

Layer 3 VPN Network model

draft-aguado-opsawg-l3sm-l3nm-01

A. Aguado (Nokia)

O. Gonzalez de Dios, V. Lopez, S. Barguil (Telefonica)

D. Voyer (Bell Canada)

L. Munoz (Vodafone)

D. King (ODC)

L. Jalil (Verizon)

Q. Wu (Huawei)

OPSAWG

24th July 2019,

Index

- Why do we need a new model?
- What is missing? *List of issues found so far*
- How? *Approaches for “upgrading” L3SM*
- Modifications
- Open issues and feedback

Why?

- L3SM intro: “This document defines a Layer 3 VPN service data model written in YANG. The model defines service configuration elements that can be used in communication protocols between customers and network operators. Those elements can also be used as input to automated control and configuration applications.”
- Therefore, the focus of RFC8299 is on the interface between upper layer systems and the customer, leaving aside parametrization of network resources that are to be orchestration between the different layers within the map of business, operations and network systems (e.g. SDN controllers).

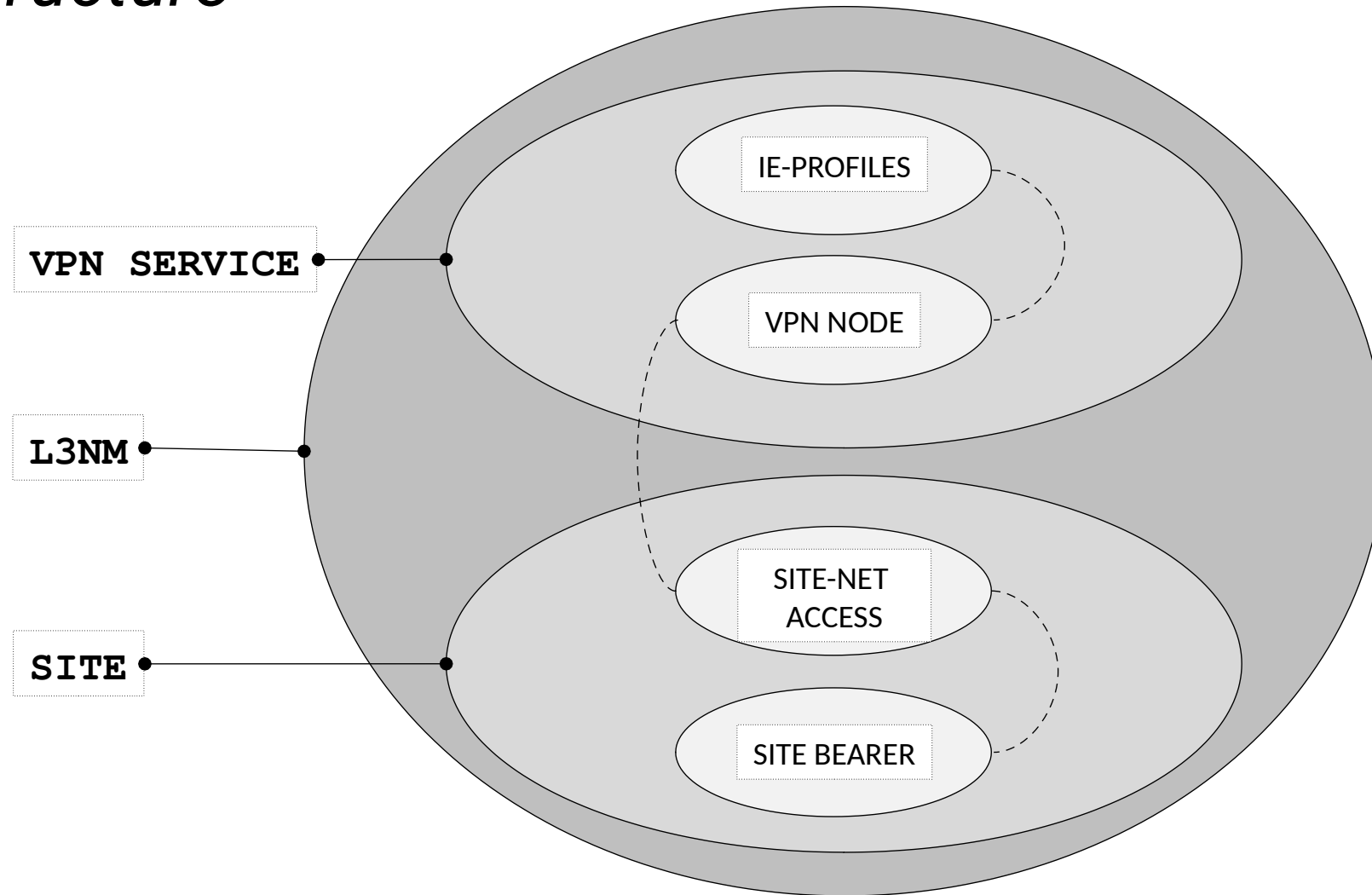
What is missing

- So far, in the current version of the draft (01) we describe few scenarios where L3SM may not be sufficient for service deployment:
 - Provide Edge Identification Point.
 - Details about the “bearers” (physical connections to the PEs)
 - Bearer Ethernet Encapsulation
 - List of bearers per site (for inventory and management purposes).
 - Remote Far-End Configuration (pseudowire stitching to an L3VPNs).
 - Multi-Domain Resource Management
 - VPN node (VRF-related) configuration (related with multi-domain resource management).
 - Further routing protocols between CE and PE.

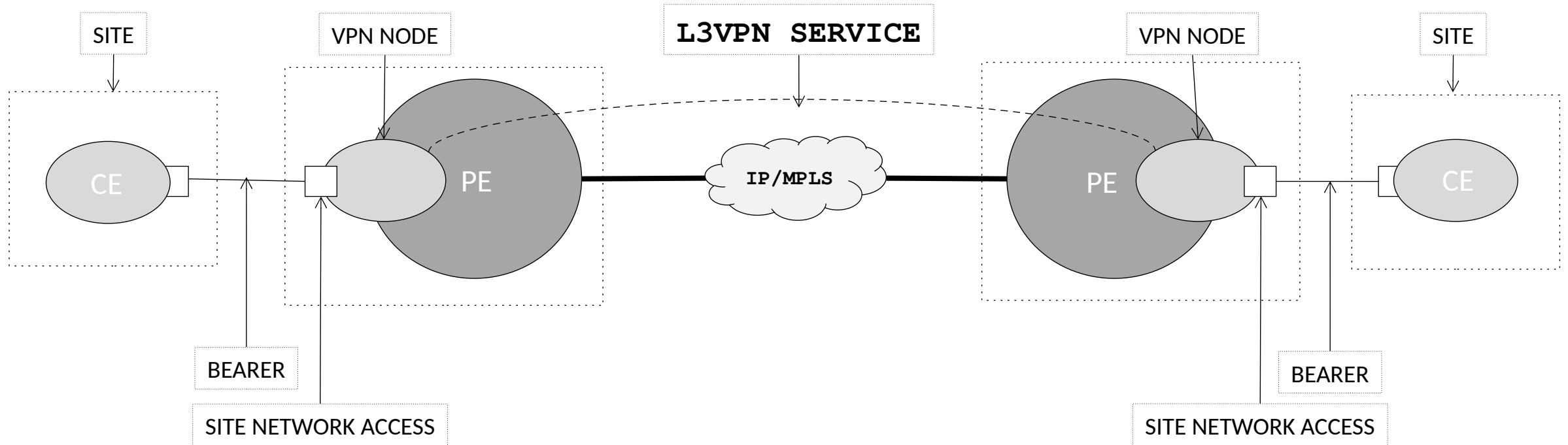
How? Approaches for “upgrading” L3SM

- For any of the options mentioned below, the starting point for the L3NM model will be the current version of L3SM (RFC8299).
 - The “*Augment*” approach:
 - It was the original idea behind version 00, as moving through this path would allow for a faster development and (possibly) acceptance cycles. Still, different parameters defined by L3SM may not be necessary for the network version of the service model, whilst others could be directly extended if the model is presented as a new one, and not as an augmentation of the existing one. This is being discussed for the next version of the doc.
 - The “*Prune and extend*” approach:
 - This approach will present an easier way to ignore and prune unnecessary information defined at L3SM. At the same time, any extension can be presented as part of the main module, and not as augments of an existing model. This approach, however, may take longer cycles of discussions and may imply other political actions (e.g. creation of a new WG in IETF).

HOW? *Prune and Extend. The model preserve the L3SM structure*



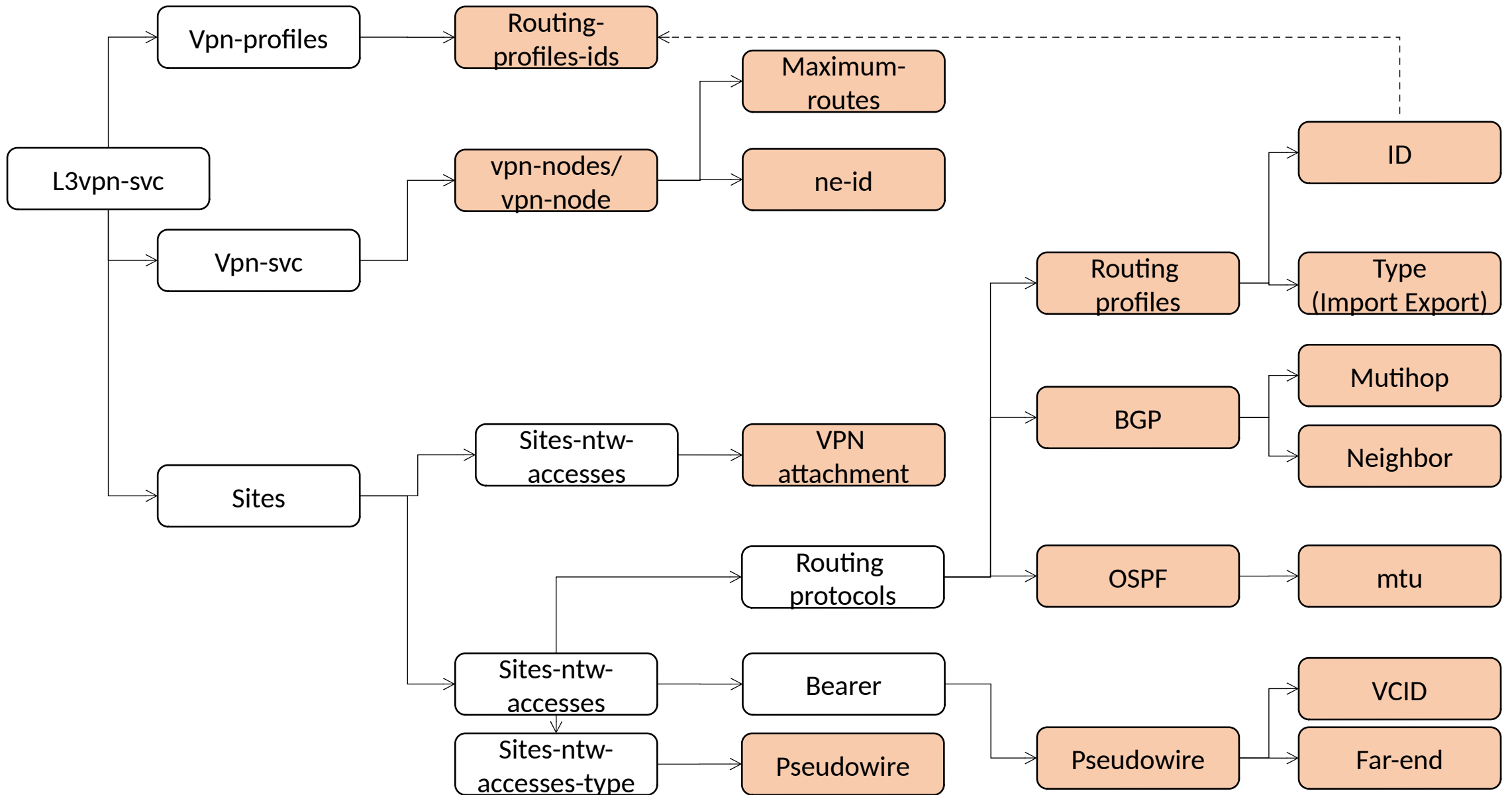
How? Does it map to the network deployments?



Assumptions:

- Sites are logical structures that are assumed to be created prior to the service deployment.
- A single bearer can carry multiple SNAs.
- A single site can be subscribed to a single or multiple VPNs, via one or more SNAs.

L3SM modifications for L3NM



L3SM modifications for L3NM

Updated:27th May 2019, version 01

Explained extensions

- vpn-service
 - ie-profiles: Import and export profiles associated to VRFs. They shall be imported by VPN-nodes
 - vpn-nodes: Instance of a VRF.
 - NE-id: network element id where the instance of a VPN node is to be implemented.
 - Maximum-routes: Maximum routes that are allowed on the specific instance.
 - Operative and Administrative status
- Sites/site:
 - Site-bearers: List of bearers that are assigned to a site. A site may be associated to multiple VPNs via site-network-accesses.
 - Site-network-accesses:
 - Bearer/bearer-references: Associated to site-bearers.

Open issues and next steps

- Open issues from the discussions in the mailing list tracked in <https://github.com/oscardd/l3nm/issues>
- How to link Network Service Yang Module with other modules such as: Topology, Traffic Engineering and Composed VPNs.
- Good feedback on mailing list from operators and potential implementors
- Implementations ongoing
- We believe it is a topic that should be dealt in IETF