

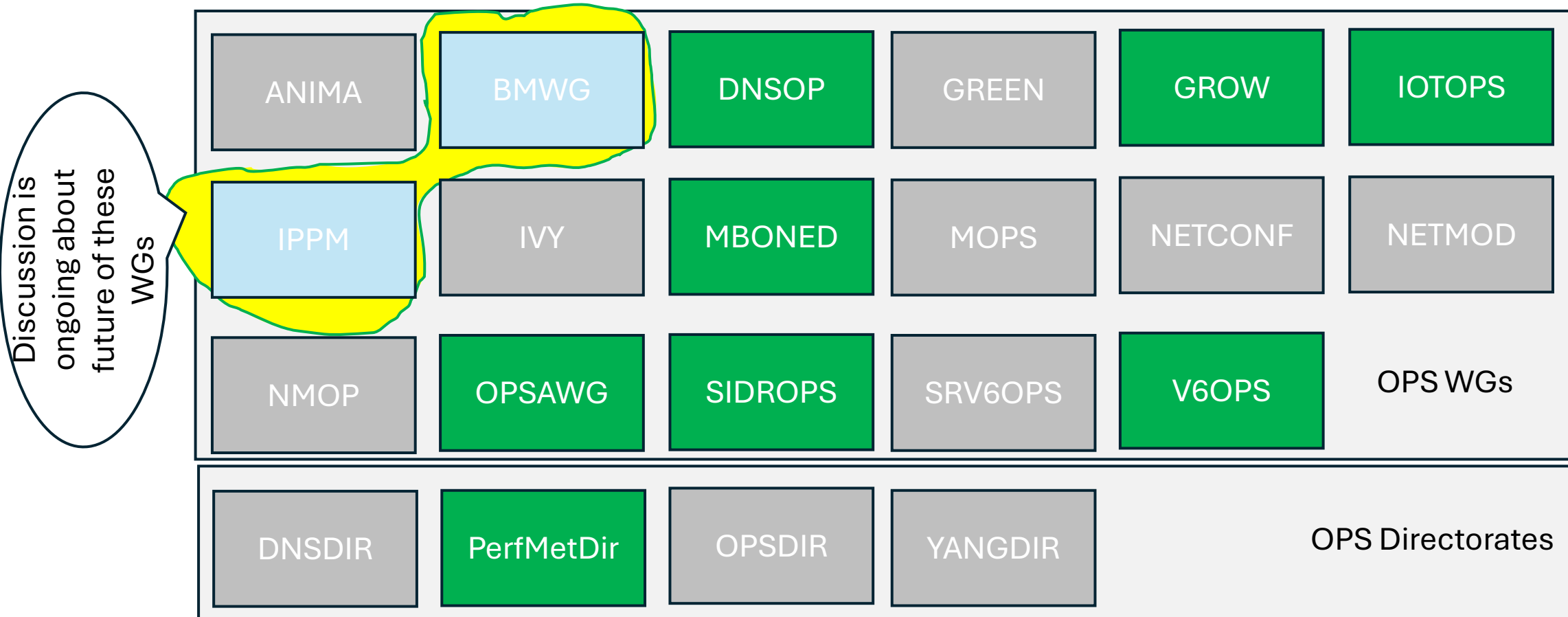
# State of OPS Nation

## IETF#125

March 2026

OPS WG Chairs & OPS Directorate Chairs

# Recharted WGs Since 03/2025



# Leadership Change Since 03/2025



# Agenda

Summary is provided for all



Zoom during this session

# WGs Zoom

# GROW

# GROW WG

- **Current WG Hot Topics/Main Issues**

- BMP
- BGP operations

- **Main Achievements Since IETF#124**

- draft-ietf-grow-bgpopecupd **LC**
- draft-ietf-grow-bmp-adj-ribs-filtered **adopted**
- draft-ietf-grow-route-leak-detection-mitigation **dead**

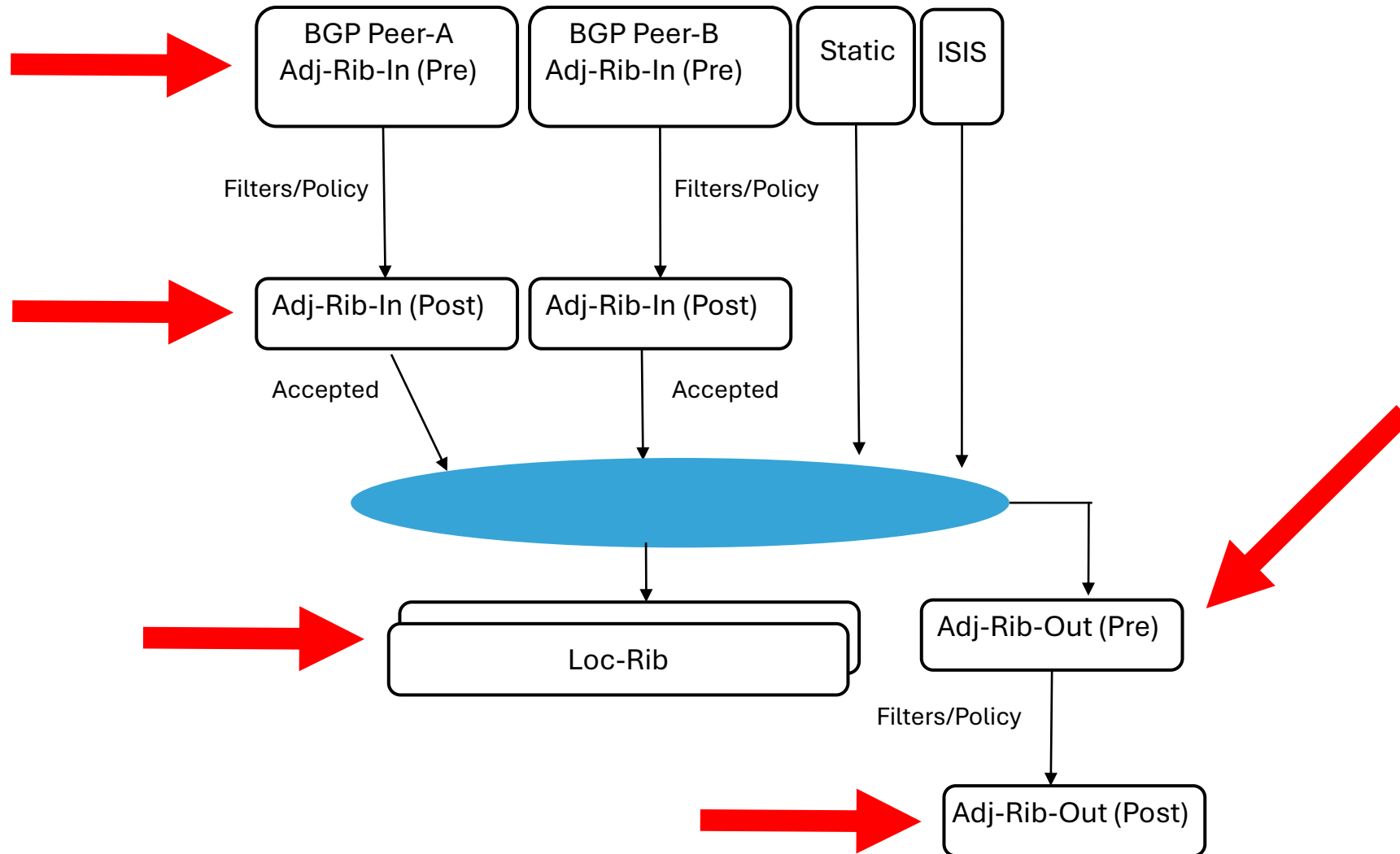
- **Admin Changes Since IETF#124**

- Charter Update: No
- Leadership Update: No

# GROW WG: Home to BMP, wait .. wha?

- A standardized protocol for real-time monitoring of BGP sessions
- Provides access to BGP Routing Information Bases (RIBs)
- Monitors pre-policy and post-policy route information
- Sends incremental updates and statistics
- Unidirectional protocol over TCP

# GROW WG: BMP vantage points



# GROW WG: BMP status

- Looking back:
  - Original design oriented to security use-cases
  - Added new vantage points to increase coverage of use-cases
- Looking forward:
  - Making the format extensible
  - Adding event-driven messages
  - YANG model
  - Kinda hot! 25 documents among WG and personal efforts

# GROW WG: Internet Routing & BGP Ops

- NRTM v4, Near Real Time Mirroring protocol
- Peering API
- Guidance, Best Practices & Terminology documents, ie.:
  - Security considerations for BGP
  - Current Options for Securing Global Routing
  - Currently Used Terminology in Global Routing Operations
  - Considerations on BGP Communities



# SRv6OPS

*a forum for network operators to discuss SRv6 operational matters*

## **Current WG Hot Topics/Main Issues**

- Operator presentations focusing on SRv6 deployments in cloud environments, security services delivered via SRv6, and end-to-end services in power grid enterprise networks
- Address planning recommendations for SRv6
- SRv6 traffic and policy selection

## **Main Achievements Since IETF#124**

- Two drafts adopted by the WG: Deployment Options and Problem Summary
- Increased participation from operators sharing their operational reality

## **Admin Changes Since IETF#124**

- Charter Update: No
- Leadership Update: No

# SRv6OPS: Why?

*a forum for network operators to discuss SRv6 operational matters*

- SRv6 specifications are done *elsewhere*
  - Architecture defined in SPRING
  - Protocol extensions in related WGs
- Operators are deploying SRv6 in *diverse* environments
  - In ISP, cloud, mobile, enterprise networks
- Deployment raises *operational* questions
  - Migration strategies, Address planning, operational challenges, monitoring and interworking
- A *targeted* forum for sharing operational experience
  - Operators share deployment lessons and challenges
- SRv6OPS documents *operational guidance*
  - Deployment recommendations and best practices

# SRv6OPS: Inviting Operators

SRV6 OPS

*a forum for network operators to discuss SRv6 operational matters*

## Welcome to IETF SRv6OPS Working Group

The SRv6OPS Working Group at the IETF addresses the operational and deployment aspects of Segment Routing over IPv6 (SRv6). It serves as a platform for network operators to share practical experiences and tackle real-world challenges. Some of it is documented through Internet drafts aimed at publication as informational RFCs.

### Next Meeting

The next hybrid SRv6OPS WG session will be at [IETF 125](#) in Shenzhen from March 14-20.

 **Are you an operator deploying SRv6? We'd love to hear from you!**

Reach out to the [chairs](#) if you're interested in sharing your operational experience at a SRv6OPS Working Group session.






<https://ietf-wg-srv6ops.github.io/>

A webpage maintained at the WG's GitHub for inviting operators to share their experience!

<https://github.com/ietf-wg-srv6ops/ietf-wg-srv6ops.github.io>

# SRv6OPS: Operator Presentations

*Multiple operators actively contributing deployment experience*

|  Operator |  Speaker |  Video |  Slide |  IETF |
|--|---|---|---|--|
| Rakuten Mobile   | Akash Agrawal   | <a href="#">Watch</a>   | <a href="#">PDF</a>   | IETF120  |
| Deutsche Telekom   | Nils Warnke   | <a href="#">Watch</a>   | <a href="#">PDF</a>   | IETF123  |
| Bell Canada  | Daniel Bernier  | <a href="#">Watch</a>   | <a href="#">PDF</a>   | IETF124  |
|  |   | <a href="#">Watch</a>   | <a href="#">PDF</a>   | IETF121  |
|  | Daniel Voyer  | <a href="#">Watch</a>   | <a href="#">PDF</a>   | IETF119  |
| Swisscom   | Thomas Graf   | <a href="#">Watch</a>   | <a href="#">PDF</a>   | IETF121  |
|  |   | <a href="#">Watch</a>   | <a href="#">PDF</a>   | IETF119  |
| IX.br  | Fabio Pessoa Nunes  | <a href="#">Watch</a>   | <a href="#">PDF</a>   | IETF123  |
| MTS Web Services   | Boris Hassanov  | <a href="#">Watch</a>   | <a href="#">PDF</a>   | IETF123  |

|                           |                 |                       |                     |         |
|---------------------------|-----------------|-----------------------|---------------------|---------|
| Turkcell                  | Mehmet Durmus   | <a href="#">Watch</a> | <a href="#">PDF</a> | IETF122 |
| Verizon                   | Nicklous Morris | <a href="#">Watch</a> | <a href="#">PDF</a> | IETF124 |
|                           | Luay Jalil      | <a href="#">Watch</a> | <a href="#">PDF</a> | IETF120 |
|                           | Gyan Mishra     | <a href="#">Watch</a> | <a href="#">PDF</a> | IETF121 |
| China Telecom             | Yongqing Zhu    | <a href="#">Watch</a> | <a href="#">PDF</a> | IETF122 |
| China Unicom              | Xinxin Yi       | <a href="#">Watch</a> | <a href="#">PDF</a> | IETF120 |
| China Southern Power Grid | Jiangang Lu     | <a href="#">Watch</a> | <a href="#">PDF</a> | IETF121 |
| MTN SA                    | Zoltan Miklos   | <a href="#">Watch</a> | <a href="#">PDF</a> | IETF119 |
| Alibaba Cloud             | Linjian Song    | <a href="#">Watch</a> | <a href="#">PDF</a> | IETF119 |
| China Mobile              | Tianji Jiang    | <a href="#">Watch</a> | <a href="#">PDF</a> | IETF119 |

# SRv6OPS: Adopted I-Ds

*a forum for network operators to discuss SRv6 operational matters*

## SRv6 Deployment Options

- Provides operational guidance for migrating networks to SRv6
- Describes deployment strategies when transitioning from MPLS / SR-MPLS
- Covers options such as gradual evolution, overlays, and “ships-in-the-night” coexistence
- Helps operators plan and execute SRv6 deployment with minimal service disruption
- [draft-ietf-srv6ops-srv6-deployment-02](#)

## SRv6 Deployment and Operation Problem Summary

- Identifies common operational and deployment challenges encountered in SRv6 networks
- Captures issues observed by operators during planning, deployment, and operation
- Serves as a foundation for operational guidance and best practices work
- [draft-ietf-srv6ops-problem-summary-00](#)

# SRv6OPS: Topics explored in individual I-Ds SRV6 OPS

*a forum for network operators to discuss SRv6 operational matters*

- Deployment architectures
  - DC-Frontend
  - AI-Backend
  - Service Function Chaining
- SRv6 Address Planning for NEXT-CSID
- Traffic steering and policy selection
- Load balancing strategies
- OAM
- Protection mechanisms

## Related Internet-Drafts and RFCs (11 hits)

- [draft-filsfils-srv6ops-srv6-ai-backend-03](#)  
SRv6 for Deterministic Path Placement in AI Backends
- [draft-horn-srv6ops-srv6addressing-01](#)  
Addressing Recommendations for SRv6 NEXT-CSID
- [draft-hss-srv6ops-srv6-routing-planes-00](#)  
BGP based SRv6 Routing Planes for DC network
- [draft-wdh-srv6ops-secservice-00](#)  
ESP Protection for Services over SRv6
- [draft-lll-srv6ops-gp-aware-srv6-lb-00](#)  
QP-based SRv6 Load Balancing Deployment
- [draft-geng-srv6ops-traffic-steering-to-srv6-03](#)  
Considerations for traffic steering to SRv6
- [draft-yang-srv6ops-policy-selector-02](#)  
SR Policy Selector
- [draft-filsfils-srv6ops-srv6-e2e-dc-frontend-wan-01](#)  
SRv6 End-to-End DC Frontend and WAN
- [draft-gong-srv6ops-srv6-oam-deployment-01](#)  
SRv6 OAM Deployment Consideration
- [draft-ye-srv6ops-sfc-deployment-00](#)  
SRv6 SFC Deployment Options
- [draft-liu-srv6ops-sr-protection-04](#)  
Operational Guidance for Protection mechanisms in SRv6 Networks

**ENCOURAGING MORE OPERATORS TO SHARE  
DEPLOYMENT AND OPERATIONAL  
EXPERIENCE...**

**THANKS!**



# All WGs

# ANIMA (Autonomic Networking Integrated Model and Approach)

## • **Main WG Objectives**

- ANI: Distributed infrastructure for network automation...”autonomic networks”
  - BRSKI: Secure Bootstrap (variations)
  - ACP: automatic/secure IPv6 connectivity
  - GRASP: automation signaling
- ASA: decentralized automation agents

## • **Current WG Hot Topics/Main Issues**

- Finishing BRSKI variation cluster
  - BRSKI-AE (done)
  - BRSKI-PRM (done)
  - Constrained BRSKI (active review)
  - Constrained PROXY (active review)
  - RFC8366bis (last fixes for IESG)
- Automatic, extensible resilient BRSKI

discovery (GRASP, DSN-SD, “CoAP”)

- Hackathon PoC implementations for ANI components
- Starting to look into applying ANIMA mechanisms as support infra for AI agents

## • **Main Achievements Since IETF#124**

- Moved RFC8366bis to IESG

## • **Admin Changes Since IETF#124**

- Charter Update: No
- Leadership Update: No

# BMWG (Benchmarking Methodology Working Group)

- **Current WG Hot Topics/Main Issues**

- AI Network Fabrics (Training and Inference) Benchmarking and LLM serving Benchmarking
- Benchmarking Methodology for technologies developed in other SDOs (e.g. VNFs) and IETF WGs: e.g., Segment Routing, CATS, ...
- Power Consumption Characterization for network devices
- Discussion on revisiting BMWG RFCs to update RFC 2544
- Rechartering to include new work on AI (either for a joint future with IPPM or separately)

- **Main Achievements Since IETF#124**

- [draft-ietf-bmwg-mlrsearch](#) in RFC Ed

## Queue

- [draft-ietf-bmwg-network-tester-cfg](#) WGLC concluded: Revised I-D needed
- [draft-ietf-bmwg-sr-bench-meth](#) WGLC concluded
- [draft-ietf-bmwg-savnet-sav-benchmarking](#) adopted
- [draft-ietf-bmwg-powerbench](#) adopted

- **Admin Changes Since IETF#124**

- Charter Update: No
- Leadership Update: No

# DNSOP (DNS Operations)

- **Current WG Hot Topics/Main Issues**

- DNS Local Root
- DNSSEC automation

- **Main Achievements Since IETF#124**

- Published 3 RFCs
- 2 drafts in RFC Ed Queue
- 4 new WG drafts adopted
- WGLC draft-ietf-dnsop-

structured-dns-error started (after sent back after IETF LC)

- **Admin Changes Since IETF#124**

- Charter Update: No
- Leadership Update: No

# GREEN (Getting Ready for Energy-Efficient Networking)

- **Current WG Hot Topics**

- Base drafts on terminology, use cases and framework
- Core YANG model
- Aligning framework and core model
- Starting the work on models beyond the base

- **Admin Changes since IETF#124**

- Delegate appointed: Luis Contreras

- **Main Achievements since IETF#124**

- Base drafts adopted
  - The adoption call for the framework draft is concluded
- Core model maturing
  - Soon ready for adoption

# GROW (Global Routing Operations)

- **Current WG Hot Topics/Main Issues**

- BMP (BGP Monitoring Protocol)
- BGP operations

- **Main Achievements Since IETF#124**

- draft-ietf-grow-bgpopssecupd **LC**
- draft-ietf-grow-bmp-adj-ribs-filtered **adopted**
- draft-ietf-grow-route-leak-detection-mitigation **dead**

- **Admin Changes Since IETF#124**

- Charter Update: No
- Leadership Update: No

# IOTOPS (IOT Operations)

- **Current WG Hot Topics/Main Issues**
  - Discussion of encrypted DNS and DNS over CoAP, among other things (draft-ietf-iotops-iot-dns-guidelines-02, “IoT DNS Security and Privacy Guidelines”)
- **Main Achievements Since IETF#124**
  - draft-mishra-iotops-iot-dns-guidelines has been adopted as draft-ietf-iotops-iot-dns-guidelines (IoT DNS Security and Privacy Guidelines)
  - 7228bis-05 was updated based on WGLC feedback
- **Admin Changes Since IETF#124**
  - Charter Update: No
  - Leadership Update: No

# IPPM (IP Performance Measurement)

- **Current WG Hot Topics/Main Issues**

- draft-ietf-ippm-ioam-data-integrity passed, and draft-ietf-ippm-ioam-integrity-yang will end working group call end of this week so that both can be passed jointly to IESG.
- draft-ietf-ippm-stamp-ext-hdr proposing an extension to support IP packet header reflection used by IOAM while draft-ietf-ippm-stamp-cos-ecn proposes to extend COS TLV to support ECN.
- MPLS, IPPM and BMWG joint adoption call on draft-song-mpls-on-path-telemetry-flag. Proposes MPLS Network Actions (MNA) flag to support OAM in MPLS networks.

- **Main Achievements Since IETF#124**

- draft-ietf-ippm-asymmetrical-pkts and draft-ietf-ippm-qoo received good feedback from IESG. Once open discusses are addressed, they are ready for approval
- Joint IPPM/BMWG sessions working well. Feared congestion has been avoided at IETF 125. We continue the experiment.

- **Admin Changes Since IETF#124**

- Charter Update: No, work started on a joint charter proposal
- Leadership Update: No

# IVI (Network Inventory YANG)

- **Current WG Hot Topics/Main Issues**
  - Inventory location model
  - Needs agreement on the definition of passive inventory
- **Main Achievements Since IETF#124**
  - Core model completed WG Last Call
  - Inventory topology and software models are near WG Last Call
- **Admin Changes Since IETF#124**
  - Charter Update: No
  - Leadership Update: No

# MBONED (MBONE Deployment)

## • **Current WG Hot Topics/Main Issues • Admin Changes Since IETF#124**

- Multicast to the Browser (mQUIC, IWA)
- Multicast for Internet Live-Streaming
  - Aircast experiences with multicast-based ULL live streaming of Australian Open
  - Dynamic Internet Multicast Tunneling
- Charter Update: No
- Leadership Update: No

## • **Main Achievements Since IETF#124**

- AMT YANG Models submitted to ISEG
- Multicast YANG revised, new WGLC
- Redundant Ingress Failover and Non-SR Mcast in SR Networks Drafts in WGLC
- AMBI and CBACC drafts parked

# MOPS (Media Operations)

- **Current WG Hot Topics/Main Issues**

- Update to WG doc in progress (<https://datatracker.ietf.org/doc/draft-ietf-mops-network-overlay-impacts/>)

- **Main Achievements Since IETF#124**

- New Chair appointed!

- **Admin Changes Since IETF#124**

- Charter Update: No
- **Leadership Update:**
  - Jana Iyengar is new co-Chair
  - Kyle Rose has stepped down
  - Leslie Daigle remains

# NETCONF (Network Configuration)

## **Main Achievements Since IETF#124**

- Published [RFC 9900](#)
- 6 docs in RFC Editor Queue
- 3 docs in IESG Evaluation
- 1 doc in AD Evaluation

## **Current WG Hot Topics/Main Issues**

- List Pagination
- YANG-Push v2
- Tracing Technologies
- NETCONF over QUIC
- Private Candidate Datastore
- CBOR-Encoding for HTTPS-based Notifications

## **Admin Changes Since IETF#124**

- Charter Update: Pending
- Leadership Update: None

# NETMOD (Network Modeling)

## Main Achievements Since IETF#124

- Published [RFC 9899](#), [RFC 9911](#), and [RFC 9922](#)
- 2 docs in RFC Editor Queue
- 1 doc in IESG Evaluation
- 4 docs in AD Evaluation
- 1 doc in Post WG Last Call

## Admin Changes Since IETF#124

- Charter Update: None
- Leadership Update: None

## Current WG Hot Topics/Main Issues

- Guidance for Managing YANG Modules in RFCs and IANA Registries
- YANG Packages
- YANG Schema Comparison
- MAC Address as String
- YANG Configuration Templates
- XML Encoding of Data Modeled with YANG
- A Baseline for YANG-next

# NMOP (Network Management Operations)

- **Current WG Hot Topics/Main Issues**
  - **Two local operators, China Telecom and China Mobile share their incidents.** Network Anomaly detection documents received reviews and YANG module updates.
  - **Multiple YANG-Push and YANG Message Broker implementations proofed system interoperability** at IETF125 hackathon.
  - **draft-ietf-nmop-yang-message-broker-message-key**, defining topic naming and message keying concept, has been successfully adopted and first proof of concept has been shown at IETF 125 hackathon.
  - **draft-netana-nmop-message-broker-bmp-telemetry-message** proposes BGP Monitoring (BMP) telemetry message extension. IPFIX extension has been announced for IETF 126.
- **Main Achievements Since IETF#124**
  - **draft-ietf-nmop-simap-concept**, has passed working group last call and addressed all remaining open issues. Ready for shepherd review.
- **Disappointment Since IETF#124**
  - **Knowledge Graph** design team was unable to reach consensus on how to progress jointly with draft-tailhardat-nmop-incident-management-noria and draft-mackey-nmop-kg-for-netops. Chairs and AD's decided that work shall continue as Independent Submission Stream.
- **Admin Changes Since IETF#124**
  - Charter Update: No
  - Leadership Update: No

# OPSAWG

- **Current WG Hot Topics/Main Issues**

- RFC 5706bis reviews and applicability
- Due to the OPS “dispatch” role of OPSAWG, sometime difficult to get draft feedback
- Observation: a lot of IPFIX-related draft (20)

- **Main Achievements Since IETF#124**

- RFC 9887: TACACS+ over TLS 1.3

- **Admin Changes Since IETF#124**

- Charter Update: No/No
- Leadership Update: No

# SIDROPS (SIDR Operations)

- **Main WG Objectives**

- Focus on deployment and operational issues, their mitigations, and experiences with SIDR technologies that are part of the global routing system, as well as the RPKI repositories and RPKI Certification Authority (CA) systems that form part of the SIDR architecture

- **Current WG Hot Topics/Main Issues**

- BGP AS\_PATH Verification Based on Autonomous System Provider Authorization (ASPA) Objects (4 drafts)
- (8210bis) Resource Public Key Infrastructure (RPKI) to Router Protocol, Version 2
- RPKI Publication Server BCP
- Various RPKI improvements

- **Main Achievements Since IETF#124**

- **draft-ietf-sidrops-manifest-numbers:** In RFC Ed Queue
- **draft-ietf-sidrops-8210bis & draft-ietf-sidrops-aspa-verification & draft-ietf-sidrops-aspa-profile:** ready for WGLC (polishing implementation reports)
- **draft-ietf-sidrops-publication-server-bcp:** new revision addressed comments raised during previous WGLC. Ready to move forward.
- **draft-snij-sidrops-constraining-rpki-trust-anchors:** adopted by WG.
- **draft-ietf-sidrops-avoid-rpki-state-in-bgp:** Passed WGLC; Waiting shepherd writeup.

- **Admin Changes Since IETF#124**

- Charter Update: **New Charter since January 2026**
- Leadership Update: No Changes

# SRv6OPS (SRv6 Operations)

*a forum for network operators to discuss SRv6 operational matters*

## **Current WG Hot Topics/Main Issues**

- Operator presentations focusing on SRv6 deployments in cloud environments, security services delivered via SRv6, and end-to-end services in power grid enterprise networks
- Address planning recommendations for SRv6
- SRv6 traffic and policy selection

## **Main Achievements Since IETF#124**

- Two drafts adopted by the WG: Deployment Options and Problem Summary
- Increased participation from operators sharing their operational reality

## **Admin Changes Since IETF#124**

- Charter Update: No
- Leadership Update: No

# V6OPS (IPv6 Operations)

- **Current WG Hot Topics/Main Issues**

- 6mops
- IPv6-app-testing
- IPv6-only definition
- NAT64 WKP for private IPs

- **Main Achievements Since IETF#124**

- RFC 7757 (SIIT) → STD 103, RFCs 7755/7756 Informational → P/S
- Published RFC9898 (ND

considerations)

- draft-ietf-v6ops-claton in RFC Editor queue
- draft-ietf-v6ops-framework-md-ipv6only-underlay passed WGLC

- **Admin Changes Since IETF#124**

- Charter Update: No
- Leadership Update: No

# OPS Directorates

# DNSDIR

- Current WG Hot Topics/Main Issues
  - Unreasonable/impossible deadline on some requests
- Main Achievements Since IETF#124
  - Processed 17 I-Ds, rejected 42
- Admin Changes Since IETF#124
  - None

# PERFMETDIR (Performance Metrics Directorate)

- **Main Dir Objectives**

- Assists the OPS Area Directors to review performance-related documents intended for IESG review.
- Provides guidance on Performance Metrics to protocol development Working Groups.
- See RFC 6390

- **Current WG Hot Topics/Main Issues**

- **Seeking for more reviewers!**  
Please reach out to [perfmtrdir-chairs@ietf.org](mailto:perfmtrdir-chairs@ietf.org).

- **Main Achievements Since IETF#124**

- **draft-ietf-opsawg-rfc5706bis** and **draft-ietf-ippm-qoo** reviews completed

- **Admin Changes Since IETF#124**

- Charter Update: No
- Leadership Update: No

# YANGDOCTORS

- See dedicated slot in this session

# OPS-DIR (OPS Directorate)

- **Main WG Objectives**

- Increase OPS awareness and help identify OPS considerations and issues to be covered by specifications
- Assisting OPS ADs with IESG Telechats preparation
- Perform early reviews: Early feedback with an OPS focus before WG Last Calls

- **Reviewers: 49 members— Welcome Michael Parsons on board!**

- **Current WG Main Issues**

- Continue providing tutorials on the OPSDIR **review template** and collecting improvement suggestions.
- Sustain and achieve consistent OPSDIR review coverage for all IESG telechat drafts.
- Follow up on delayed review documents to close gaps ahead of future telechats.

# OPS-DIR

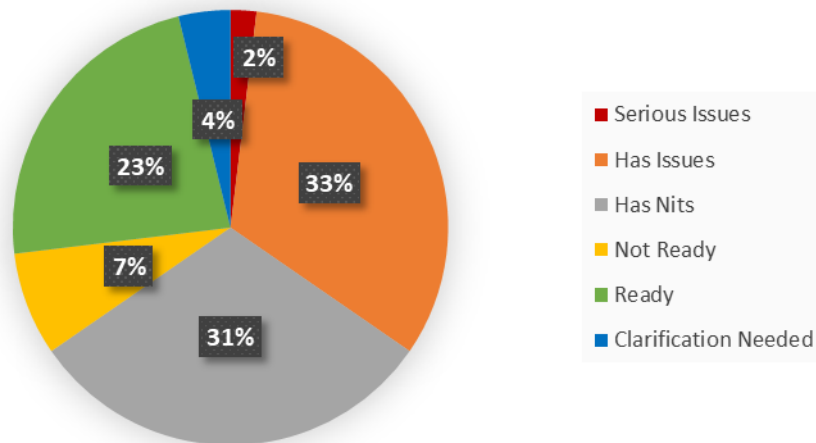
## Main Achievements Since IETF#124 (2025/11)

- OPSDIR has received **70** review requests, **Completed reviews: 52 (24 on time, 18 delayed)**
- The overall review quality is healthy. A large number of issues were effectively identified.

| Team   | Serious Issues | Has Issues | Has Nits | Not Ready | Ready  | Clarification Needed |
|--------|----------------|------------|----------|-----------|--------|----------------------|
| OpsDir | 1              | 17         | 16       | 4         | 12     | 2                    |
| %      | 1.92%          | 32.69%     | 30.77%   | 7.69%     | 23.08% | 3.85%                |

| Team   | Completed in time | Completed Late | Not Completed | Avg. Compl. days |
|--------|-------------------|----------------|---------------|------------------|
| OpsDir | 24                | 18             | 19            | 13.1             |
| %      | 53%               | 21%            | 25%           |                  |

Quality Results (Total:52)



Review Completion Status (Total:70)

