

Evolving Routing Security in the Internet

An Interim Workshop

Thursday 30th September 2021, 15:00 UTC (11:00 EST)

- Open meeting to discuss new work to secure routing in the Internet
- Bring in some speakers from outside the IETF
- Discuss the implications for routing and for research

Note Well – This is Not an IETF meeting

But in this meeting, let's apply IETF policies for: contributions, patents, and code of conduct

The IETF's patent policy and the definition of an IETF "contribution" and "participation" are set out in BCP 79: please read it

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Definitive information is in the documents listed below and other IETF BCPs:

- [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)

More information at <https://www.ietf.org/about/note-well/>



Logistics

- **This meeting will be recorded!**
- 90-minute meeting
- Webex
 - <https://htf-paris.my.webex.com/htf-paris.my-en/j.php?MTID=mc8bb1a7bcda855d14060678f65272117>
 - Please keep yourselves on mute
 - Please note: We will record this meeting
- Interaction
 - Questions – Raise your hand in WebEx, moderator will call on you to speak
 - Follow-up discussion – SARAH mailing list
<https://www.jiscmail.ac.uk/cgi-bin/webadmin?SUBED1=SARAH&A=1>
- Live stream
 - <https://youtu.be/V9CZC42BTDc>
- Etherpad (notes, comments)
 - <https://etherpad.wikimedia.org/p/routing-security-in-the-internet-30-09-21>
- Materials
 - <https://github.com/danielkinguk/sarah/tree/main/conferences/security-workshop>
 - The recording will also be posted here

Context and Related Work

- The organisers have a specific focus
 - Research into Semantic Routing and Addressing
 - Routing on IP addresses that have additional meaning assigned to them
 - Routing on additional fields in IP packets
 - Wider (neglected) routing research concerns
 - We hope this meeting will help expose some general points that we can apply to our work
- draft-king-irtf-semantic-routing-survey - A Survey of Semantic Internet Routing Techniques
 - Standards, experiments, and research
 - datatracker.ietf.org/doc/html/draft-king-irtf-semantic-routing-survey
 - Support further study and research
- draft-king-irtf-challenges-in-routing - Challenges for the Internet Routing Infrastructure (Introduced by Changes in Address Semantics)
 - Architectural questions, considerations and challenges
 - <https://datatracker.ietf.org/doc/html/draft-king-irtf-challenges-in-routing>
- draft-galis-irtf-sarnet21-report - Report on the SARNET 2021 workshop
 - Semantic Addressing and Routing for Future Networks
 - Part of High Performance Switching and Routing 2021 conference (HPSR-21)
 - <https://datatracker.ietf.org/doc/html/draft-galis-irtf-sarnet21-report-01>

Routing Research Concerns

- Understand the **key drivers** for new routing solutions
 - New services and use cases
 - Support specialized environments, while enabling interconnection to/via Internet
 - Make routing systems more secure and robust
- Better understand the **benefits** and **drawbacks** of applying new routing ideas to “limited domains”
 - How well do different routing mechanisms scale and does it matter?
 - How to ensure interconnection to the Internet?
- What are the **impacts** of new routing proposals on the existing routing infrastructure?
 - How can routing research be made independently verifiable and “reproducible”?
 - How do you contrast an entirely new routing mechanism with modifications to existing tools?
 - What is the cost-benefit?
- Where should **research be discussed**, and what needs to be **standardised**?

Agenda

1. Moderator's Introduction
 - Adrian Farrel, Old Dog Consulting
 - 5 minutes
2. Mutually Agreed Norms for Routing Security
 - Andrei Robachevsky, Internet Society
 - 20 minutes
3. Lightweight blockchain assisted secure routing of swarm UAS networking
 - Houbing Song and Jian Wang, Embry-Riddle Aeronautical University
 - 20 minutes
4. On-Demand Blind Packet Forwarding
 - Irfan Simsek, University of Duisburg-Essen
 - 20 minutes
5. Open Discussion
 - 25 minutes

Discussion

- Open questions to presenters
 - Please raise your hand in WebEx
- What are the scalability and performance considerations of improved routing security?
- Are new approaches dependent on new hardware/software?
 - Does this matter? What about deployment models?
- Can we enhance security by carrying additional semantic information in packets?
 - What information?
 - What are the privacy implications?
- What should we do better in routing security research?
 - How do we grow the group of people who understand routing and security
 - What forums exist for sharing and discussing routing security research?
- How do we build security and privacy into routing research from day one?
- Continue discussion on the SARA list
 - <https://www.jiscmail.ac.uk/cgi-bin/webadmin?SUBED1=SARAH&A=1>