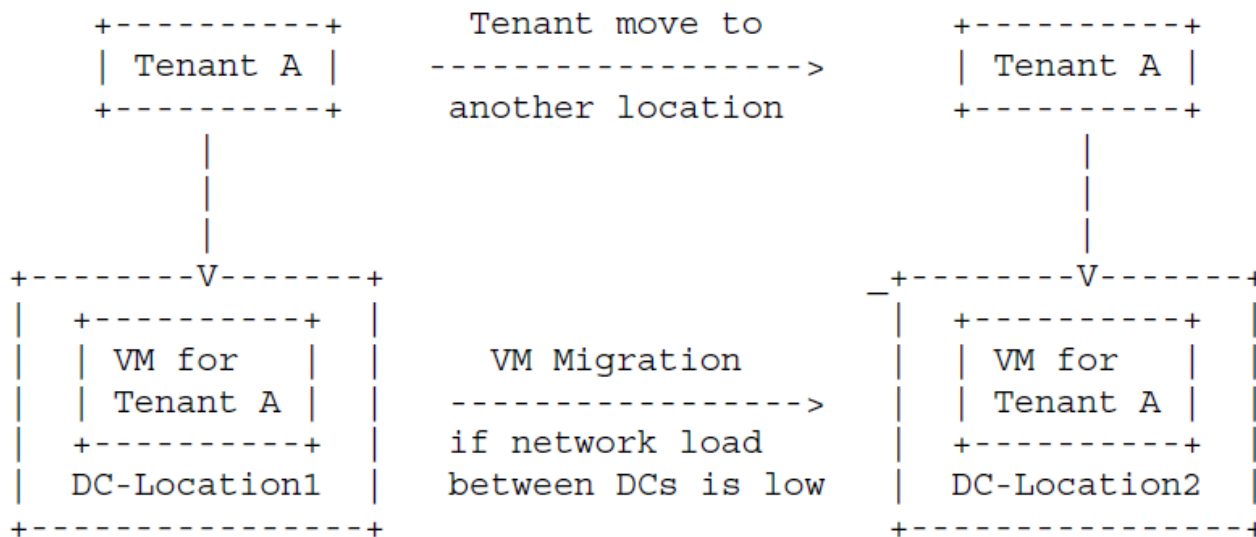


Figure 5: VM Migration if Tenant Move

- A public cloud operator can virtualize the cloud resources into multiple isolated virtualized private clouds and provide them to different tenants.
- After the VM is moved to the new DC, the network related to the VM must be updated accordingly.

- **Target:** Perform VM migration when user location changed and the network load between the DCs is low.
- **ECA Policy:**
 - Event: a VPC user's location is changed (near to another DC).
 - Condition: $\text{network_load}(\text{DC_old}, \text{DC_new}) < \text{threshold}$.
 - Action:
 1. Migrate the VM to the new data center (DC_new).
 2. Update the VPNs connecting the user's services.Cloud is referred to as a VPC

Instant creation of VPN

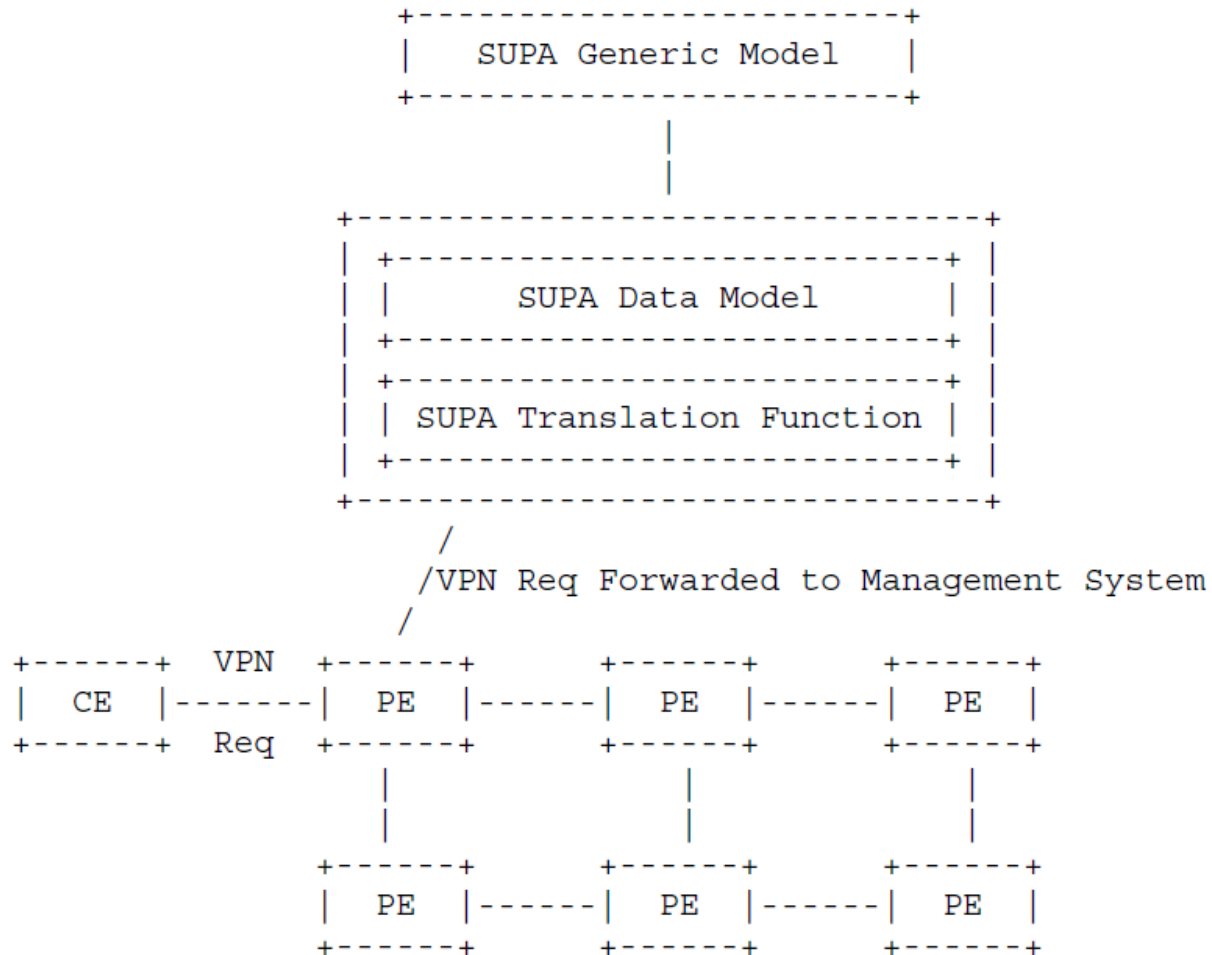


Figure 8: Instant VPN

- CE should send authentication (with credentials) request to the PE, and PE should forward the request to the management system together with port/frame/slot on which the request is received, the PE ID etc.
- **Target:** Configure VPN for an enterprise customer to connect its enterprise network with VPC
- **ECA Policy:**
 - Event: service management system receive a CE request for VPN creation (forwarded by PE).
 - Condition: Authentication and Authorization results are OK.
 - Action: Configure VPN based on received request, including the user's grade and physical info (port/slot/frame/route id, etc, from which the request is received).

Traffic optimization and QoS assurance on ISP DC

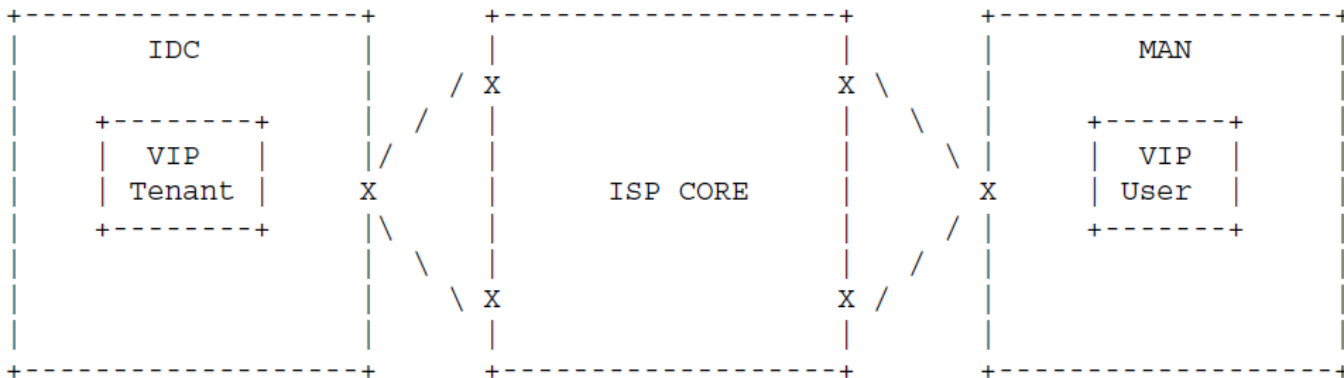


Figure 9: traffic optimization and QoS assurance on ISP DC

- ISPs usually build DCs at the core network border, DCs have more than one uplinks to DC core network; In order to provide service assurance for import tenant, network administrators need to schedule the traffic in specific periods.
- When utilization of a link reaches a certain threshold, specific flows should be steered to a low load link according to IP address and AS number

- **Target 1:** a DC has multiple external links. When the load on a link is over a threshold, perform traffic steering for a better bandwidth resource usage.
- **ECA Policy:**
 - Event: load on a DC link exceeds threshold or a VIP tenant needs bandwidth assurance.
 - Condition: DC has multiple external links.
 - Action: steer VIP's traffic to link with low load in a specific period
- **Target 2:** Tenants or users may have critical request on network QoS. When there is enough bandwidth along the link, perform resource reservation for VIP's traffic on specific links.
- **ECA Policy:**
 - Event: Tenants or users have critical network requests.
 - Condition: Resources along the link are enough for reservation.
 - Action: perform resource reservation for VIP's traffic on specific links.

Thanks for your attention!