

Network Virtualization Overlays (NVO3) Update

IETF 111 RTG Open

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What is NVO3 about?

- NVO3 is chartered to develop a set of protocols / protocol extensions that enable network virtualization within a data center environment that assumes an IP-based underlay.
- Provides layer 2 and/or layer 3 services for virtual networks enabling multi-tenancy and workload mobility
- Covers architecture, data plane, control plane, security and OAM for these solutions: 7 RFCs so far
- Control plane explicitly centralized, but we can assess applicability of distributed control planes like BGP

Data Plane

- NVO3 spent a significant time selecting a data plane encapsulation from a number of candidates:
 - GENEVE, VXLAN-BGP, GUE...
- Encapsulations are particularly controversial due to impact on hardware and difficulty upgrading/interoperating with existing deployments
 - And there was a history of deployments of pre-standard encapsulations (VXLAN, NVGRE) that were later published via individual submissions
- NVO3 formed an encapsulation design team (twice!) that selected GENEVE based on documented requirements
 - Published as standards track RFC8296
 - Others can either go forward as informational (VXLAN-GPE), or sent to Int Area (GUE)
- Work of the DT is documented in draft-ietf-nvo3-encap
 - Intending to publish this for the benefit of the community

Control Plane

- Distributed control plane development out of scope
- Protocol extensions for BGP EVPN done in BESS
 - draft-ietf-bess-evpn-geneve-02
- Applicability of EVPN to NVO3
 - draft-ietf-nvo3-evpn-applicability-03
- WG also addressed Split-NVE control plane requirements (RFC8394) in support of the development of IEEE 802.1Qcy-2019
- Generally, hasn't been much demand for centralized control plane work in NVO3
- Although we do have some YANG config models:
 - draft-ietf-nvo3-yang-cfg

OAM and Other Work

- OAM for use in GENEVE
 - draft-ietf-nvo3-geneve-oam-02
- BFD for GENEVE
 - draft-ietf-nvo3-bfd-geneve-03
- Hoping to wrap this up during 2021