APNIC 62

What's new at the IETF

IETF®

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IETF
Mission

Make the Internet work better by producing high quality, relevant technical documents that influence the way people design, use, and manage the Internet.

[RFC 3935]

IETF
Ethos

- **Everyone** participates as an individual
- We don’t have **Members**
- Specifications provide **“building blocks”**
- All work is available for **free**
- Judge contributions on **technical merits**
- Determine success by **voluntary deployment**

IETF
Key Organizational Elements

Standards

IETF standards are organized into Areas

Applications & Real-Time (art)	**Internet** (int)	**General** (gen)
Ops & Mgmt (ops)	**Routing** (rtg)	**Security** (sec)
Web & Internet Transport (wit)		

- Each Area is composed of multiple Working Groups (WGs) on specific topics
- ~125 active WGs

I E T F

Area Directors (ADs) makes the **IESG**

Architecture and Outreach

Internet Architecture Board (**IAB**) provides:

- Long-range technical direction for Internet development
- Pre-standardization workshops
- Liaison coordination
- Outreach

I A B

Research

Internet Research Task Force (**IRTF**) conducts research on the evolution of the Internet protocols, applications, architecture and technology.

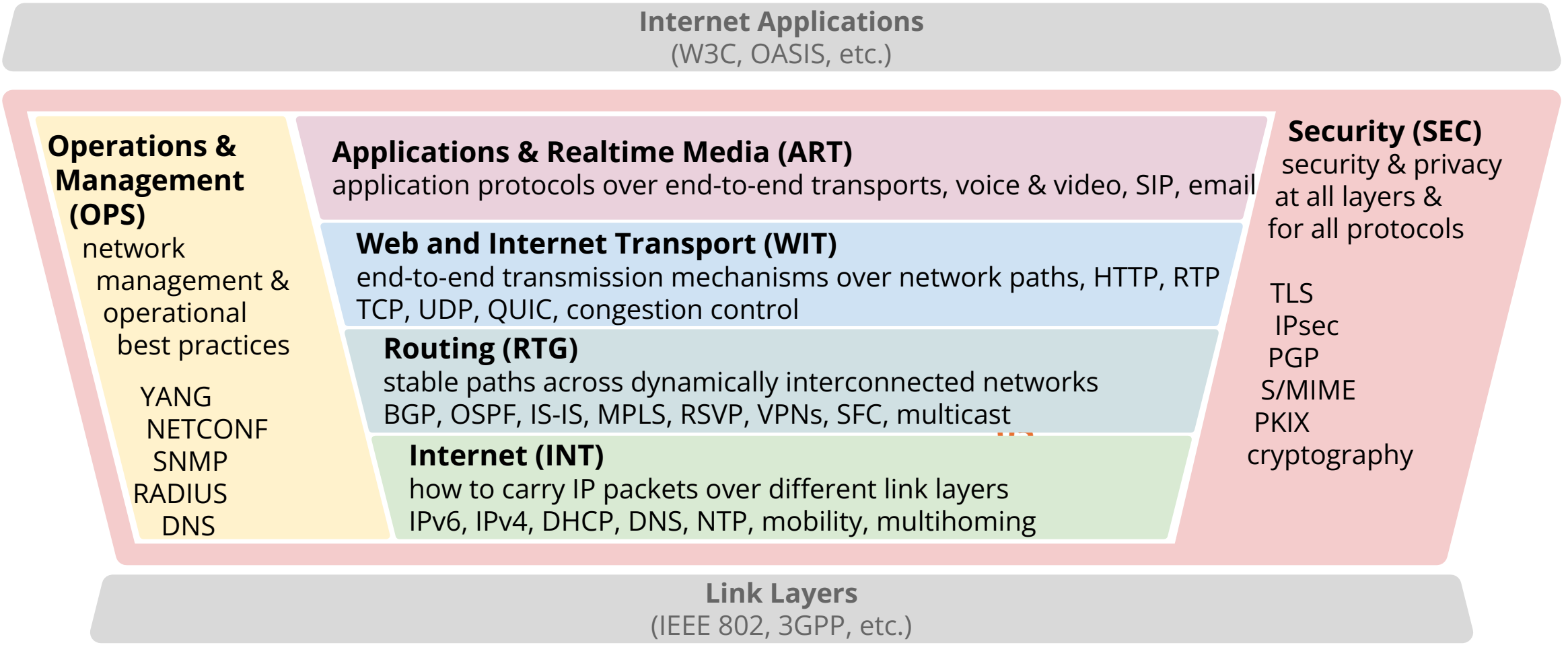
- Long-term exploration ahead of standardization activities
- Organized into ~16 active Research Groups (RGs)

I R T F

The **IETF Administration LLC** provides the corporate legal home of all the IETF activities

The **IETF Trust / IETF Intellectual Property Management Corporation (IPMC)** holds and manages the rights to IETF contributions

IETF
Work Areas and Key Protocols



Flexible approaches to contribution
All IETF meetings are remote-only or hybrid

35 - 45%

of plenary meetings participants that are remote

~40%

of working groups meet during the year in remote-only sessions

No question asked Fee Waivers for Remote participation!

WebRTC

Same meeting participation tool for on-site and remote

All key working group decisions confirmed via email

Meetecho

IETF Datatracker

All work in progress, final specifications, and meeting materials, recordings are available free

https://datatracker.ietf.org

IETF
Relationship with APNIC

- The APNIC community and the IETF have evolved together, with standards and operations closely **interdependent**, with **complementary** roles from the outset
- Operational experience from APNIC feeds into IETF work:
  - Deployment insights → protocol improvements, BCP, Operational guides
  - Operational challenges → new requirements and protocol extensions
- Some participants are active in both communities, with regular interaction points bridging standards and operations
- This relationship ensures that standards remain deployable, and that real-world networks influence protocol evolution
  - *Scale and economics set operators in APAC apart.*

IAB Workshops

- Focused gatherings that bring together experts from the broader Internet community to discuss specific topics of interest related to Internet architecture, protocols, standards, and future directions.
- Not the final destination. They're the spark for in-depth discussions and engagement that might otherwise be missing.
    - IAB Workshop on IP Address Geolocation (ip-geo) (December 2025) **[Discussed in Cooperation SIG @ APNIC62]**
    - IAB/W3C Workshop on Age-Based Restrictions on Content Access (October 2025)
    - IAB Workshop on the Next Era of Network Management Operations (NEMOPS) (December 2024)
    - IAB Workshop on AI-CONTROL (September 2024)
    - IAB Workshop on Barriers to Internet Access of Services (BIAS) (January 2024)
    - IAB Workshop on Environmental Impact of Internet Applications and Systems (December 2022)
    - IAB Workshop on Management Techniques in Encrypted Networks (M-TEN) (October 2022)

IAB
PQ Workshops

- IAB initiative to accelerate real-world deployment of **Post-Quantum Authentication** (signatures, certificates, tokens, and hardware custody).
    - Addresses size and performance constraints of post-quantum signatures (e.g., ML-DSA, SLH-DSA) impacting certificate chains, handshakes, hardware, and offline validation.
- Bridges protocol designers with practitioners (CAs, HSM/TPM vendors, identity providers, and system operators) outside typical standards venues.
- Explores deployment trade-offs of hybrid/composite signatures, Merkle Tree Certificates, and KEM-based authentication.
- Prague, Czechia; October 11–12, 2026 (co-located with OpenSSL Conference).
- Details: https://datatracker.ietf.org/group/pqws/about/

New Working Groups

Fast Network Notification (fann)
New working group

- Traditional routing, BFD, and telemetry may react too slowly to microbursts, congestion, link degradation, and failures.
    - Scope limited to **controlled environments** such as data centres, AI/ML fabrics, and DCI—not Internet-wide routing.
- Goal is to enable **event-driven network notifications** at sub-millisecond to millisecond timescales.
    - Send status directly from the detecting node to ingress, head-end, or repair nodes.
    - Support faster rerouting, traffic engineering, load balancing, and congestion mitigation.
- Requirements, information models, lightweight transport, and receiver discovery.
- Operator value: **Reduce packet loss and protect latency-sensitive services and SLAs.**

Operationalizing Network & SErvice abstractioNs (onsen)
New working group

- Network and service models are fragmented across IETF working groups and technologies.
- Goal is to provide **a focal point** for developing and coordinating service and network models.
  - Builds on: The IAB NEMOPS workshop report and its operator-driven recommendations.
- Enable operators to manage and automate **service abstractions** consistently.
  - Improve automation, operational efficiency, model reuse, and multi-vendor interoperability.
  - Service-layer APIs based on YANG service models
- Updating IETF LxSM and LxNM service and network YANG models
- Value: Operator-driven models that **reduce custom integrations** and enable consistent service provisioning, assurance, and lifecycle automation across multi-vendor networks.

JSON Schema (jsonschema)
New working group

- Produce **a stable, referenceable specification for JSON Schema**.
  - Standardize features and mechanisms already proven through implementation and deployment.
  - Identify, document, mitigate, or resolve known security concerns.
  - Create new IANA registries and update relevant existing registries.
- Value: **Improve consistency and interoperability** across validators, APIs, tooling, and programming languages.

Authenticated Transfer (atp)
New working group

- Enable **decentralized global networks for publishing self-certifying data**.
  - Identity: Each account has a persistent, globally resolvable identifier.
  - Data model: Accounts publish signed data records through repositories.
  - Foundation: Builds on **Bluesky's AT Protocol** and its deployment experience.
- Key specifications: Repository structure, low-latency synchronization, and the at: URI scheme.
  - Define requirements and selection criteria for account identifier systems.
- Value: **Portable identity and data across independently operated services.**

PKI, Logs, And Tree Signatures (plants)
New working group

- Large post-quantum signatures significantly increase certificate, TLS handshake, and Certificate Transparency log sizes.
  - Growing pressure: Shorter certificate lifetimes mean more certificates and faster CT log growth.
  - Goal: Reduce PKI and TLS costs while retaining **publicly monitorable certificate transparency**.
  - Approach: Integrate transparency logging into certificate issuance and use **Merkle trees** so one signature can cover many key-to-identity bindings.
- **Merkle Tree Certificates** (MTCs)—compact certificates with proofs that a binding is present in a CA-maintained, externally monitored log.
- Operator value: **Lower handshake bandwidth and latency, reduced CT infrastructure costs, and a more practical migration path to post-quantum PKI.**

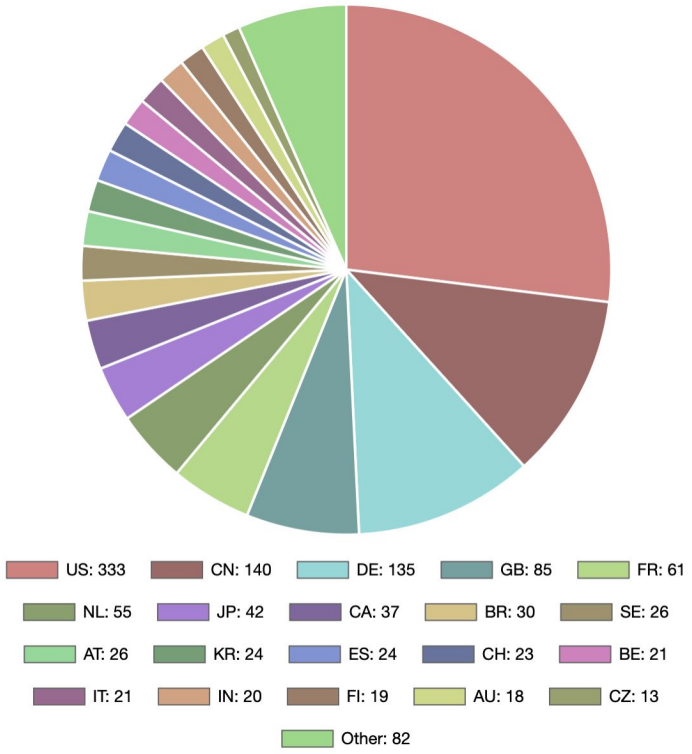
IETF®

IETF 126 Vienna July 2026

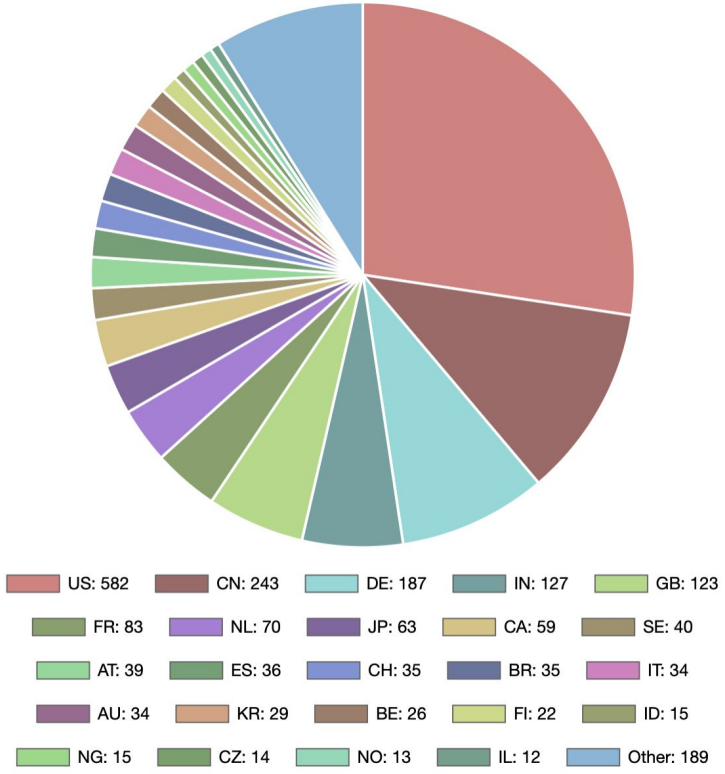
IETF 126
Vienna, July 2026

- One of the best attended meetings in recent times

In Person Registrations by Country (1235 in total)



Total Registrations by Country (2125 in total)



Source: https://datatracker.ietf.org/stats/meeting/126/country/

IETF 126
Vienna, July 2026

- Several new BoFs on the topic of AI (agentproto, dmsc, dawn)
  - **dawn** looked at developing requirements, information models, and protocol solutions for entity (workloads, agents etc.) discovery and seems to be oriented towards using DNS.
  - **agentproto** looked at defining frameworks and protocol building blocks for enabling interoperability for AI Agent applications across the Internet.
  - **dmsc** looked at exploring interoperable protocols and mechanisms for AI Agent Gateway-mediated collaboration
- Work has started in the **wimse** working group for putting together guidelines for using existing protocols for AI Agent Authentication and Authorization and identify gaps
- Work is being discussed in the **oauth** working group for doing any necessary work for AI Agent Authentication and Authorization

Agent Communication Protocols (agentproto)
BoF Session

- This BoF was aimed at defining frameworks and protocol building blocks for enabling **interoperability for AI Agent** applications across the Internet.
    - The main deliverable was be a protocol for creation and maintenance of communication sessions between AI agents and/or tools.
    - Also define a framework document that identifies the key building blocks and defines the protocol suite for interoperable agent-to-agent and agent-to-tool communications (A lot of work to be done in other WGs).
- During the BoF it seemed that there was agreement that there was indeed a problem for the IETF to solve and a need for interop
    - But there was disagreement on scope and the need for a standards track framework.
- There is ongoing work on the **agentproto** mailing list to iterate on the charter to address these issues.

Discovery of Agents With Names (dawn)
BoF Session

- This BoF was focused on establishing a working group to develop requirements, information models, and protocol solutions for entity (entities may be tasks, workloads, endpoints, services, AI agents, etc.) discovery.
- Discussion during the BoF appeared to indicate that the scope was too wide.
- After the BoF, a draft charter was being worked on by some of the proponents to address the issues brought up during the BoF
- The sponsoring AD has now put a new **proposed charter** in front of the IESG to begin the chartering process
    - Discussions are ongoing

Dynamic Multi-agent Secured Collaboration (dmsc)
BoF Session

- This BoF intended to explore interoperable protocols and mechanisms for mediated collaboration (an **AI Agent Gateway**)
- Topics included agent capability exposure, request forwarding, coordination, synchronization, policy control, observability, and secure communication.
- Productive discussion but did not finalize any DMSC-specific work ready for standardization
    - This was a non-working group forming BoF
- There were some concerns brought up regarding the possibilities for centralization and censorship

Protocol for Transposed Transactions over HTTP (PTTH) BoF Session

- Some backend **servers cannot accept inbound connections** because of firewalls, changing addresses, or security constraints.
  - The backend **initiates an outbound connection but acts as the HTTP server**—reversing the usual transport roles.
  - Use cases: CDN origins, Zero Trust Network Access, hidden services, on-premises applications, and dynamic compute workers.
- Goal: Replace proprietary reverse-HTTP mechanisms with an interoperable, standards-based approach.
  - Proposed scope: Connection setup and authorization using existing HTTP semantics; transport changes and deployment-specific scaling controls remain out of scope.
- Operator value: **Avoid inbound firewall exposure, simplify backend connectivity, and reduce vendor lock-in.**
- Status: A WG-forming BoF was held at IETF 126; room polls showed strong interest, with chartering subject to the formal IETF process.

Continuous Updating and Ratcheting for rekeying Encrypted Network Transport (CURRENT)

BoF Session

- Long-lived encrypted connections remain exposed if their active key material is compromised.
  - Goal: **Continuously refresh and ratchet keys** without repeatedly rebuilding the connection.
  - Approach: Use a two-party profile of Messaging Layer Security **(MLS) for key management** with the TLS record layer for protected traffic.
  - Security benefits: Provide forward secrecy and post-compromise security—protecting past traffic and recovering protection for future traffic after a compromise.
    - Crypto agility: Support both traditional and post-quantum cryptography.
- Operator value: **Strengthen long-lived connections and critical infrastructure against key exposure while avoiding disruptive session restarts.**
- Status: A WG-forming BoF at IETF 126 explored whether this new security protocol should have a dedicated home in the IETF. The problem and scope were not yet sufficiently clear yet.

Recent Hot Topics

RIR and Space
Hot Topics

- The **tiptop** working group is discussing how IPv6 address blocks should be allocated and managed for celestial bodies
- Two high level ways to look at the problem
  - Single-RIR model
    - draft-li-tiptop-address-space
  - Multi-RIR model
    - draft-kumari-tiptop-address-space
  - Possibly a merged I-D
- **Separate out technical requirements from policy**

AI in IETF
Other key Topics

- **AI Preferences (AIPref)**
  - As usual the working group makes most of the progress in the interims and at the Toronto Interim the WG made good progress on the training and search terms
  - The Inference term (that was removed due to lack of consensus) is becoming more important
    - There are now content providers who believe having a term for this purpose is critical and this was one of the focus items at the recently concluded interim and will be so for IETF127
  - A design team worked on text on applying preferences and ended up with this text after a series of iterations
    - *“An entity that receives usage preferences has a choice whether to follow those preferences. This specification does not determine how that choice is made. Whether and under which circumstances a preference is followed is outside the scope of this specification.”*
- **WebBotAuth**
  - Major work item is regarding using **HTTP Message Signatures** for automated bot traffic

Post-Quantum Cryptography (PQC)
Hot Topics

- There is work ongoing in multiple working groups to define algorithms, procedures and guidelines for PQC (a few key callouts here)
- **pquip** has documented operational and design guidance for supporting the PQC transition
    - Post-Quantum Cryptography for Engineers (RFC 9958) is highly recommended
- The **tls** working group is working on both hybrid and non-hybrid PQC
    - There is a lot of discussion in the WG on whether non-hybrid PQC should be published by the IETF or not
- There is also work happening in **ipsecme** for PQC signature authentication for IKEv2

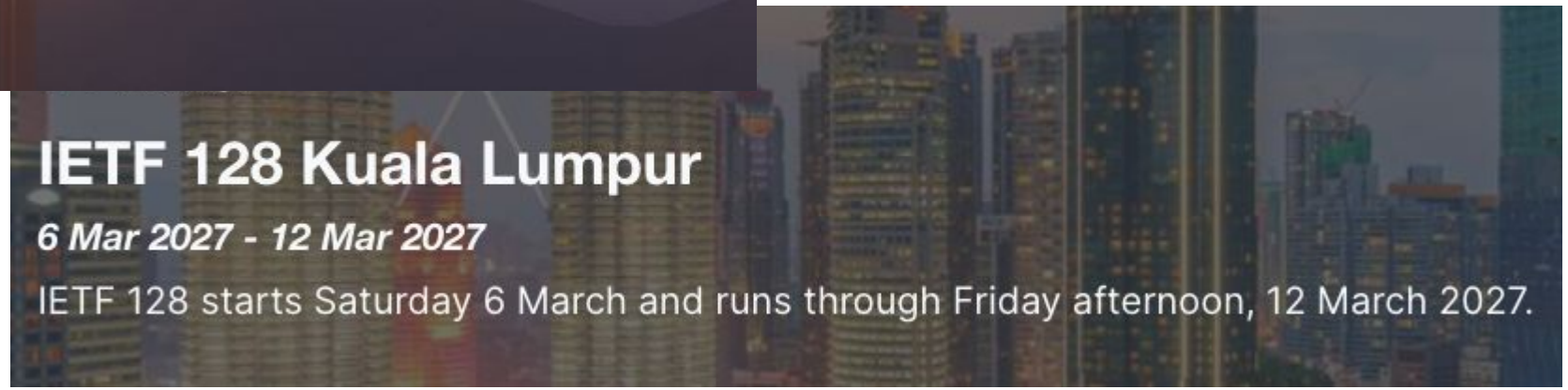
YANG Development outside of RFCs
Hot Topics

- YANG deVELpment PrOCEss & maintenance (**VELOCE**) - Turning IAB NEMOPS recommendations into practical IETF process experiments
  - *Traditional RFC cycles can be too slow for iterative development and maintenance of operational data models.*
- Separate prose from code: RFCs retain architecture, operational, security, and IANA considerations; YANG modules live in version-controlled repositories.
- Git-native workflow: Use issues and pull requests for review and traceability, while preserving normal IETF consensus processes.
- Operator value: **Deliver usable models sooner and enable focused fixes and incremental updates without republishing an entire RFC.**
- https://datatracker.ietf.org/doc/draft-ietf-opsawg-veloce-yang/

SRv6 Operations
Hot Topics

- SRv6OPS: A **forum for operators** to share experience deploying and managing SRv6 networks.
  - Operational focus: Deployment models, migration, interoperability, scaling, security, OAM, telemetry, reliability, and troubleshooting.
- **APAC operator** presentations:
  - *Rakuten* shared migration from native IPv6 to an SRv6 fabric spanning approximately 14,000 nodes, supporting 4G/5G, Internet, and enterprise services—with lessons on scaling, prefix summarization, automation, and convergence.
  - *China Mobile*: Reported C-SID deployment across 700+ devices in 31 provinces.
  - *China Telecom*: End-to-end SRv6 services across metro, backbone, cloud, and inter-AS environments.
- Invitation to operators: **Present your deployments, trials, operational challenges, lessons learned—and what did not work.**
- Why participate: Real deployment experience helps the WG identify gaps and produce practical operational guidance - https://ietf-wg-srv6ops.github.io/

Upcoming IETF Meetings



- Joining Mailing List are free!
- Lower Fees for Student Participation
- **Fee Waivers for Remote Participation** are available

Your feedback for future
APNIC & APRICOT

- What topics are you interested in
  - How can you start participating in IETF?
  - Regular updates like these?
  - More in-depth technical presentations on a specific topic?
  - Upcoming and emerging work at IETF
  - Something else?

thank you, and questions...