

Routing Area Open Meeting

IETF 111 – Online

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Note Well

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- As a participant or attendee, you agree to work respectfully with other participants; please contact the ombudsteam (<https://www.ietf.org/contact/ombudsteam/>) if you have questions or concerns about this.

Definitive information is in the documents listed below and other IETF BCPs. For advice, please talk to WG chairs or ADs:

- [BCP 9](#) (Internet Standards Process)
- [BCP 25](#) (Working Group processes)
- [BCP 25](#) (Anti-Harassment Procedures)
- [BCP 54](#) (Code of Conduct)
- [BCP 78](#) (Copyright)
- [BCP 79](#) (Patents, Participation)
- <https://www.ietf.org/privacy-policy/> (Privacy Policy)

Note Also...

- Please state your name clearly before speaking at the microphone
- Audio streams and jabber
 - <https://datatracker.ietf.org/meeting/110/agenda/>
- Routing Area mailing list
 - routing-discussion@ietf.org
- Routing Area wiki
 - <http://trac.tools.ietf.org/area/rtg/trac/wiki/WikiStart>
- Routing Directorate
 - <http://trac.tools.ietf.org/area/rtg/trac/wiki/RtgDir>
- Blue Sheets
 - Automatically filled out through MeetEcho.

Feedback to ADs

- How are we doing?
- How can we do things better?
- What's broken with the area?
- What's working with the area?

Document Review Request

Document quality relies on reviews, please review documents in your working group and at least one other document from another working group.

If you'd like documents you care about reviewed, put the effort in to review other documents.

Please!

Agenda

- Administrivia
 - Area Status
 - rtg-dir Report
- WG Updates
 - nvo3
 - sfc
 - bess
 - pce
 - lisp
- Open Discussion / Any other business

Area Status

- WG Status Changes
 - Closed: 0
 - Re-chartered: 0
 - New: 0
- New Chairs
 - manet: Don Fedyk
 - rtgwg: Yingzhen Qu
- APN BOF: Friday @ 1200-1400 (Session I)

WG Distribution

Alvaro

- bier
- idr
- lisp
- lsrv
- manet
- pim
- rift
- roll
- rtgwg

John

- bfd
- ccamp
- detnet
- lsr
- pce
- raw
- teas

Martin

- babel
- bess
- mpls
- nvo3
- pals
- sfc
- spring

RTG-DIR REPORT

Routing Directorate Report

IETF 111

Routing Directorate Coordinators:

Amy Ye (amy.yemin@huawei.com)

Luc André Burdet (laburdet.ietf@gmail.com)

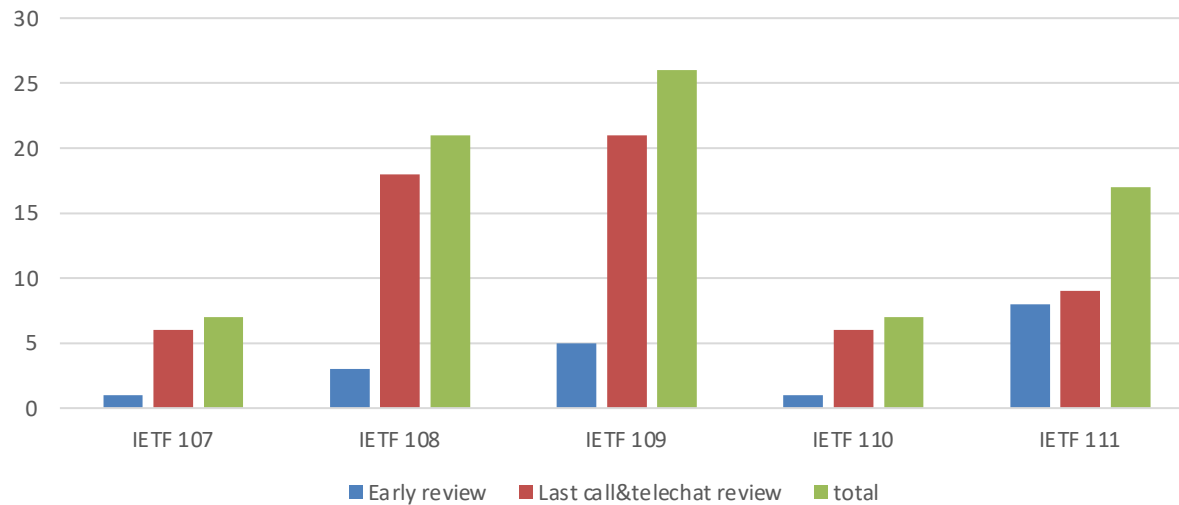
Haomian Zheng (Zhenghaomian@huawei.com)

Role of the Routing Directorate

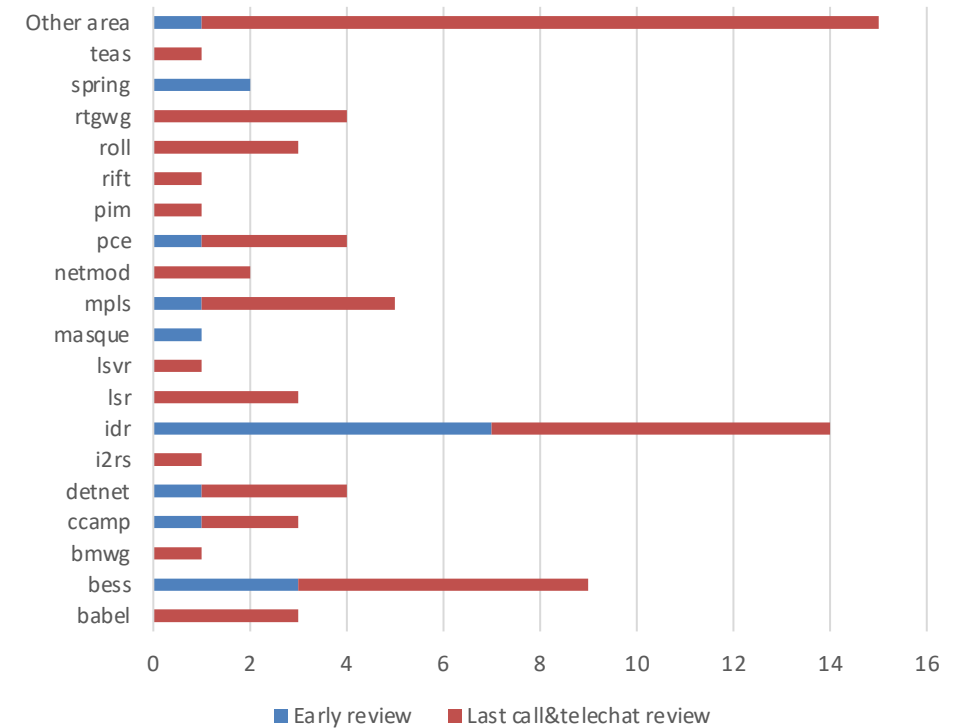
- Panel of 44 routing area experts
 - Awesome people , appointed by the ADs
- Purpose of the directorate
 - Review routing area drafts as they pass through IETF last call
 - Review other routing related drafts at IETF last call
 - Early review of any routing area WG document before WG last call
- See the wiki: <https://trac.ietf.org/trac/rtg/wiki/RtgDir>

Routing Directorate Stats

RTGDIR Review from 2020

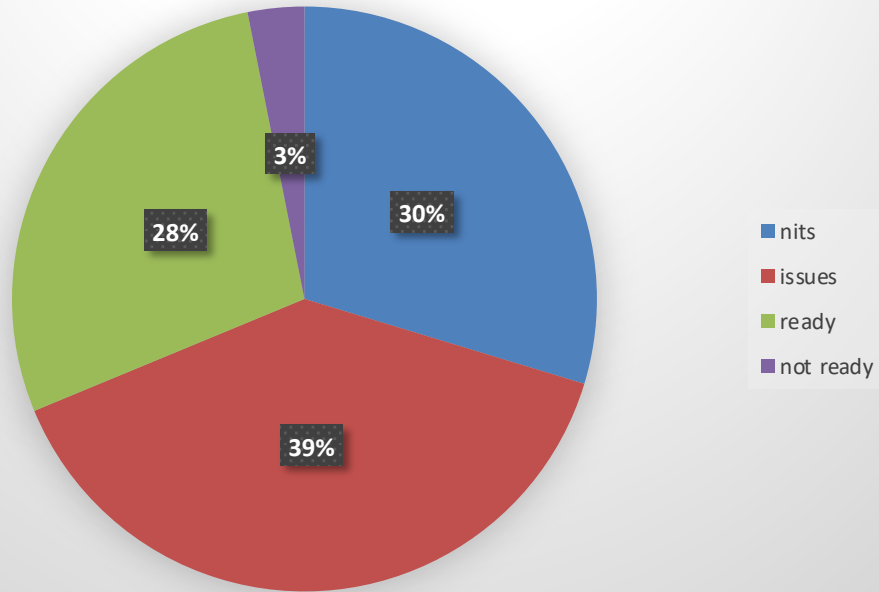


Reviews Distribution in WGs

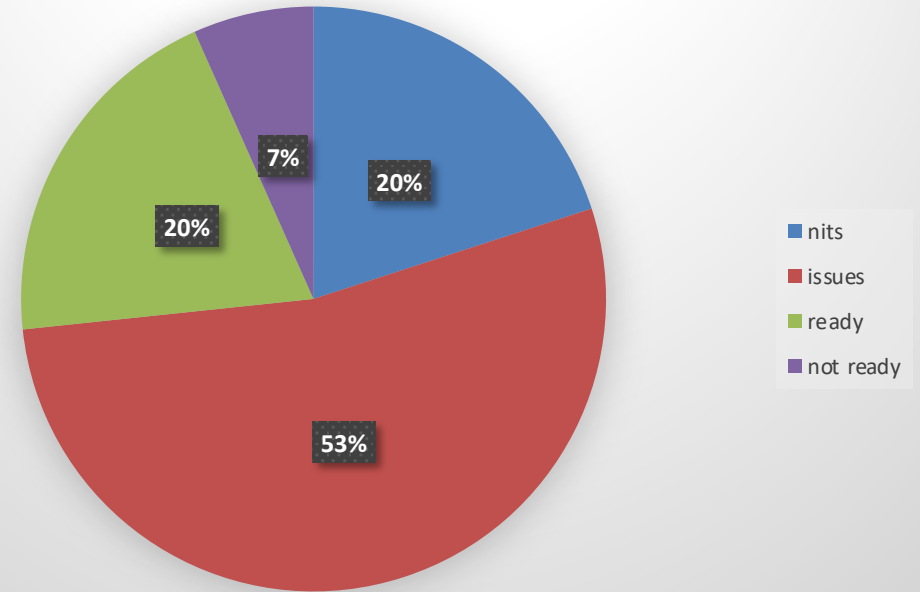


Routing Directorate Stats-cont.

Result of RTG area drafts



Result of non-RTG area drafts



WG UPDATES

Network Virtualization Overlays (NVO3) Update

IETF 111 RTG Open

Matthew Bocci (NVO3 co-chair)

Sam Aldrin (NVO3 co-chair)

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

Service Function Chaining (SFC)

Working Group Status

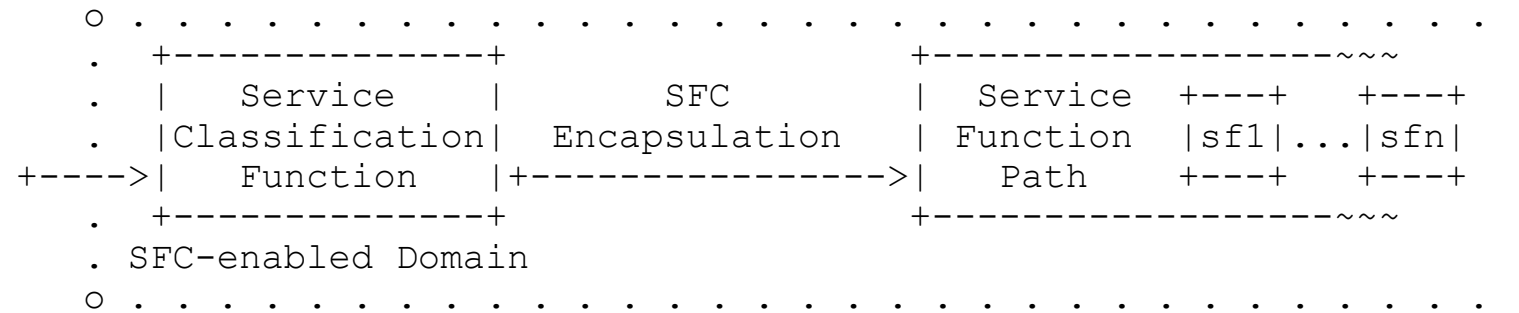
Chairs:	Jim Guichard Joel Halpern
Area Director:	Martin Vigoureux
Secretary:	Tal Mizrahi

IETF 111, RTGAREA
July 2021

What is SFC?

[An informal definition]

A **Service Function Chain (SFC)** defines an ordered set of **Service Functions (SFs)**, such as packet filtering (firewalls), load-balancing and transactional proxies.



Service Function Chain Architecture

[RFC 7665]

Completed Work

- Architecture and use cases
 - RFC 7498
 - RFC 7665
 - RFC 8495
- The Network Service Header (NSH)
 - RFC 8300
 - RFC 8393
- OAM
 - RFC 8924
- Context headers
 - RFC 8979

Current Work

- 5 active WG documents
 - In IESG review:
<https://datatracker.ietf.org/doc/draft-ietf-sfc-nsh-integrity/>
 - Approved in WG last call:
<https://datatracker.ietf.org/doc/draft-ietf-sfc-proof-of-transit/>
<https://datatracker.ietf.org/doc/draft-ietf-sfc-nsh-tlv/>
- 12 individual I-Ds
- The WG has not met since IETF 104
- Will meet again subject to some new energy on the mailing list

BESS WG update

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BESS in few words

- BESS = BGP Enabled Services
- Home for key BGP based services: L3VPN, EVPN, mVPN...
- Strong relationship with IDR WG by definition

RFC7432bis

- RFC7432 defines controlplane procedures for BGP based Ethernet VPN (started a long time back !)
- Based on deployment experience, clarifications and enhancements in the base RFC are required:
 - Clarify terminology
 - Route prioritization based on route type
 - DF roles : BDF, NDF
 - ...

BGP based controller for mcast

- Problem statement:
 - How to use central BGP controller to setup mcast trees ?
- Work started couple of years ago:
 - draft-ietf-bess-bgp-multicast-controller
- More recent I-D focused on SR p2mp trees:
 - draft-hb-idr-sr-p2mp-policy (discussed mostly in IDR)
- Authors are discussing to ideally come with a single solution

EVPN multihoming/load balancing/convergence

- WG is very active in keep improving EVPN based on deployment experience and new requirements
 - MH/Load-balancing:
 - draft-ietf-bess-evpn-mh-pa: Port-based multihoming (MC-LAG in an EVPN way)
 - draft-ietf-bess-evpn-unequal-cost: use link BW to provide loadbalancing on access links running at different speeds
 - ...
 - Convergence:
 - draft-ietf-bess-evpn-fast-df-recovery: use NTP to get faster DF switchover
 - draft-sajassi-bess-evpn-ip-aliasing
 - Interworking between services:
 - draft-brissette-bess-evpn-vpws-seamless: merged effort to get interworking between EVPN VPWS and legacy VPWS services
 - Additional on going WG work for EVPN/IPVPN and EVPN/MVPN

Routing Area Open Meeting - PCE WG update

IETF 111

Chairs - Dhruv Dhody & Julien Meuric
Secretary - Hariharan Ananthakrishnan



Main Motivations for Path Computation Element (PCE)

- Centralized control features
 - Path engineering (possibly with advanced metrics)
 - Path optimization
 - Path diversity
 - Path state synchronization (for stateful capabilities)
 - Global view
- Multi-domain / multi-layer coordination
 - Path selection
 - Path control
 - Path obfuscation at boundaries

PCE WG

- The PCE WG is responsible for the Path Communication Element Communication Protocol (PCEP).
- PCEP allows a Path Computation Client (PCC - for example, a head-end router) to request paths from, or have paths created by, a Path Computation Server (PCE).
- PCEP is also well suited for communication between PCEs to coordinate inter-domain paths.
- PCE is a core component of Software Defined Networking (SDN) systems.
- PCEP is used for RSVP-TE signalled paths, SR, PCECC.
 - PCEP can also be used for BIER, Detnet, SFC...
- PCEP is used in IP/MPLS, Optical as well as for inter-layer path setup.

Hot topics

- Stateful PCE
 - Various enhancement are being discussed
 - State sync between PCE
 - New Association types
- SDN
 - Basic PCECC for static LSP is published - RFC 9050
 - PCECC is further enhanced for SR, SRv6, P2MP etc
 - Native IP
- Segment Routing
 - SR Policy
 - Path Segment
 - BI-DIR SR
 - SRv6
- Multicast
 - SR P2MP Policy
 - BIER
 - BIER-TE
 - Some new proposal for PCE based BIER
- Some discussion on the list on
 - PCEP-LS

WG coordinations

- TEAS - PCE based architecture for TE, ACTN, IETF network slice
- CCAMP - PCE for optical networks (WSON, Flex-grid etc)
- SPRING - for all SR related requirements
- BIER - for all BIER related requirements
- IDR - Native IP, feature parity for SR extn
- PIM - SR P2MP Policy
- DETNET - for use of PCE in controller plane
- SFC - any control plane work

Thank You!

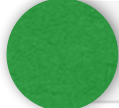





















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LISP Working Group

@ RTG Area -111 IETF

Recent Achievements

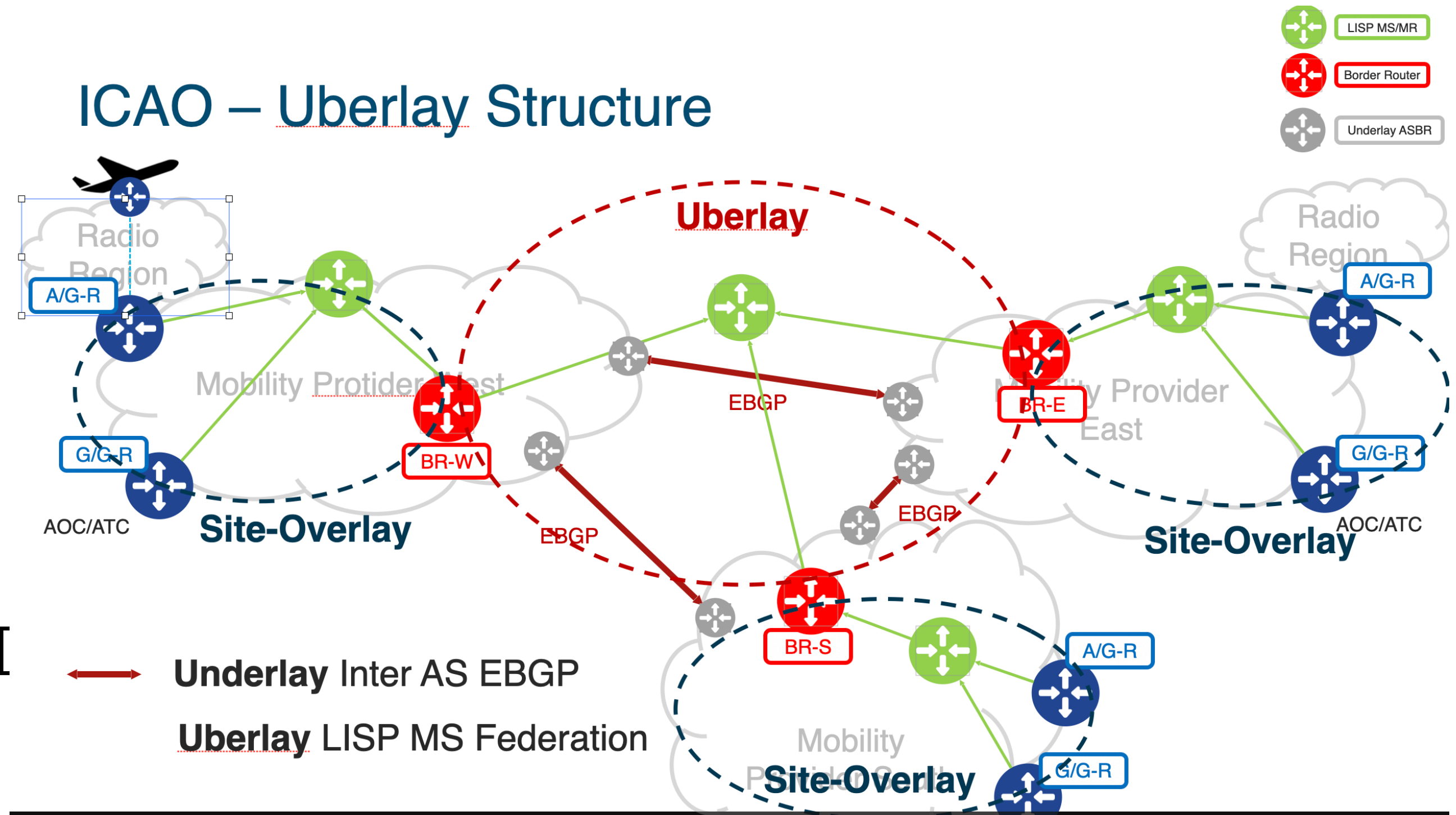
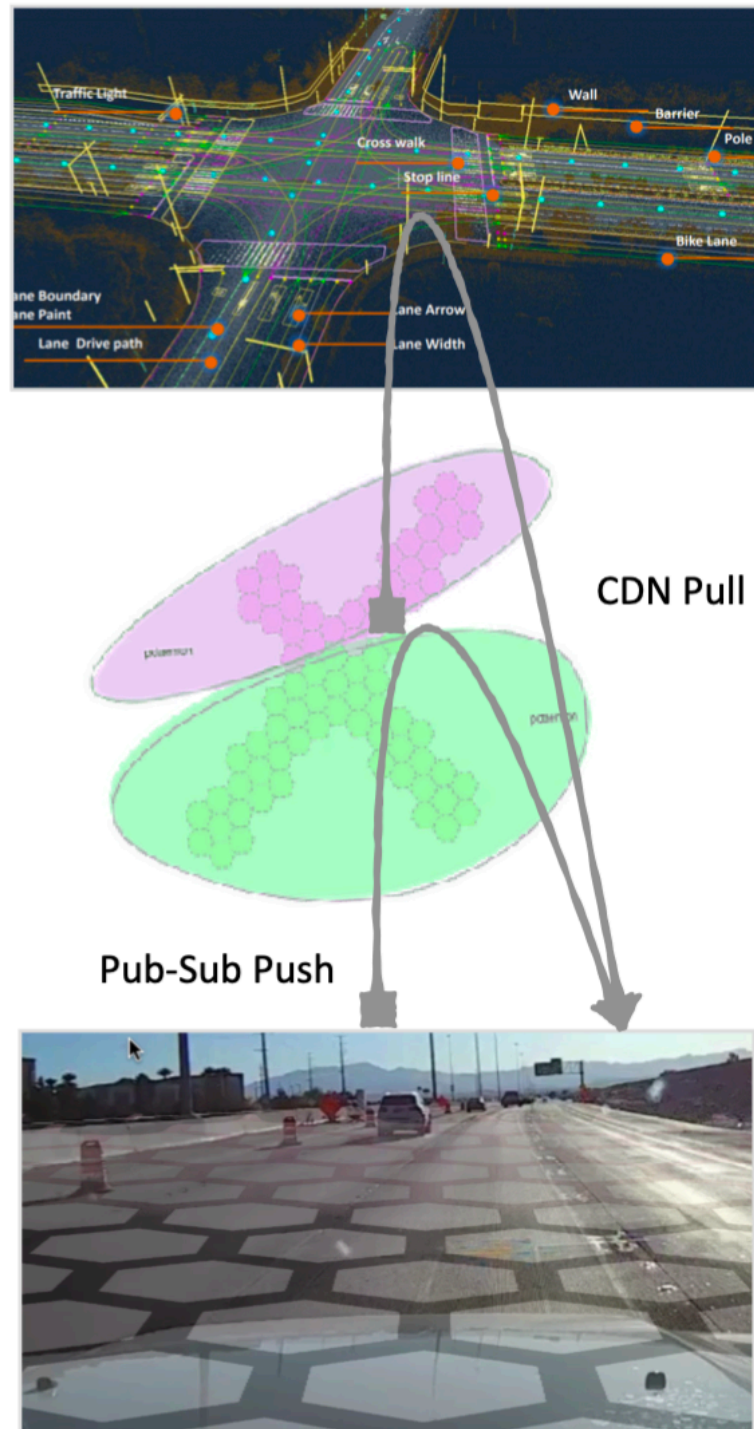
	draft-ietf-lisp-6834bis-08 Locator/ID Separation Protocol (LISP) Map-Versioning
	draft-ietf-lisp-ecdsa-auth-05 LISP Control-Plane ECDSA Authentication and Authorization
	draft-ietf-lisp-eid-anonymity-10 LISP EID Anonymity
	draft-ietf-lisp-eid-mobility-07 LISP L2/L3 EID Mobility Using a Unified Control Plane
	draft-ietf-lisp-gpe-19 LISP Generic Protocol Extension
	draft-ietf-lisp-introduction-13 An Architectural Introduction to the Locator/ID Separation Protocol (LISP)
	draft-ietf-lisp-mn-09 LISP Mobile Node
	draft-ietf-lisp-nexagon-07 Network-Hexagons: H3-LISP GeoState & Mobility Network
	draft-ietf-lisp-predictive-rlocs-08 LISP Predictive RLOCs
	draft-ietf-lisp-pubsub-09 Publish/Subscribe Functionality for LISP
	draft-ietf-lisp-rfc6830bis-36 The Locator/ID Separation Protocol (LISP)
	draft-ietf-lisp-rfc6833bis-30 Locator/ID Separation Protocol (LISP) Control-Plane
	draft-ietf-lisp-rfc8113bis-03 Locator/ID Separation Protocol (LISP): Shared Extension Message & IANA Registry for Packet Type Allocations
	draft-ietf-lisp-sec-22 LISP-Security (LISP-SEC)
	draft-ietf-lisp-te-08 LISP Traffic Engineering Use-Cases
	draft-ietf-lisp-vendor-lcaf-09 Vendor Specific LISP Canonical Address Format (LCAF)
	draft-ietf-lisp-yang-15 LISP YANG Model

-  Past WG LC
-  Close to WG LC
-  OnHold/Issues

- Huge work in the last couple of years to make LISP Proposed Standard
- This include both Control-Plane and Data-Plane
- Important features/working items:
 - Secure Control-Plane
 - Publish/Subscribe Control-plane
 - Multi-protocol support
 - Extensible encapsulation

Looking Forward

- Complete chartered work:
 - NAT Traversal
 - LISP & Mobility (possible overlap with I



- Exploring some interesting applications
 - Uberlay (International Civil Aviation Organization)
 - Nexagon (also discussed in COINRG)
 - PIM + LISP (mainly discussed in the PIM WG)
 - ...

OPEN DISCUSSION