State of OPS Nation IETF#123

July 2025

OPS WG Chairs, OPS Directorate Chairs, & Proposals Leaders

Agenda

- OPS Working Groups
- Active OPS Proposals
- OPS Directorates

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 (mostly done)
    - Constrained BRSKI (active review)
    - Constrained PROXY (active review)
    - RFC8366bis (secure Voucher) – last one
  - Automatic, extensible resilient BRSKI discovery (GRASP, DSN-SD, "CoAP")
  - Hackathon PoC implementations for ANI components
  - Working towards various ANIMA use-cases to translate into ASA
    - Interim-2025-anima-01
- **Main Achievements Since IETF#122**
  - WG-Adoption:
    - OPS considerations BRSKI Registrar
    - OPS considerations BRSKI MASA
    - Constrained GRASP signaling
- **Admin Changes Since IETF#122**
  - Charter Update: No
  - Leadership Update: No

BMWG (Benchmarking Methodology WG)

- **Main WG Objectives**
  - Recommendations concerning the key performance characteristics and benchmarks for network devices, systems, and services
  - Characterization of networking technologies using controlled stimuli in a laboratory environment and not for live, operational networks
  - The set of benchmarks are of interest for the users (network operators and testing organizations) and for those affected by the benchmarks (networking and test equipment manufacturers)
- **Current WG Hot Topics/Main Issues**
  - Discussion for revisiting BMWG RFCs in order to update RFC 2544
  - Benchmarking Methodology for new technologies developed in other IETF WGs: SPRING, SAVNET, CATS, TEAS, …
- **Main Achievements Since IETF#122**
  - **draft-ietf-bmwg-mlrsearch** submitted to IESG for publication
  - **draft-ietf-bmwg-sr-bench-meth** and **draft-ietf-bmwg-network-tester-cfg** preparing for the WGLC
  - **draft-cprjgf-bmwg-powerbench**, **draft-chen-bmwg-savnet-sav-benchmarking** and **draft-lencse-bmwg-multiple-ip-addresses** candidate for adoption
- **Admin Changes Since IETF#122**
  - Charter Update: No
  - Leadership Update: No

DNSOP (DNS Operations)

- **Main WG Objectives**
  - Document DNS operations and deployment
  - DNSSEC automation and pipeline
  - DNS protocol maintenance
  - DNS <-> application interaction
- **Current Hot Topics/Main Issues**
  - Various active DNS <-> application interaction drafts (e.g., domain verification, structured DNS error, DNS integration)
  - Active drafts focussing on DNSSEC automation & deployment, as well asprerequisite protocol specifications
  - Maintenance drafts: updating, clarifying, general improvements
- **Main Achievements Since IETF#122**
  - Adoption dns-integration draft
  - WGLC cds-consistency provided good feedback
- **Admin Changes Since IETF#122**
  - New Chair: Ondřej Surý (w/ incumbent Benno Overeinder)
  - New Secretary: Shumon Huque and Peter Thomassen
  - New Technical Advisor: Jim Reid

GREEN (Getting Ready for Energy-Efficient Networking)

- **Main WG Objectives**
  - Data models for energy metrics
  - Controls to minimize energy usage
  - Related use-cases, terminology, metrics, framework ..,
- **Current WG Hot Topics/Main Issues**
  - Get some base docs adopted
  - Converge/Progress core/base structure for energy YANG models
- **Main Achievements Since IETF#122**
  - 3 Virtual Interim meetings
  - Liaison responses from ITU and ETSI
  - Draft discussions progressing
- **Admin Changes Since IETF#122**
  - Charter Update: No
  - Leadership Update: No

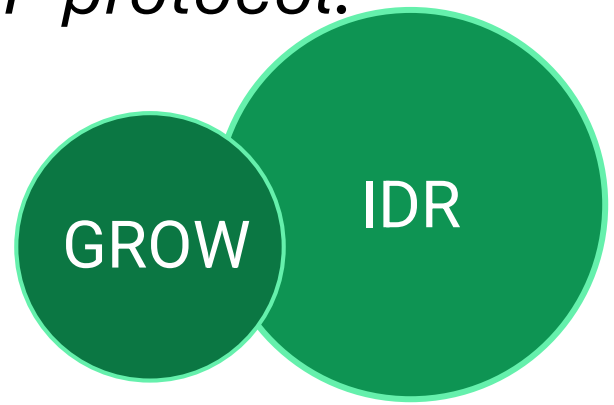
- **Admin Changes Since IETF#122**
  - Charter Update: Yes
  - Leadership Update: Yes
    - New Chair: Paolo Lucente
    - New Secretary: Lancheng Qin
    - New Tech Advisor: Jeff Haas

GROW (Global Routing Operations)

★★★★☐
"Loved it - really good WG"

GROW focuses on BGP in context of the global Internet Routing System.

GROW also maintains the BMP protocol.



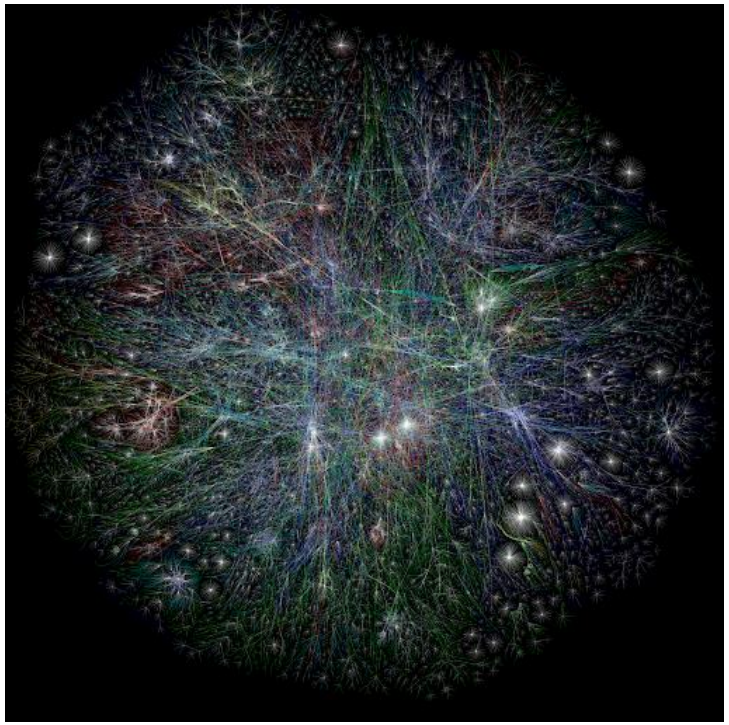


Image source: opte.org

IOTOPS (IOT Operations)

- **Main WG Objectives**
  - Is chartered for the discussion of operational issues related to Internet of Things (IoT) devices, in particular related to device onboarding and lifecycle management
  - Has “DISPATCH”-like function for work items related to work done in other existing WGs
  - Historically was used to raise awareness about various IoT work done in IETF and elsewhere
  - Recently expanded to allow Standards Track work on: Manufacturer Usage Description (MUD) documents; configuration backup and recovery solutions; software/firmware upgrade solutions, focusing on discovery and distribution
- **Current WG Hot Topics/Main Issues**
  - Narrows rules for when to accept updated MUD URLs (draft-ietf-opsawg-mud-acceptable-urls, "Authorized update to MUD URLs")
  - Ownership and licensing statements in YANG (draft-ietf-iotops-ol)
  - MUD-Based RATS Resources Discovery (draft-ietf-iotops-mud-rats)
- **Main Achievements Since IETF#122**
  - IOTOPS was rechartered to allow working on some Standards Track documents
  - Several documents moved over from OPSAWG: draft-ietf-iotops-mud-acceptable-urls, draft-ietf-iotops-ol (Ownership and licensing statements in YANG)
  - draft-ietf-iotops-security-protocol-comparison (Comparison of CoAP Security Protocols) had AD review
- **Admin Changes Since IETF#122**
  - Charter Update: Yes
  - Leadership Update: No

IPPM (IP Performance Measurement)

- **Main WG Objectives**
  - STAMP Maintenance and Extensions.
  - Hybrid OAM (IOAM, Alternate-Marking) Maintenance and Extensions.
  - End-user centric measurements and benchmarking.
- **Current WG Hot Topics/Main Issues**
  - Many IOAM related proposed work and lightning talk requests.
  - **draft-ietf-ippm-capacity-protocol** and **draft-ietf-ippm-encrypted-pdmv2** share similar security related challenges during IESG review process.
  - RFC 7799 related OAM terminology discussions with **draft-ietf-opsawg-oam-characterization**.
- **Main Achievements Since IETF#122**
  - **draft-ietf-ippm-asymmetrical-pkts** passed working group last call. Received TSVART review. Pending shepherd review.
  - **draft-ietf-ippm-on-path-telemetry-yang** working adoption succeeded. Yangdoctors review addressed.
  - **draft-ietf-ippm-qoo** has working group last call in progress. Received good feedback.
- **Admin Changes Since IETF#122**
  - Charter Update: No
  - Leadership Update: No

IVY (Network Inventory YANG)

- **Main WG Objectives**
  - Inventory terminology
  - HW & SW components (+licenses)
  - Physical location
  - Correlation with existing models
- **Current WG Hot Topics/Main Issues**
  - Last updates to core model
  - Following:
    - Location
    - Topology mapping
    - SW extensions
    - Passive inventory (individual)
  - Entitlement inventory (issue)
- **Main Achievements Since IETF#122**
  - No new RFC
  - But all WG and individual drafts updated
- **Admin Changes Since IETF#122**
  - Charter Update: No
  - Leadership Update: No

MBONED (Multicast Backbone Deployment)

- **Main WG Objectives**
  - Document and discuss multicast operational and deployment issues
  - Dev tools for improving multicast ops, troubleshooting, admin, and interworking
  - Investigate and address gaps related to transport-layer and security issues hindering multicast deployment
- **Current WG Hot Topics/Main Issues**
  - Multicast to the Browser (mQUIC, CBACC/DORMS/AMBI)
- **Main Achievements Since IETF#122**
  - Re-charter, doc cleanup
  - Multicast to the Browser doc and implementation updates
- **Admin Changes Since IETF#122**
  - Charter Update: Yes
  - Leadership Update: No

MOPS (Media Operations)

- **Main WG Objectives**
  - Cross pollination between IP tech and media industry
  - Documenting existing operational issues with media protocols
  - Published: RFC 9706, RFC 9699, RFC 9317
- **Current WG Hot Topics/Main Issues**
  - Network Overlay Impacts to Streaming Video (WG doc)
  - MoQ in practice
- **Main Achievements Since IETF#122**
  - Update to WG doc in progress (draft-ietf-mops-network-overlay-impacts)
- **Admin Changes Since IETF#122**
  - Charter Update: No (milestones in progress)
  - Leadership Update: No

NETCONF (Network Configuration)

- **Main WG Objectives**
  - YANG management protocols
    - NETCONF / RESTCONF
    - Transport and encodings
    - Telemetry and monitoring
    - Zero Touch
- **Current WG Hot Topics/Main Issues**
  - Various notif documents
  - YANG-Push Lite
  - NETCONF over QUIC
- **Main Achievements Since IETF#122**
  - Several documents post WG
  - Encouraged more participation through, e.g., shepherding
- **Admin Changes Since IETF#122**
  - Charter Update: No
  - Leadership Update: Yes

NETMOD (Network Modeling)

- **Main WG Objectives**
  - Maintain the YANG data modeling language
  - Develop/maintain guidelines for developing YANG models
  - Define core YANG models and models that do not otherwise fall under the charter of any other WG
- **Current WG Hot Topics/Main Issues**
  - Module versioning and server support for multiple versions
  - Templates – do we do something here?
  - YANG Next – agreeing on scope and timeline
- **Main Achievements Since IETF#122**
  - RFC 9742 **A YANG Data Model for Syslog Management**
  - 3 new documents in RFC Editor queue
  - 7 documents submitted for publication (5 new)
  - 2 documents post LC
- **Admin Changes Since IETF#122**
  - Charter Update: None
  - Leadership Update: None

NMOP (Network Management Operations)

- **Main WG Objectives**
  - Solicit input from network operators to identify existing and anticipated operational issues arising from the near-term deployment of network management technologies.
    - YANG Push integration with Message Broker architecture and message schema.
    - Network Anomaly Detection architecture, semantics and lifecycle.
    - Service & Infrastructure Maps (SIMAP) concept and experiments.
    - Updating RFC 3535 from IAB workshop feedback.
    - Bring your Own Incident.
- **Admin Changes Since IETF#122**
  - Charter Update: No
  - Leadership Update: No
- **Current WG Hot Topics/Main Issues**
  - **Knowledge Graph** design team established. Should the IETF work on this topic?
  - **draft-ietf-nmop-yang-message-broker-integration** YANG-Push MVP 1 hackathon validation with end-to-end chain.
  - **SIMAP** hackathon shows challenges and brings proposals how to address.
  - **draft-boucadair-nmop-rfc3535-20years-later** WG adoption call.
- **Main Achievements Since IETF#122**
  - **draft-ietf-nmop-terminology** first document passed working group last call and progressing well at IESG.
  - **draft-ietf-nmop-simap-concept**, good progress on requirements and RFC8345 gap definition.
  - **draft-ietf-nmop-message-broker-telemetry-message** successful working group adoption and first implementation at hackathon.

OPSAWG

- **Main WG Objectives**
  - Publish TACACS+ over TLS 1.3
  - Publish Secure TACACS+ YANG module
  - Submit GTP-U in IPFIX, On Path Telemetry in IPFIX, and Contextualized Telemetry Data to IESG
- **Current WG Hot Topics/Main Issues**
  - Guidelines for Characterizing “OAM”
  - PCAP[NG] work
- **Main Achievements Since IETF#122**
  - **BCP 241** - Operational Considerations for Use of DNS in Internet of Things (IoT) Devices…
  - **RFC 9761** - Manufacturer Usage Description (MUD) for TLS and DTLS Profiles for Internet of Things (IoT) Devices
- **Admin Changes Since IETF#122**
  - Charter Update: **Yes!**
  - Leadership Update: No

SIDROPS (SIDR Operations)

- **Main WG Objectives**
  - Identify operational issues with a SIDR-aware Internet
  - Identify issues with interaction with the non-SIDR-aware Internet
  - Develop operational solutions for identified issues in sidrops and document them in informational or BCP documents
- **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 Discussion ongoing whether ordering of PDU is necessary
  - RPKI Publication Server BCP
  - Various RPKI improvements
- **Main Achievements Since IETF#122**
  - **RFC 9829** (RPKI Certificate Revocation List (CRL) Number Extensions)
  - **draft-ietf-sidrops-manifest-numbers** past WG Last Call, waiting for shepherd writeup
  - **draft-ietf-sidrops-publication-server-bcp** was in WG Last Call but authors needed time to address the received feedback
- **Admin Changes Since IETF#122**
  - Charter Update: No
  - Leadership Update: Yes
    - New Co-Chair: Luigi Iannone
    - New Tech Advisors: Keyur Patel & Chris Morrow Tech

SRv6OPS (SRv6 Operations)

- **Main WG Objectives**
  - A forum for network operators to discuss operational matters for SRv6 networks
  - Documenting operational and deployment challenges in SRv6 network
- **Current WG Hot Topics/Main Issues**
  - Operator presentations from DT, IX.br, and MTS Web services
  - SRv6 Deployment Options
  - Aim to issue adoption call for Problem Summary Draft post IETF 123
- **Main Achievements Since IETF#122**
  - Have been successful in bringing in new and diverse operators' viewpoints by inviting them for operator presentations
  - A new website aimed at operators not active in IETF - https://ietf-wg-srv6ops.github.io/ with content hosted in WG GitHub
- **Admin Changes Since IETF#122**
  - Charter Update: No
  - Leadership Update: No

V6OPS (IPv6 Operations)

- **Main WG Objectives – (1) identify deployment/operations issues & resolve them (2) accelerate standardization of useful solutions (e.g., IPv6-mostly)**
  - Publishing deployment and operations guidelines for IPv6-mostly
  - Update IPv6 CPE requirements (rfc7084-update)
  - Solicit IPv6-only deployment cases and publish BCP for IPv6-only
  - Identify IPv6 issues that prevent H.E. from selecting IPv6 for Dual-Stack users, and publish operational solutions
  - Publish BCP for enterprise IPv6 deployment
- **Current WG Hot Topics/Main Issues**
  - “Definition of IPv6-only” debate
  - “Prefix-discovery for NAT64” (prefer8781 draft)
  - “AAAA-filtering” (draft-caletka-aaaa-filtering)
- **Main Achievements Since IETF#122**
  - ND-consideration draft passed IETF LC and entered RFC Editor queue
  - “CE Routers LAN DHCPv6 Prefix Delegation” is in AUTH48
  - Prefer8781 draft submitted to IESG for publication
- **Admin Changes Since IETF#122**
  - Charter Update: No
  - Leadership Update: No

Active Proposals

AINETOPS (AI/NETwork OPerationS)

- Multiple side meetings on the applicability of AI to network operations in last few IETF meetings
- Main Objectives:
  - Investigate ***and gauge interest in whether there is concrete work*** that falls under the IETF activity scope to cover AI integration in network operations, network adaptation to support AI needs, or both
  - ***Coordinate*** discussion and share reviews and thoughts on several relevant AINETOPS I-Ds across a spectrum of IETF WGs
- A few relevant IETF works in this area such as:

draft-king-rokui-ainetops-usecases
draft-hcl-rtgwg-ai-network-problem
draft-cui-ai-agent-task/
draft-cheng-rtgwg-ai-network-reliability-problem
draft-han-ai-agent-impact-infra/
draft-wmz-nmrg-agent-ndt-arch
draft-rosenberg-ai-protocols
Various AI Agents side meetings
…

- A few potential network use-cases:
  - Network Assistance, Active and Reactive Assurance, Predictive Analytics, Operational Insights, Security Monitoring
- Discussion List: https://mailarchive.ietf.org/arch/browse/ainetops/

SETTLE (**SE**cure access **T**o **T**ls **L**ocal r**E**sources)

- **Target: WG**
- **Problem Overview**

  Many local network services (such as printers) still rely on unencrypted or unauthenticated connections, creating security risks and a poor user experience. **SETTLE** aims to address this problem from an operational standpoint by defining guidance and requirements for securing these local resources with TLS.
- **Main Objectives**
  - Develop a document describing the problem, prior attempts to solve the problem, and deployment issues
  - Develop a requirements document that balances existing browsers behavior with the WG's primary goal
  - Develop operational guidance for deployment of a system that meets the WG's primary goal
  - Develop applicability of the operational guidance to key applications that might be selected by the WG
- **Current Status**
  - Side Meeting: Wednesday, 23th July
  - 4 Related Internet-Drafts
- **Next Steps:** Address the action points resulting from the side meeting
- **Logistic**
  - Discussion List: https://mailarchive.ietf.org/arch/browse/settle/
  - Contact Points: settle-chairs@ietf.org (Prachi Jain & Ines Robles); Dan Wing (Proposed Charter Editor)

ONIONS (**O**perationalizing **N**etwork & service abstract**IONS**)

- **Target: WG**
- **Main Objectives**
  - Focal point for network/service abstractions modelling in the IETF
  - Provide recommendations on operationalizing YANG-based APIs (YANG2API)
  - Assess the applicability of these abstractions to accommodate specific operational use cases and deployments
  - Assess the realization of the intended abstractions and identify gaps, if any
  - Coordinate with the routing area to evaluate OPS needs for proposed solutions designed to address specific abstraction needs
- **Current Status**
  - Initial work items and milestones listed
  - Charter stable
- **Next Steps**
  - Start formal chartering
- **Logistic**
  - Charter: https://github.com/boucadair/WG-Charters/blob/main/onions.md
  - Discussion List: https://mailarchive.ietf.org/arch/browse/onions/
  - Contact Points: Dhruv Dhody & Joe Clarke (Proposed charter Editors)

OPS Directorates

DNSDIR (DNS Directorate)

- Reviews All (Most?) I-Ds with DNS content
  - Sometimes minimal, sometimes detailed
  - *Should get involved at earliest stages of doc lifecycle*, often gets left to LC
- No major issues or hot topics
  - Little feedback from authors and WG Chairs
    - No news is good news?
- No leadership or “charter” changes since IETF#122
- Directorate has processed 15 and rejected 48 I-Ds since IETF#122
  - Rejections are usually I-Ds that have no DNS content

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 perfmetrdir-chairs@ietf.org.
- **Main Achievements Since IETF#122**
  - Updated charter after taking over from late Al Morton (R.I.P).
  - Re-established contacts to reviewers. Many thanks to Aamer, Benoit, Carlos, Giuseppe, Paul and Qin for your dedication.
  - Completed the first 3 review requests!
- **Admin Changes Since IETF#122**
  - Description Update: Yes
  - Leadership Update: Yes

OPS-DIR (OPS Directorate)

- **Main Directorate 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

- **Admin Changes Since IETF#122**
  - New co-chair: Daniele Ceccarelli
  - Reviewers: 40 members, including 7 new additions and 3 departures

- **Main Achievements Since IETF#122**
  - OPSDIR has received 64 review requests, including 42 LC reviews and 22 early reviews
    - **Completed reviews: 52 (25 on time, 27 delayed)**
    - Uncompleted reviews: 12
    - Average completion time: 20 days

Team	Serious Issues	Has Issues	Has Nits	Not Ready	Ready
OpsDir	1	7	23	4	17
%	2%	14%	44%	8%	32%

YANGDOCTORS

- **Main Directorate Objectives**
  - Review YANG Data Models
- **Current WG Hot Topics/Main Issues**
  - Not much, the experts know what to do
  - Maybe rfc8407bis
- **Main Achievements Since IETF#122**
  - 56 completed reviews
- **Admin Changes Since IETF#122**
  - Charter Update: No
  - Leadership Update: Yes
    - New Chairs: Per Andersson & Qiufang Ma

Thank You!

- Carlos Pignataro (OPSDIR Chair)
- Chris Morrow (GROW & SIDROPS Chair)
- Dan Romascanu (YANGDOCTORS Chair)
- Keyur Patel (SIDROPS Chair)
- Tim Wicinski (DNSOP Chair)
- Suzanne Woolf (DNSOP Chair)
- Mehmet Ersue (YANGDOCTORS Chair)