



Outcome report
Spotlight Session
Wednesday July 7th, 10-10h20 AM CEST

Session Summary: SCION is a next-generation internet architecture, with state-of-the-art security and scalability properties, meant to overcome the limitations of the current IP and BGP-based internet, to achieve strong security, high availability, and high efficiency. Born as a research project at ETH Zürich and Carnegie Mellon University, the architecture is now used for critical infrastructure communication by industry and government. In this talk, we introduce the architecture and show how its path-aware properties can be used to reduce network infrastructure carbon footprint. We also show how a NGO is exploring the use of SCION to protect confidential information for humanitarian purposes.

1. Main outcomes highlighting the following:

- BGP is a fundamental protocol for today's internet, as it allows ISPs to exchange routing information. This protocol has drawbacks in terms of security and reliability, that are cause of frequent outages and network instability.
- SCION was presented, a path aware Internet Architecture that fundamentally addresses BGP's security and availability challenges, adding benefits of natively multipath communication
- By introducing the concept of Isolation Domains, SCION allows tolerance for compromise or failure in parts of the infrastructure, avoiding global outages

2. Main conclusions reached during the discussion:

- SCION Can be used for sovereign communication, thanks to its path control feature
- SCION forwarding is more efficient than in traditional routing, and recent lines of research show that a path-aware architecture can promote adoption of lower CO2 impact routing

- Only a portion of BGP's issues are addressed by routing security initiatives like MANRS.

3. Panellists contributions to the outcome reports:

- *What are the opportunities and challenges of emerging technology for LDCs, LLDCs and SIDS*
 - Opportunities: As a pilot project with ICRC shows, SCION geofencing can be used to protect sensitive information in complex and challenging environments. In addition, SCION runs on cost-effective commodity hardware, therefore can be easily deployed.
 - Challenges: SCION requires additional know-how, as it is fundamentally different from how standard IP-based internet works. In addition, SCION ISPs presence in developing countries is still limited, therefore there is less path diversity than in regions where the technology more widely available (i.e., Europe). This can be addressed with more local ISPs joining the SCION Network.
- *What are the most important points/aspects of the emerging technology that should be considered in order to accelerate the digital transformation in LDCs, LLDCs and SIDS?*
 - SCION can be run as software on inexpensive and commodity hardware. Its multipath capabilities can dramatically improve connection availability and performance even in unstable environments. The technology, could therefore allow to connect critical infrastructure even in locations where connectivity is unstable, leveraging multiple ISPs.