

IETF Network Slice Service YANG Model

[draft-wd-teas-ietf-network-slice-nbi-yang](#)

TEAS WG

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Bo Wu, Dhruv Dhody - Huawei

Reza Rokui - Nokia

Tarek Saad - Juniper

Liuyan Han - China Mobile

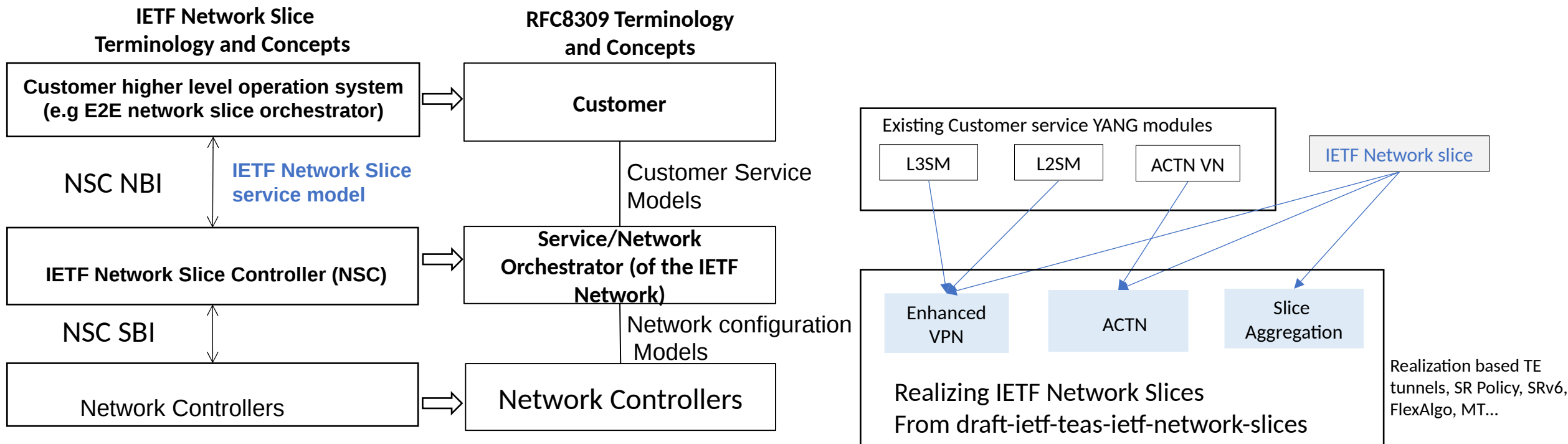
Luis Miguel Contreras Murillo - Telefonica



I E T F
TEAS Interim meeting

Why IETF Network slice service YANG?

- draft-ietf-teas-ietf-network-slices defines IETF Network Slice Service, and also define IETF NSC NBI as a technology-agnostic interface for creation/modification/deletion of the IETF Network Slices; it expresses requirements of what is required rather than how that is to be achieved (**intent**)!
- Based on RFC8309, IETF NSC NBI is thus classified as **customer service model**. Existing customer service YANG modules are all technology specific, e.g. L3SM, ACTN VN (tight coupling to TE)
- A network slice service YANG module is needed when a SP provides “slicing as a service”, so the customer could focus on the service requirements rather than the technical implementation.



Yang Modeling Options for Network Slice service model

Reuse VN Model

- **VN + TE topology**: Describe the service in terms of topology, so tight coupling with TE topo model
- draft-ietf-teas-ietf-network-slices defines NS, NSE without use of VN, AP, VNAP
- Miss lots of NS features, SLO/SLE ☐

Augmenting VN model

- Same issues apply here
- VN model is not suitable as a base because of the tight coupling
- **VN-TE topo**: Redesign VN model (!!!) – *is that practical? Redefine IETF network slice in terms of VN, AP, VNAP?*

Independent model

- The modeling approach is more akin to the LxSM model
- Avoid any coupling with TE models to support other ways to realize the slice such as MT, FlexAlgo, etc.
- Clear modeling for SLOs/SLEs, NSE etc as per the IETF network slice definition.
- VN model can be used to realize slice along with LxSM/LxNM

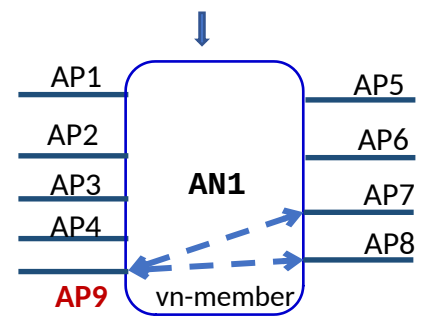
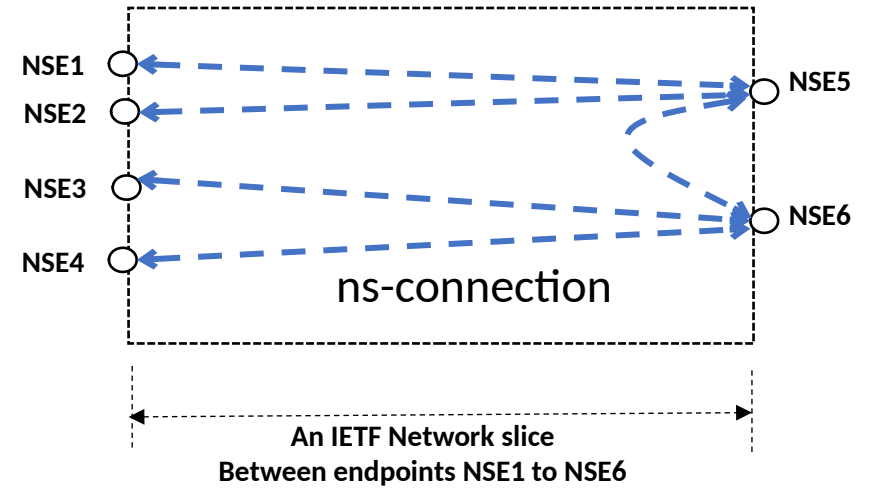
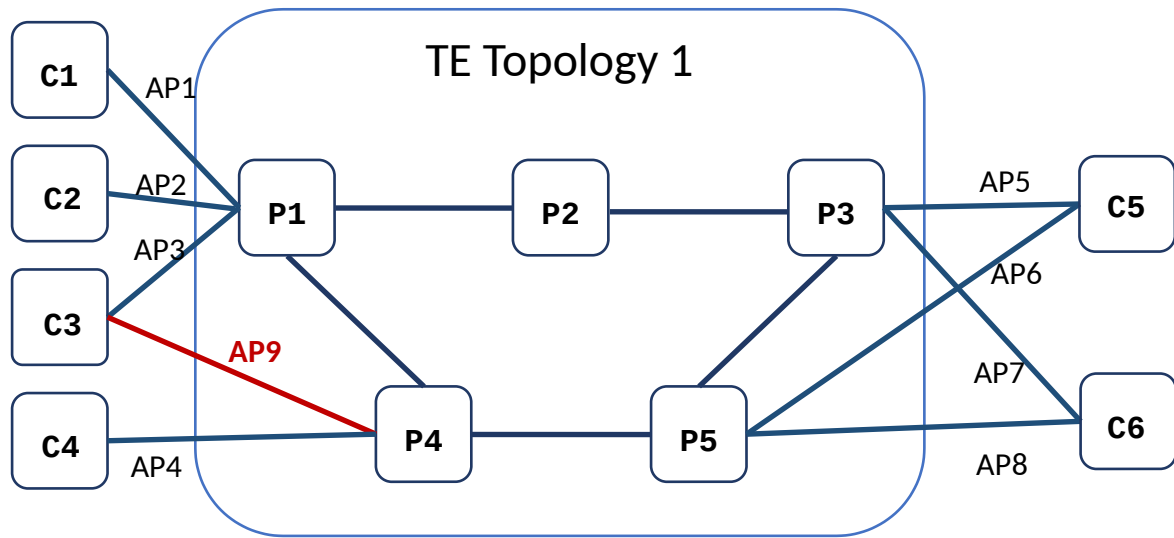
Issues with this approach!

Better suited for Network Slice Realization as NSC SBI, that maps NS (customer view) to provider network!

Just FYI - There are ongoing implementations based on this modeling approach!

Difference between AP & NSE

- AP/VNAP is not consistent with the NSE definition: AP/VNAP refers to access **link**; NSE are conceptual points of connection to IETF network, serving as slice **ingress/egress points**!
- VN model describes the service topology in terms of IETF TE topology where AP is logical identifier but it maps to a access link between customer node and operator node. Any change in access link will cause service topology changes.
- Multiple access links can be part of NSE but NSE is otherwise independent.

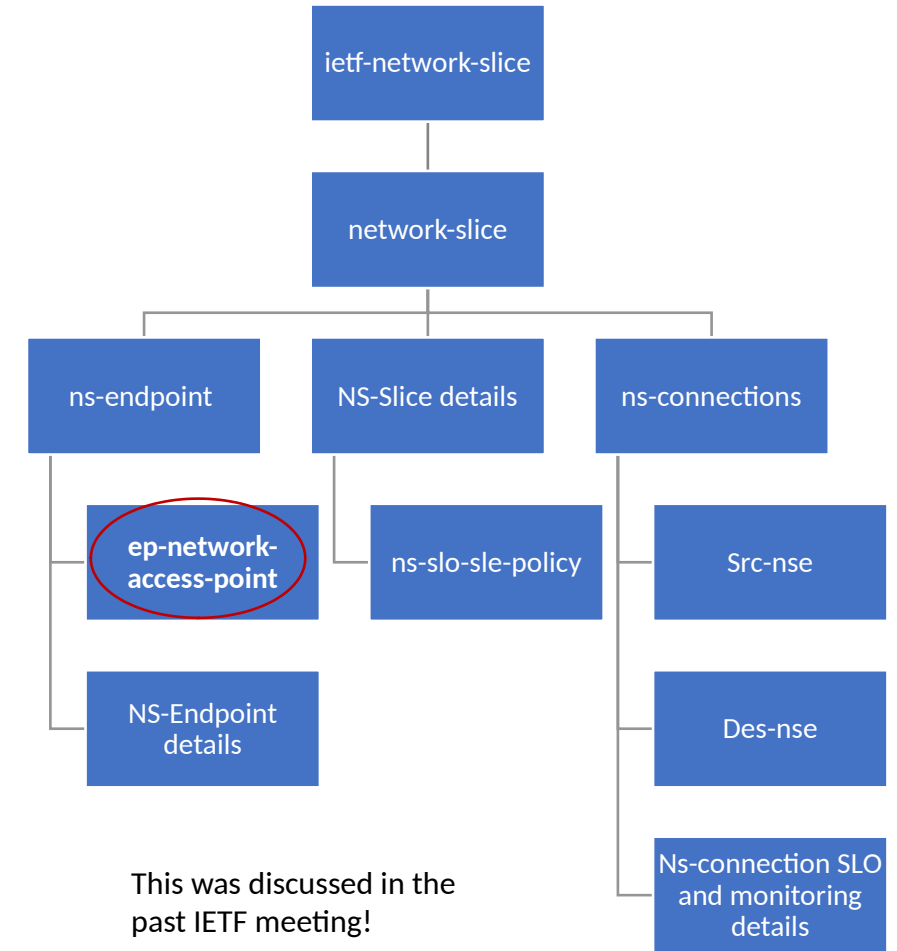
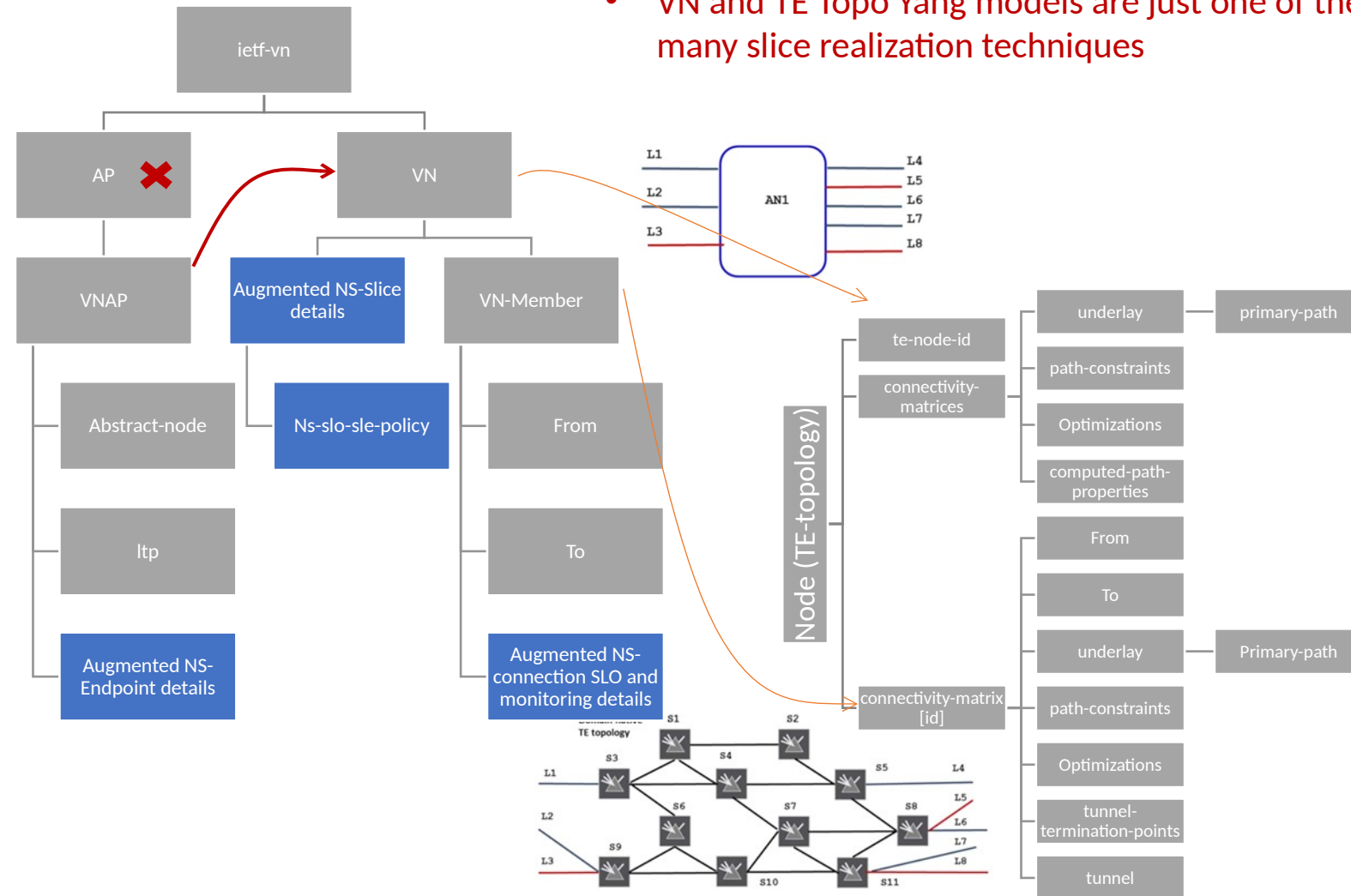


VN service topology

NSE is similar to site, with each access link being network-access.

NS-service model as Augmenting VN model (ACTN)

- VN model has a tight coupling with TE topology abstract node & connectivity matrix!
- The AP/VNAP does not align with NSE.
- VN and TE Topo Yang models are just one of the many slice realization techniques



This was discussed in the past IETF meeting!

WG Comments Consideration

- Is IETF NS service YANG the only IETF NS Service Model?
 - Customer service modules, such as LxSM and VN, can be used for slicing, and also for the realization of IETF NS service model
 - Technology agnostic (intent) and Technology specific model can co-exist and used by the customer
 - Add text for clarification
 - There are other possible customer service modules that can be used for slicing
 - When multiple technologies are available in a SP's network to support slicing services, the network slicing service model can be used to hide the implementation differences
 - The new independent model can co-exist with other models

Q&A

What kind of model is this?

- This is a customer service model used by the customer of IETF network slice. This model defines the customer requirements/intent for the IETF network slice in easiest terms!

How does this map to ACTN framework?

- This model can be part of the CMI along with other YANG model

Is this a replacement of VN model

- No, the VN model coexist. It can be used to realize the slice in TE networks

VN and IETF network slice are very similar, why did you not reuse it?

- Yes, there are similarities, but there are also differences. IETF network slice definition is not in terms of VN, AP, and VNAP! It defines new concept and we model them independently

Why not augment VN

- See above! The fundamental issue remains the same! Major VN redesign is needed to remove tight coupling!

What is the issue with tight coupling with TE topo?

- IETF network slice can be realized with MT, FlexAlgo etc and tight coupling with TE is not desirable.

Summary

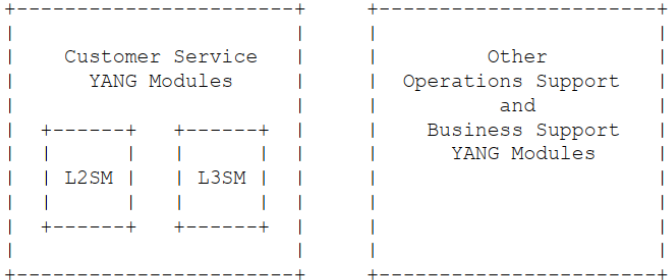
- A New independent Network slice service YANG module is the recommended approach as per the current IETF network slice definition
 - This model follows this approach!
 - It can coexist with existing customer service models!

Backup

Question about the name

- If the provider wants to use slicing based on the VN model or the L3SM then that's OK, and they don't need to use the NSC NBI. On the other hand, they can offer "slicing as a service" and may choose to use the NSC NBI for this.
- [DC] Agree. Can we call the draft: "A service model for IETF network slice NBI" ? And in the text say that the model is one of the options that can be used as a "network model" ?

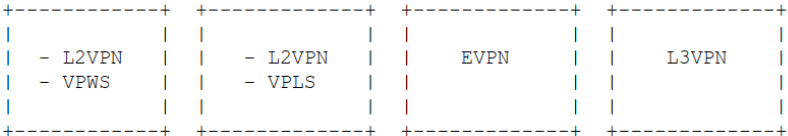
Operations Support and Business Support YANG Modules



IETF Network Slice Service YANG Model

The name is consistent with RFC 8309 service model explained based on Med's comment, since NBI may cause confusion

Network Service YANG Modules



Network Element YANG Modules

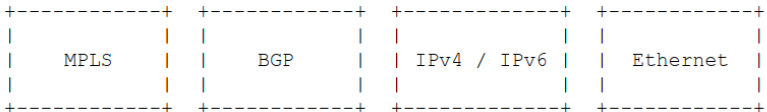


Figure 4: YANG Module Abstraction Layers Showing Customer Service Modules