ETSI — NFV Proof of Concept

PoC#39: Virtualised Service Assurance Management in vGi-LAN
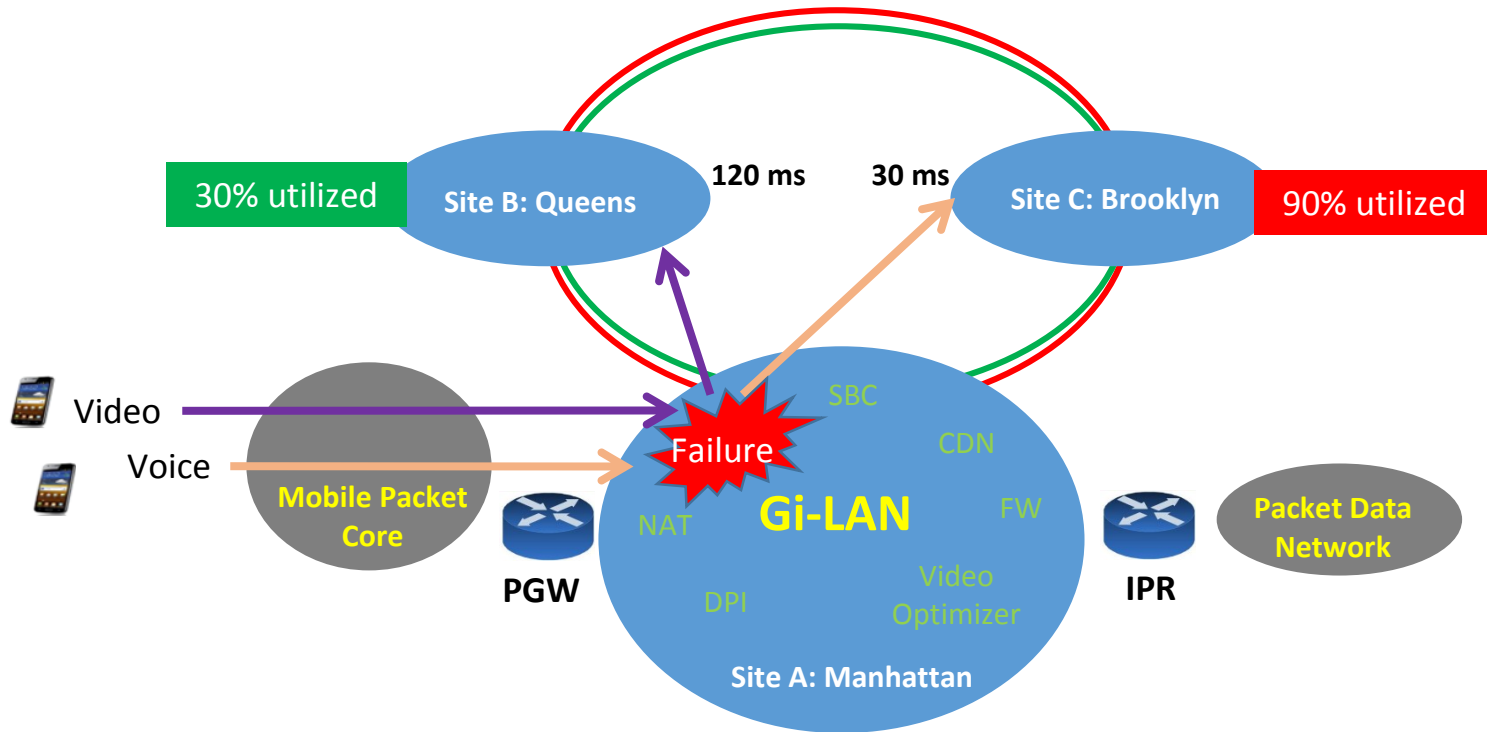
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# More intelligent resource management needed for service assurance in NFV

- **traffic is currently failed over without considering platform load or link suitability**
- **could be improved by a more intelligent approach to utilizing resources on adjacent sites**

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# Proof of Concept: Virtualized Service Assurance Management in vGi-LAN
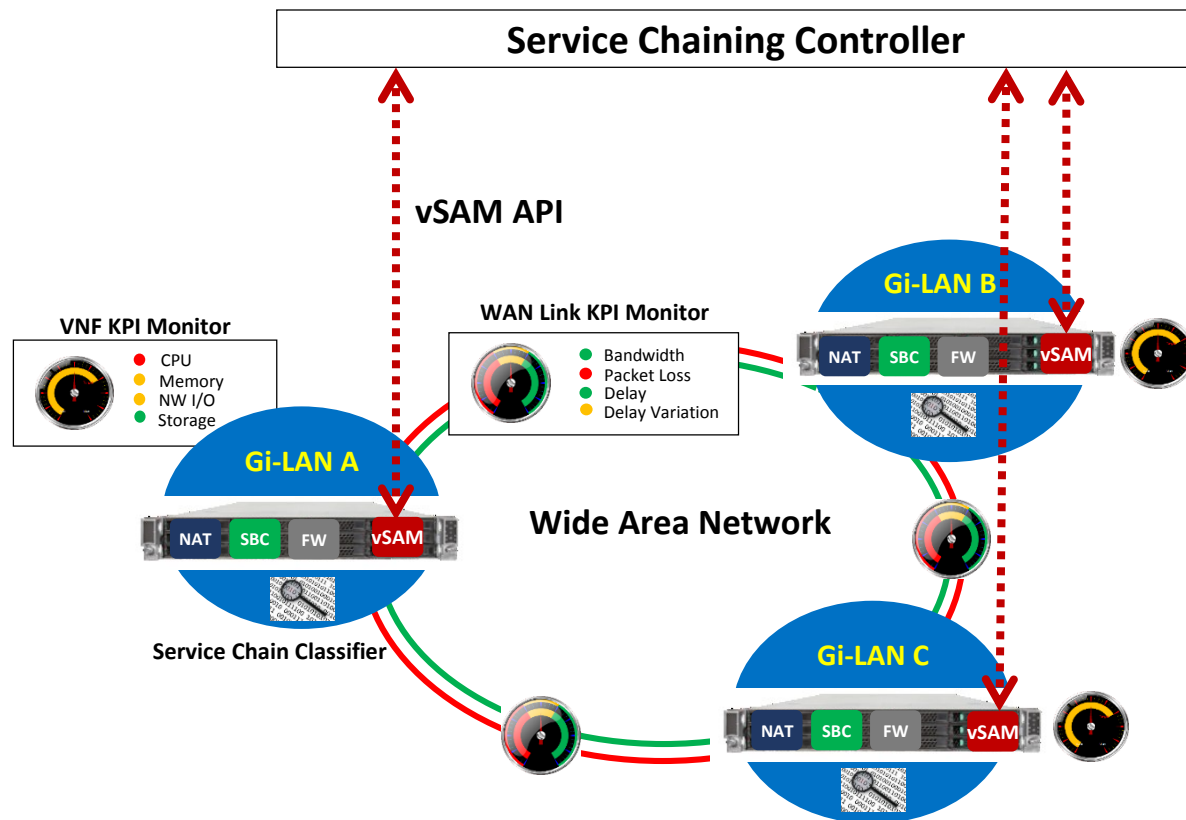
- **Marry and track VNF resources & links between NFVI PoP's**
- **Open API for any NFV management entity to use**
- **Intelligent deterministic logic to cope with overload and failure conditions.**

PoC High-level Design
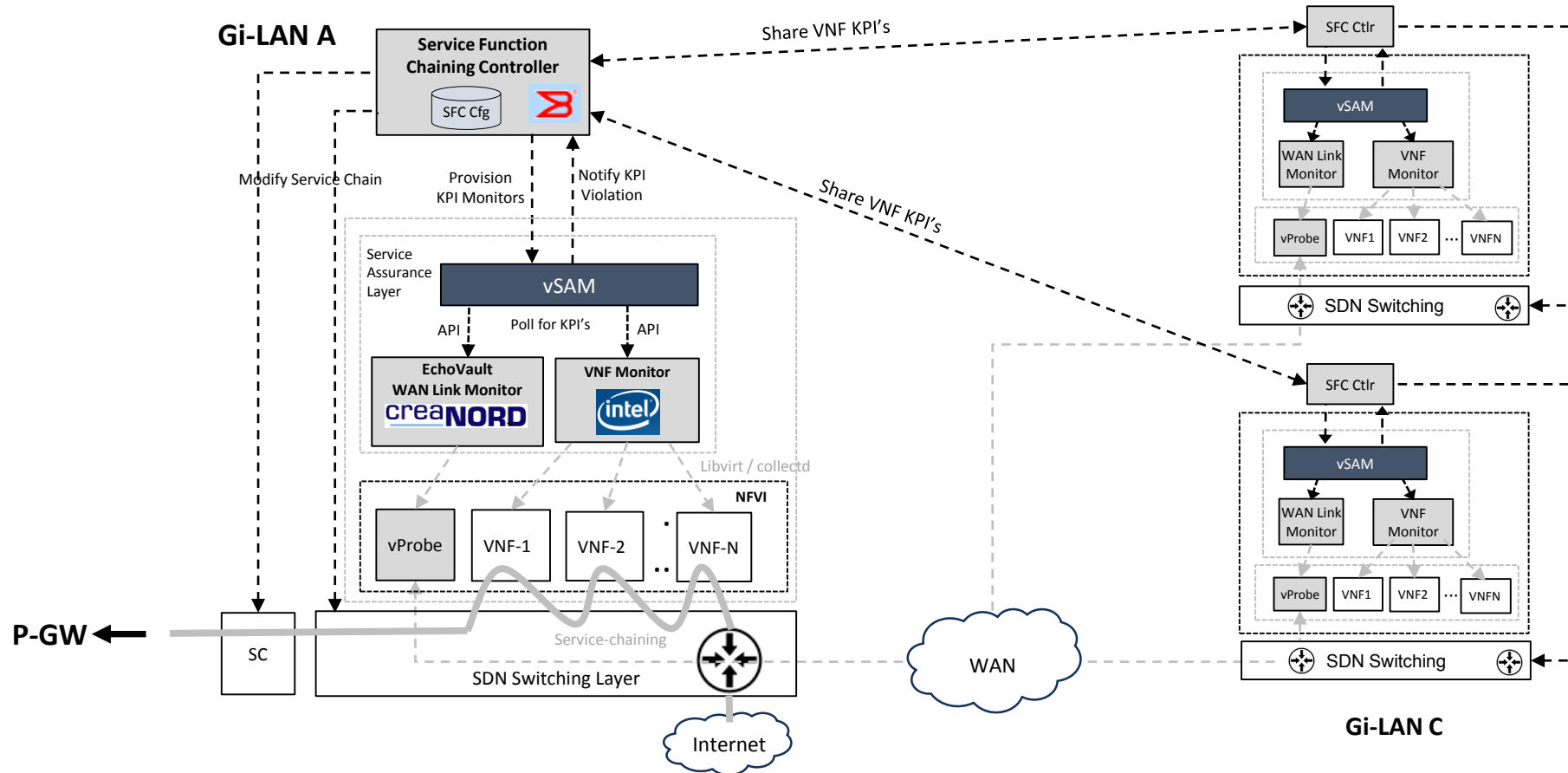
- **vSAM instances collect compute/network KPI's using Creanord EchoVault and Intel VNF Monitor**
- **vSAM alerts SFC controller of KPI threshold violations for service chain elements**
- **SFC controller adapts service chains based on vSAM alerts and KPI data**

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# Scenario (1) : vGi-LAN service chaining under normal conditions
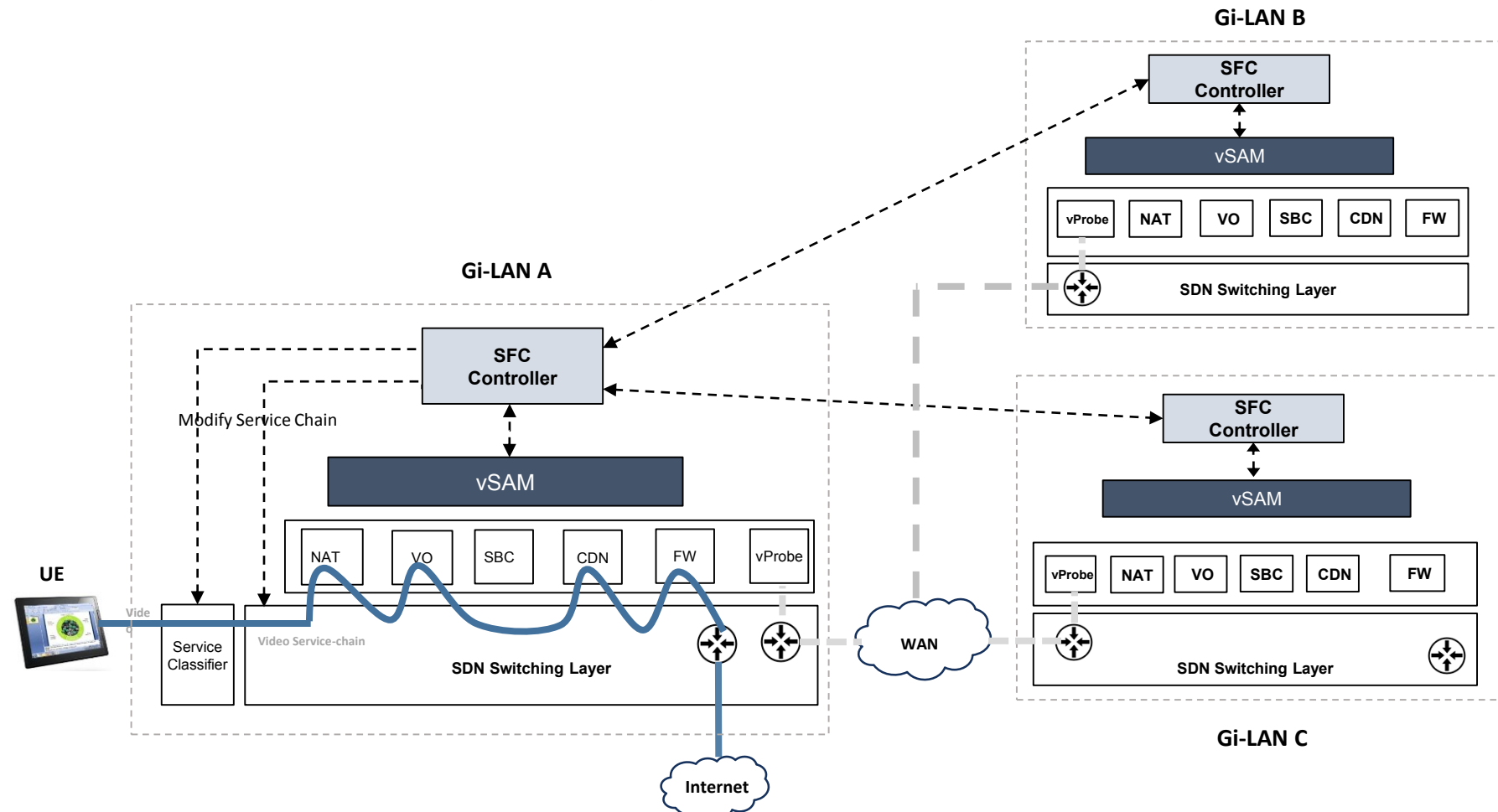
vSAM assures that Gi-LAN A VNF's are healthy and can fulfil a service chain for video traffic

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Scenario (2) : VNF overload - WAN links and VNF's normal for adjacent sites
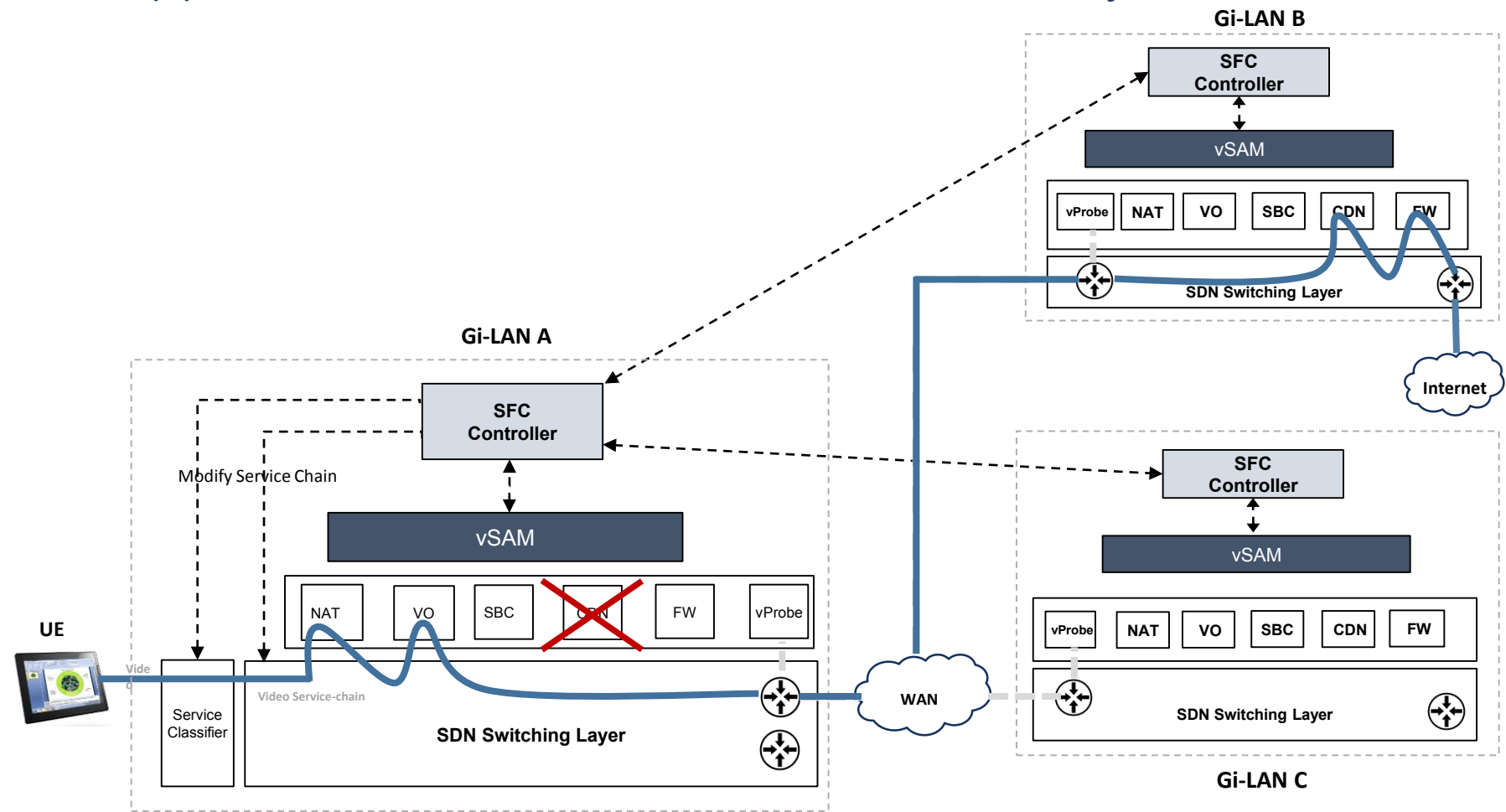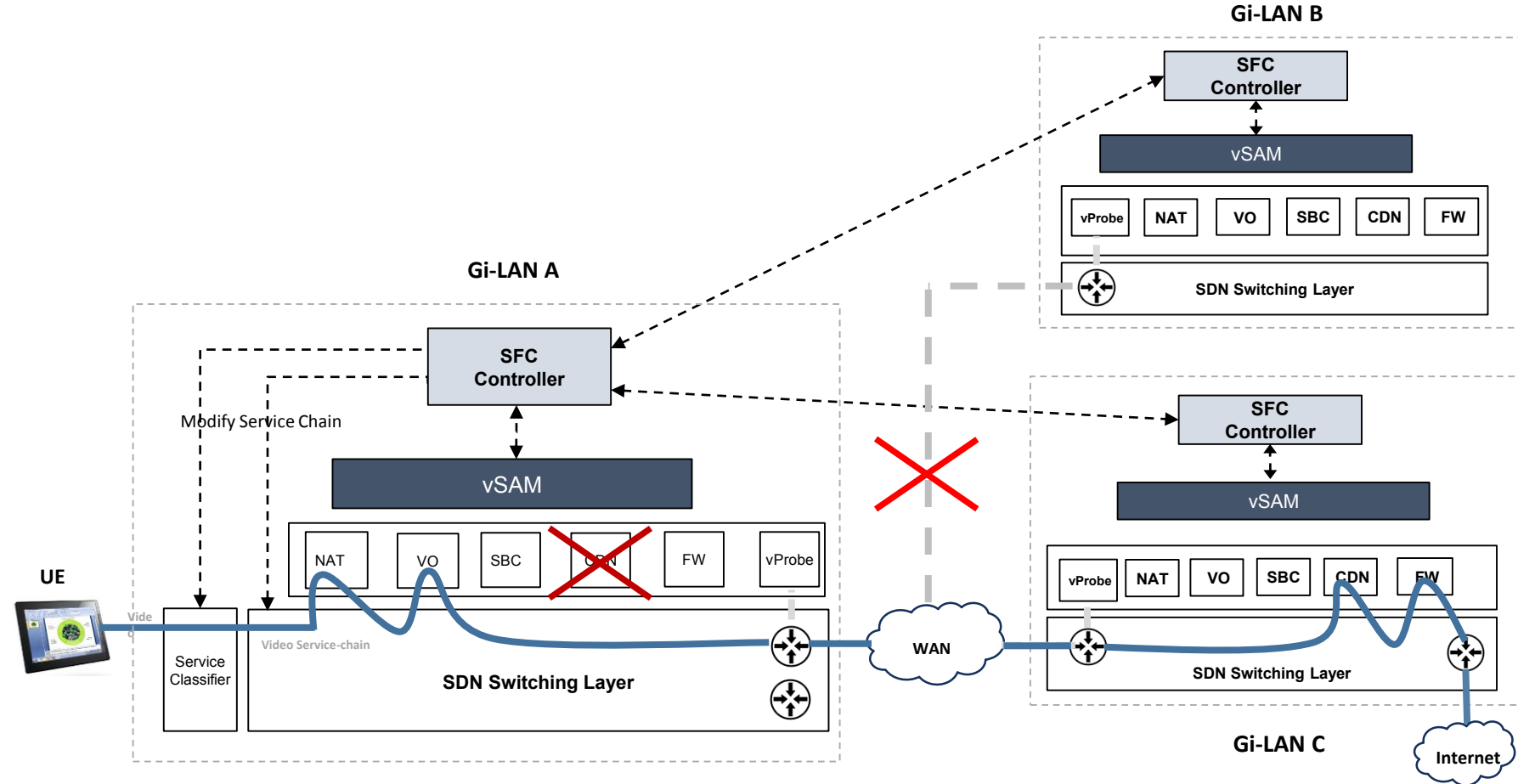

vSAM notifies the SFC Controller that a KPI violation has occurred in Gi-LAN A CDN

CDN on Gi-LAN B is chosen for an alternative service chain path based on vSAM KPI data

Scenario (3): VNF overload - VNF on default back-up site also overloaded
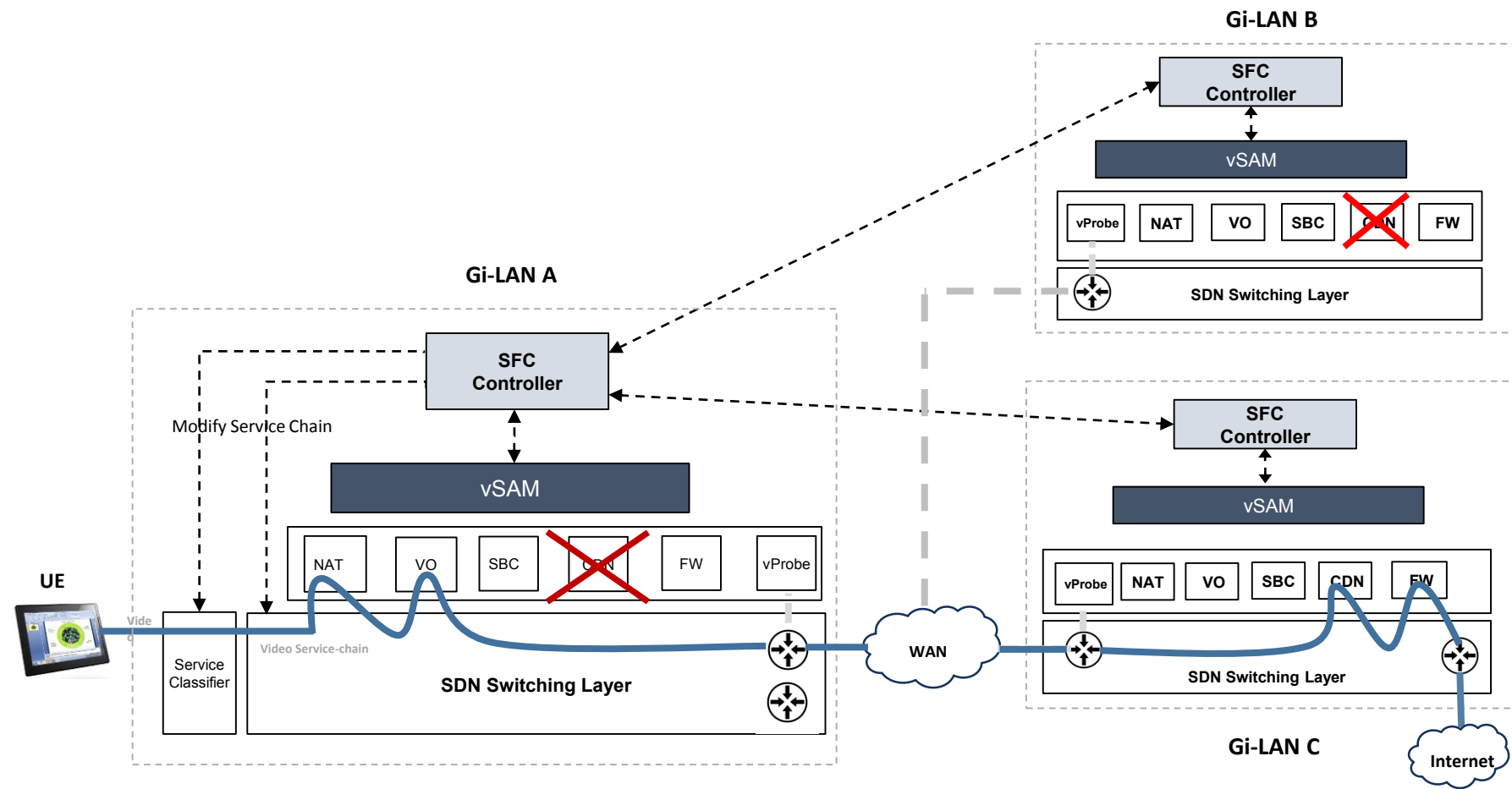
vSAM notifies the SFC Controller that a KPI violation has occurred in Gi-LAN A CDN

Based on sub-optimal KPI data for the Gi-LAN B CDN, the Gi-LAN C CDN is chosen as an alternative path

Scenario (4) : VNF overload – unsuitable WAN link with default back site

vSAM notifies the SFC Controller that a KPI violation has occurred in Gi-LAN A CDN

Based on sub-optimal KPI data for the wide-area link between Gi-LAN A and Gi-LAN B CDN, the Gi-LAN C CDN is chosen as an alternative service chain path

REST API's

vSAM API

|		
POST	/vsam/initialization	Initialize vsam
POST	/vsam/kpi/monitor	Register a KPI for monitoring
DELETE	/vsam/kpi/monitor	De-register a KPI for monitoring
GET	/vsam/kpi/monitor/path	Get a list of registered paths
GET	/vsam/kpi/monitor/path/{path}	Get a specific Path's KPI's
GET	/vsam/kpi/monitor/platform	Get a list of registered paths
GET	/vsam/kpi/monitor/platform/{platform	Get a list of registered paths
POST	/vsam/kpi/notification	POST a KPI Event Notification
DELETE	/vsam/kpi/notification	DELETE a KPI Event Notification

SFC API

POST	/rest/sfc/alert	POST a KPI Event Notification
GET	/rest/sfc/chains	Get a list of registered chains
GET	/rest/sfc/chains/{id}	Get a chain by id
GET	/rest/sfc/dci	Get DCI Topology
DELETE	/rest/sfc/deregister/{app}	Deregister an application
GET	/rest/sfc/mgmtip/{id}	Get Mgmt IP
GET	/rest/sfc/paths	Get a list of registered paths
GET	/rest/sfc/platforms	Get a list of registered platforms
POST	/rest/sfc/register/{app}	Register an application
GET	/rest/sfc/registered	Get registred apps
GET	/rest/sfc/sfp	Get SFP List
GET	/rest/sfc/sfp/{id}	Get SFP Topology

Key functions:

**vSAM API (1) KPI monitor provisioning (2) KPI query (3) KPI event notification**

SFC API   (1) Service chain status query (2) Service chain alert

PoC Infrastructure - 3 x vGi-LAN's
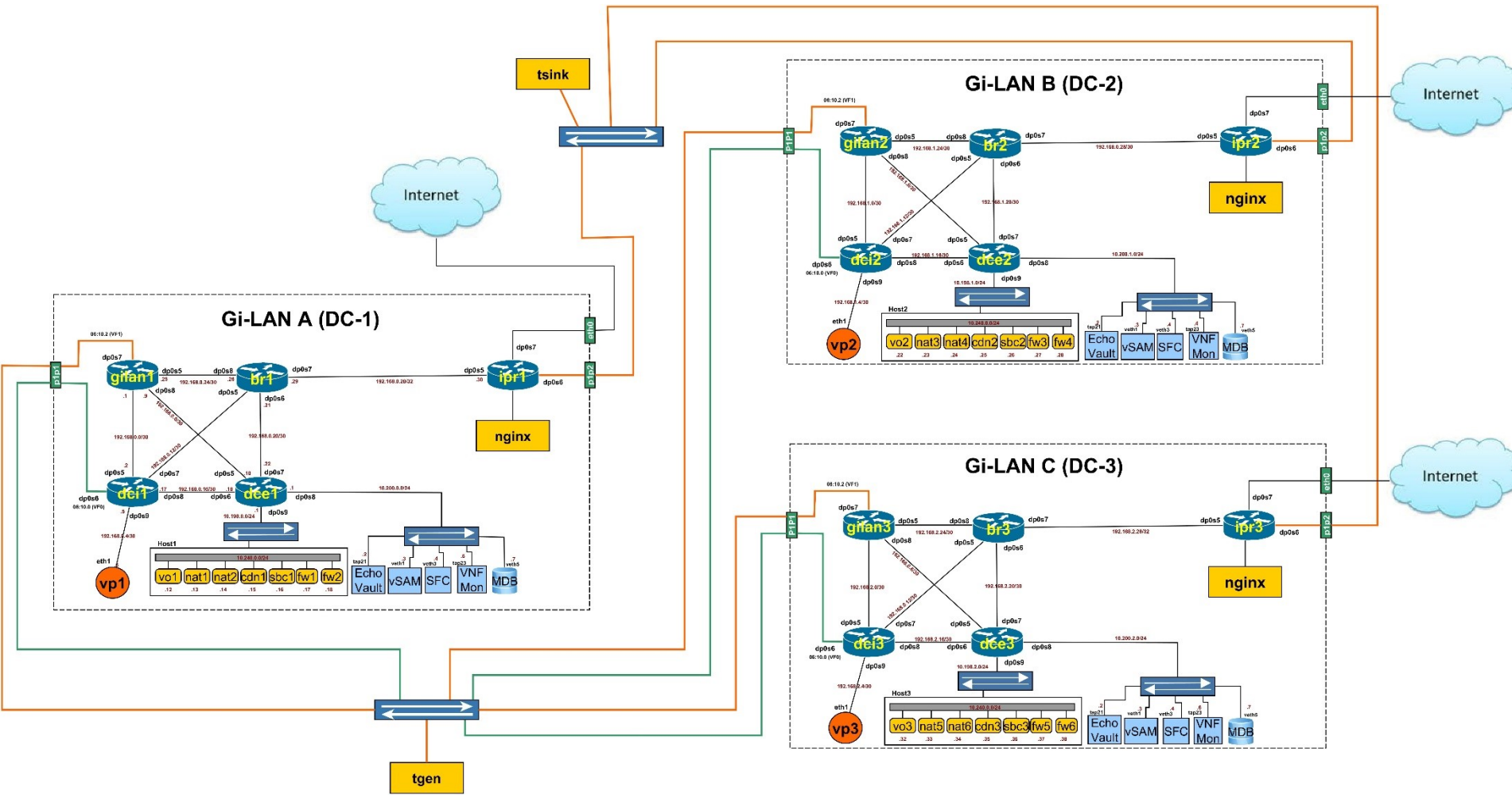
3 x Gi-LAN sites simulated on 3 x servers with Dual Intel® Xeon E5-2699 v3 18-core CPU's and Intel® 82599 10Gbe NIC's.   Servers inter-connected by a 10G Brocade TurboIron switch.

PoC Infrastructure - Single vGi-LAN View
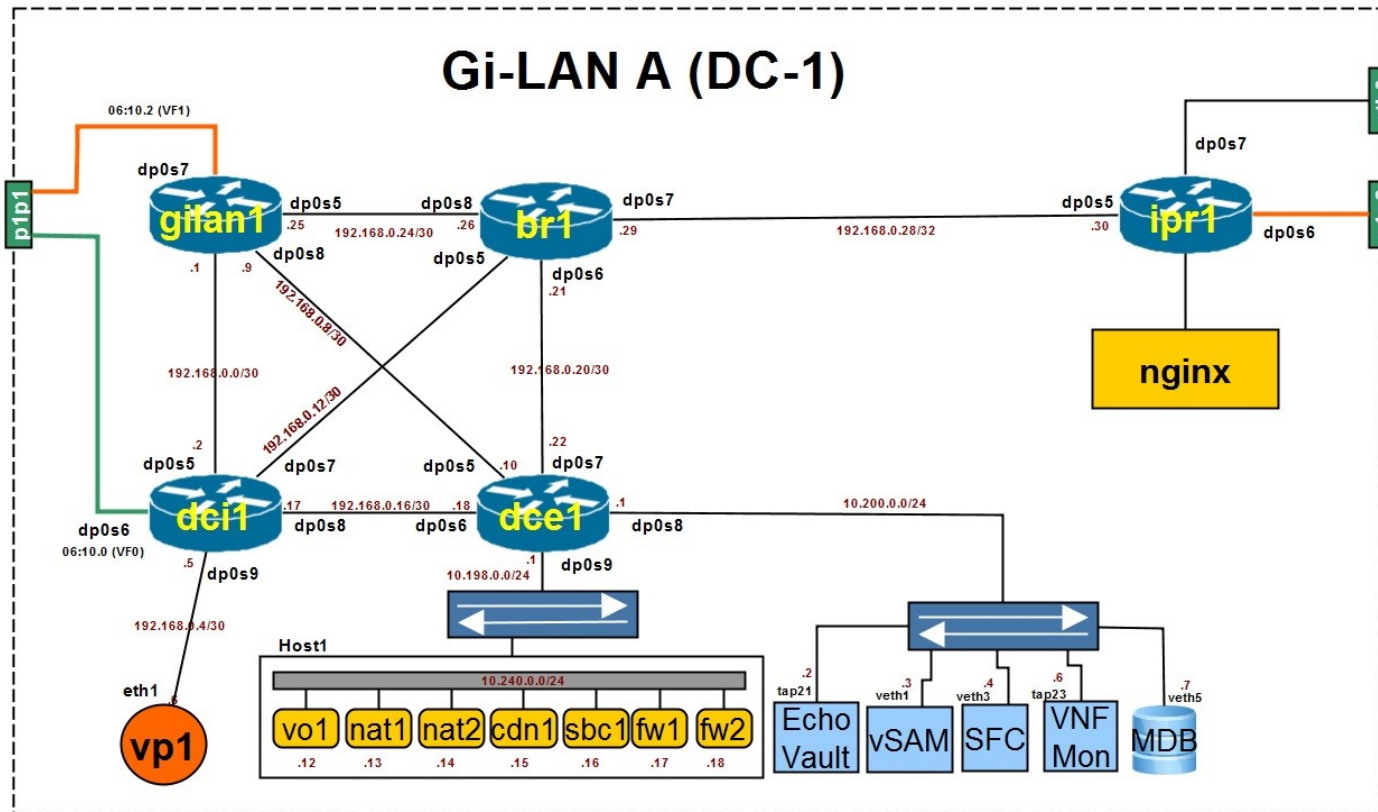
- **Vyatta virtual routers used for service classification and simulation of typical Gi-LAN routers**
- **Creanord virtualized network probe attached to DCI vRouter for testing of inter-site links**
- **VNF's run as Linux Containers inside a VM (which simulates a physical host)**
- **OSS components (vSAM, SFC etc) running in Linux Containers and VM's**

ETSI NFV Architecture Mapping
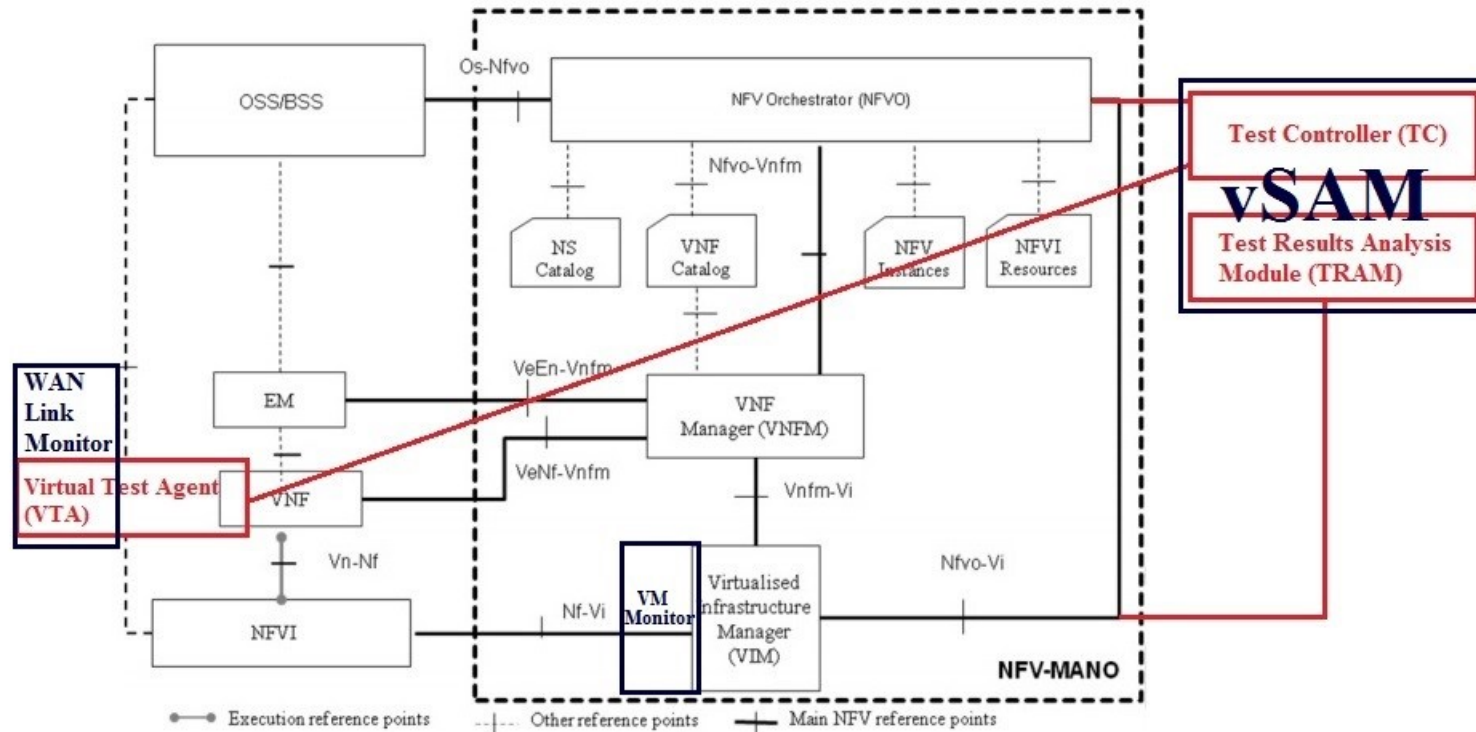
Test Controller, TRAM and VTA are new elements identified in work item NFVREL004 "Active Monitoring and Failure Detection in NFV Environments"

vSAM is analogous to a consolidated Test Controller and TRAM, which gathers KPI data from VIM and VTA, and may interact with an NFV Orchestrator

GUI to Demonstrate PoC Scenarios
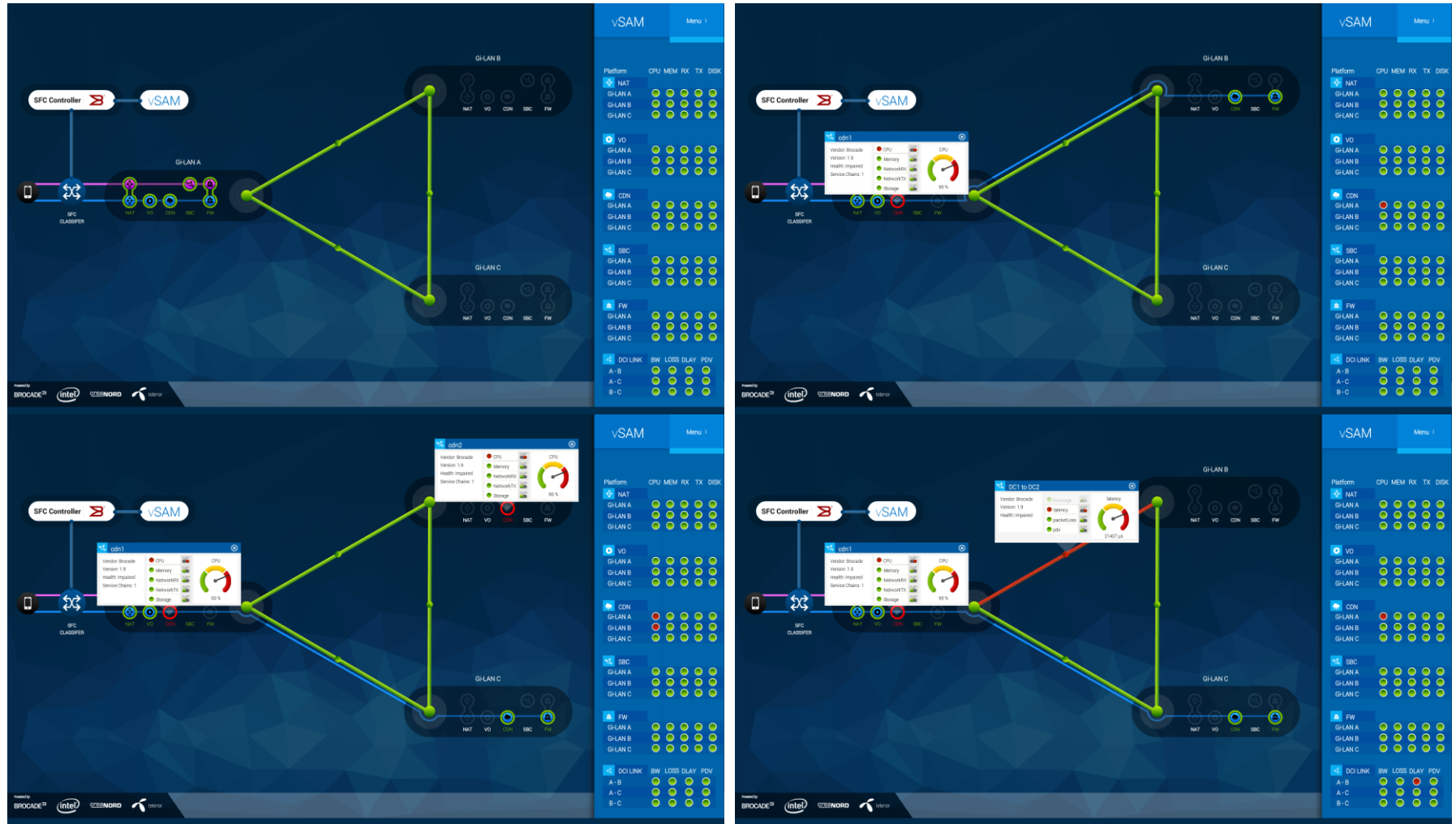
REST API's used to render state of VNF's, wide area links and service chain path

Summary

- SDN and NFV allow us to think in new ways to improve operator agility and subscriber QoE

- The combination of compute and network KPIs offers a powerful open fabric for deterministic service assurance management in NFV

- The goal of ETSI NFV PoC #39 was to implement and demonstrate an approach to this based on the use-case of a virtualized Gi-LAN

Q&A

The PoC team at NFV WC 2016 in San-Jose – front-stage and back-stage