74th NMRG Meeting

IETF 119, Brisbane + Hybrid

Chairs: Laurent Ciavaglia, Jérôme François

Secretaries: Jéferson Campos Nobre, Pedro Martinez-Julia

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- See RFC 7154 (Code of Conduct) and RFC 7776 (Anti-Harassment Procedures), which also apply to IRTF

Goals of the IRTF

The IRTF conducts research; it is not a standards development organization

The Internet Research Task Force (IRTF) focuses on longer term research issues related to the Internet while the parallel organization, the IETF, focuses on shorter term issues of engineering and standards making

While the IRTF can publish informational or experimental documents in the RFC series, its primary goal is to promote development of research collaboration and teamwork in exploring research issues related to Internet protocols, applications, architecture, and technology

See “An IRTF Primer for IETF Participants” – RFC 7418

Meeting useful links

- Materials: https://datatracker.ietf.org/meeting/119/session/nmrg
- Meetecho: https://meetings.conf.meetecho.com/ietf119/?group=nmrg
- Notes: https://notes.ietf.org/notes-ietf-119-nmrg
- Video recording: https://www.youtube.com/user/ietf/playlists

  Available post-meeting

NMRG Updates

RG document in "Last Calls"

- draft-irtf-nmrg-green-ps: Challenges and Opportunities in Management for Green Networking
    - No more discussions in group, introduced in e-impact February interim meeting
    - Propose to submit for IRSG review

- draft-francois-nmrg-ai-challenges: Research Challenges in Coupling Artificial Intelligence and Network Management
    - Positive feedback with in-depth comments requiring clarifications and/or addings
    - Revision 03 submitted, to be presented today if time allows or on mailing list/interim meeting
    - Post-IETF 119: final call for comments, 2 weeks. Then, submit for IRSG review

Meetings

- Regular (monthly) interims with rotating time zones
    - Topic-focused meeting (e.g. NDT in last February)
    - research agenda revision
    - new topic/presentation proposals

- Possible interim meeting at IFIP/IEEE NOMS (6-10 May, Seoul)

Agenda

09:30 Introduction, RG Chairs, 10 min

09:40 Deakin Internet Research: Unlocking the Potential of Zero Trust SemCom Networking, Shiva Pokhrel

10:00 Joint Exposure of Network and Compute Information for Infrastructure-Aware Service Deployment, https://datatracker.ietf.org/doc/draft-rcr-opsawg-operational-compute-metrics, Jordi Ros Giralt

Intent-Based Networking

10:10 Network Management Intent, One of IBN Use Cases, draft-chen-nmrg-ibn-management, Danyang. Chen

10:20 Interconnection Intents, draft-contreras-nmrg-interconnection-intents-04, Paolo Lucente

10:30 An Intent-Based Management Framework for Software-Defined Vehicles in Intelligent Transportation Systems, draft-jeong-opsawg-intent-based-sdv-framework-00, Jaehoon Paul Jeong

10:40 Summary of the side meeting on IBN, RG chairs

Network Digital Twins

10:50 Network Digital Twin: Concepts and Reference Architecture and processes to progress on this draft, draft-irtf-nmrg-network-digital-twin-arch-05,Qin Wu Cheng Zhou

11:00 Feedback from the NMRG participants on the draft in regards to its intrinsic content and the foreseen future work on NDT in the group

11:20 Telemetry Methodologies for Analog Measurement Instrumentation, draft-janzking-nmrg-telemetry-instrumentation-01, Christopher Janz

If time allows:

- Research Challenges in Coupling Artificial Intelligence and Network Management, draft-irtf-nmrg-ai-challenges-03, Jérôme François, 10 min

IBN Wednesday Side meeting 1/2

Presentations

- Intent translation engine
- Proposition of use-cases joint approach/integration
- Demo of Network Management Intent

IBN use cases

- 8 IDs
- Different level of details / maturity
- No common approach to describe use cases
- Final objectives? (which can be different): document a problem to be addressed with IBN, design of a solution, RFC publication, research paper, implementation, support further work, etc…
- Individual use case can progress individually to reach a mature level and/or joint effort to synthetize all work done (could create more impact and visibility)

IBN Wednesday Side meeting 2/2

Proposition made by Paul, Kehan, Danyang, Chungang, Qin

- Intent to extend to other use cases if the associated authors agree

Comments

- Add use case analysis after their description that includes a methodology to "compare" them (e.g. to realize the different part of the IBN system)
- Objectives of each use cases in terms of output might differ (and so their timelines)
- Make references with IBN uses cases in other Wgs/SDOs, focus here on methodological aspects
- Need to split contributors between editors (authors) and contributors

- On a voluntary basis (proposition shared today and in mailing list asap) → joining discussions to see how your use case would fit and the structure should be changed ≠ agreement

1) Short Summary of NMRG IBN with RFC 9315 and 9316

2) Lacking Parts for Real Systems

1) Data Collection for IBN
2) Construction of IBN System
3) Evaluation of IBN System
4) Validation and Verification

3) Use Cases

4) Network Planning
5) Network Construction
6) Routing and Path Selection(draft-contreras-nmrg-interconnection-intents, draft-contreras-nmrg-transport-slice-intent, draft-chen-nmrg-ibn-management, draft-park-nmrg-ibn-network-management-srv6)
7) Network Management
8) IoT Device Management(draft-jeong-nmrg-ibn-network-management-automation)
9) OAM
10) Performance Guarantee(draft-yang-nmrg-network-measurement-intent)
11) Network Security
12) Network Parameter Optimization
13) Network Configuration

14) Other Considerations

15) Integration of IBN and Network Digital Twin
16) Integration of IBN, AI and Green

NDT (1)

Chairs' proposal

- On Architecture
  - Set-up an open design team
  - Regular, bi-weekly, on-line meetings to progress on key issues

  - Consider splitting draft-irtf-nmrg-network-digital-twin-arch-05
    - Rationale
      - Separate stable, consensual aspects from ongoing, open research questions
      - Architecture as a final research result; keep architecture open and adaptable

    - NDT Concepts and Definitions
      - Stabilize content and consensus; publish as RFC

    - NDT Architecture – or equivalent (reference model, framework…)
      - Principles, functionality, structure and operations
      - Keep open as RG working document
        - Fix intermediate architecture versions, publish as research papers
        - Act as in-progress reference architecture
        - Flexibility to adapt with maturing understanding
        - Progress other NDT sub-topics and use cases
        - Revise, refine architecture
        - Publish as conclusion of NDT work

NDT (2)

Chairs' proposal

- On NDT research agenda
  - Determine research questions, use cases and focus areas for NMRG
    - Could be an outcome, research paper(s) or RFC (cf. PANRG)
  - Organize as research items ("RG milestones")
  - Link to architecture updates
  - Use previous topics experience (IBN, AN…)
- Research approaches
  - "Paper" work only or combination with evaluation, experimentation, implementation?
  - Interactions with other communities, groups and NDT-related work
    - DT/NDT research and industry communities
    - Standardization groups and industry alliances (ITU, ETSI, 3GPP, O-RAN, TMF, ITU, IETF (!), …)
  - Research results not only as RFC
    - Scientific papers, tools, implementations, models…