SCION
ELEVATING SECURE COMMUNICATION

SCION AT THE CYBER-DEFENCE CAMPUS

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Switzerland

SCION ASSOCIATION · ETH zürich · ANAPAYA · eraneos · satw technology for society

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
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Eidgenössisches Departement für Verteidigung,
Bevölkerungsschutz und Sport VBS

armasuisse

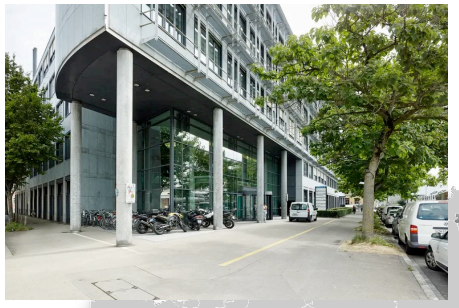
SCION at the Cyber-Defence Campus

Dr. Vincent Lenders, Director Cyber-Defence Campus

Scion Day, Zurich, 15.10.2023

Cyber-Defence Campus

Zurich



CYD | CYBER DEFENCE CAMPUS

ETH zürich

armasuisse S+T

EPFL

Lausanne

Thun

Founded in **2019** by DDPS **(armasuisse)**

Collaborative effort with 60+ national and international partners from academia (ETH Zurich and EPFL) and industry

Supports the **Swiss Conferderation** in

- research and innovation
- security testing
- technology monitoring and transfer
- talent development

SCION Technology Timeline

2012 First meeting with Adrian Perrig at ETH

2017 Anapaya Systems created

2020 Commercial Scion offerings by 3 independent ISPs in Switzerland

2020 Decision to build a national Scion testbed for cyber defence at CYD/DDPS

2020 Launch of first research projects related to Scion with ETH Zurich

2022 Scion CYD network inauguration

2023 Extension with site at NATO CCDCOE

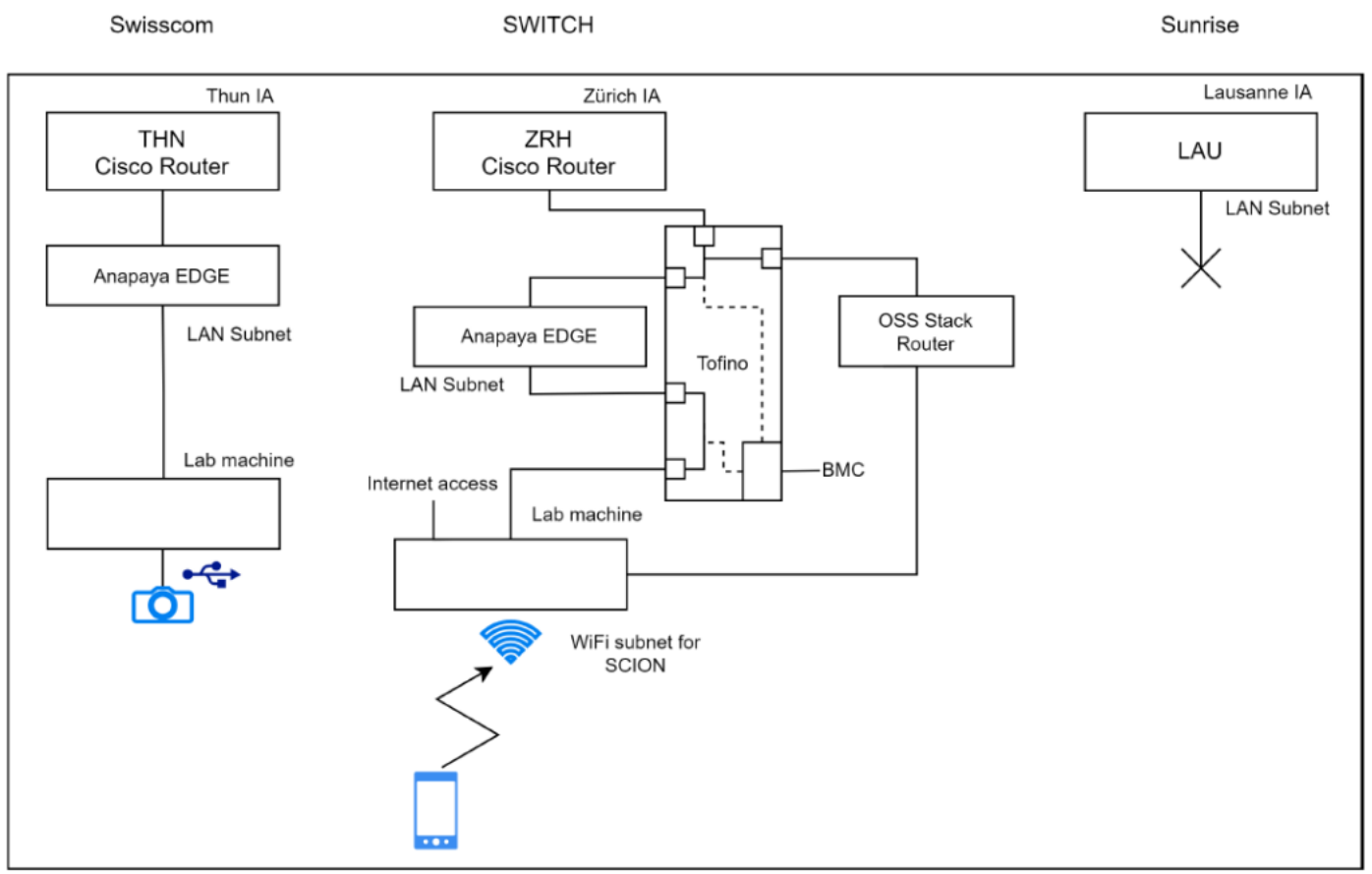
SCION Inauguration at the CYD Campus Zurich on 24.11.22

Toni Eder, General Secretary DDPS

Goals of the CYD Campus SCION Network

- Drive dissemination of SCION in the security and defence domain (army, critical infrastructures, NATO)
- Gather experience for the federal administration with commercial providers
- Promote and advance Swiss innovation in the security of networking

Current Deployment



In operation since November 2022

3 locations with different providers

Location	ISP	Speed
Zurich	Switch	10 Gb/s
Thun	Swisscom	10 Gb/s
Lausanne	Sunrise	1 Gb/s

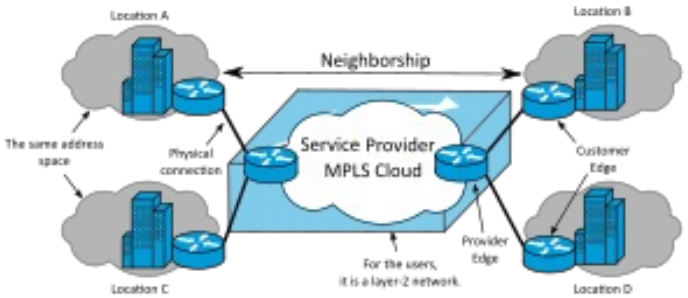
Part of the Swiss ISD

Ongoing site expansion in Tallinn at NATO CCDCoE

Relevant Cyber Defence Use Cases

<u>Use Case 1</u>: Alternative to MPLS / leased lines

➡ cost savings

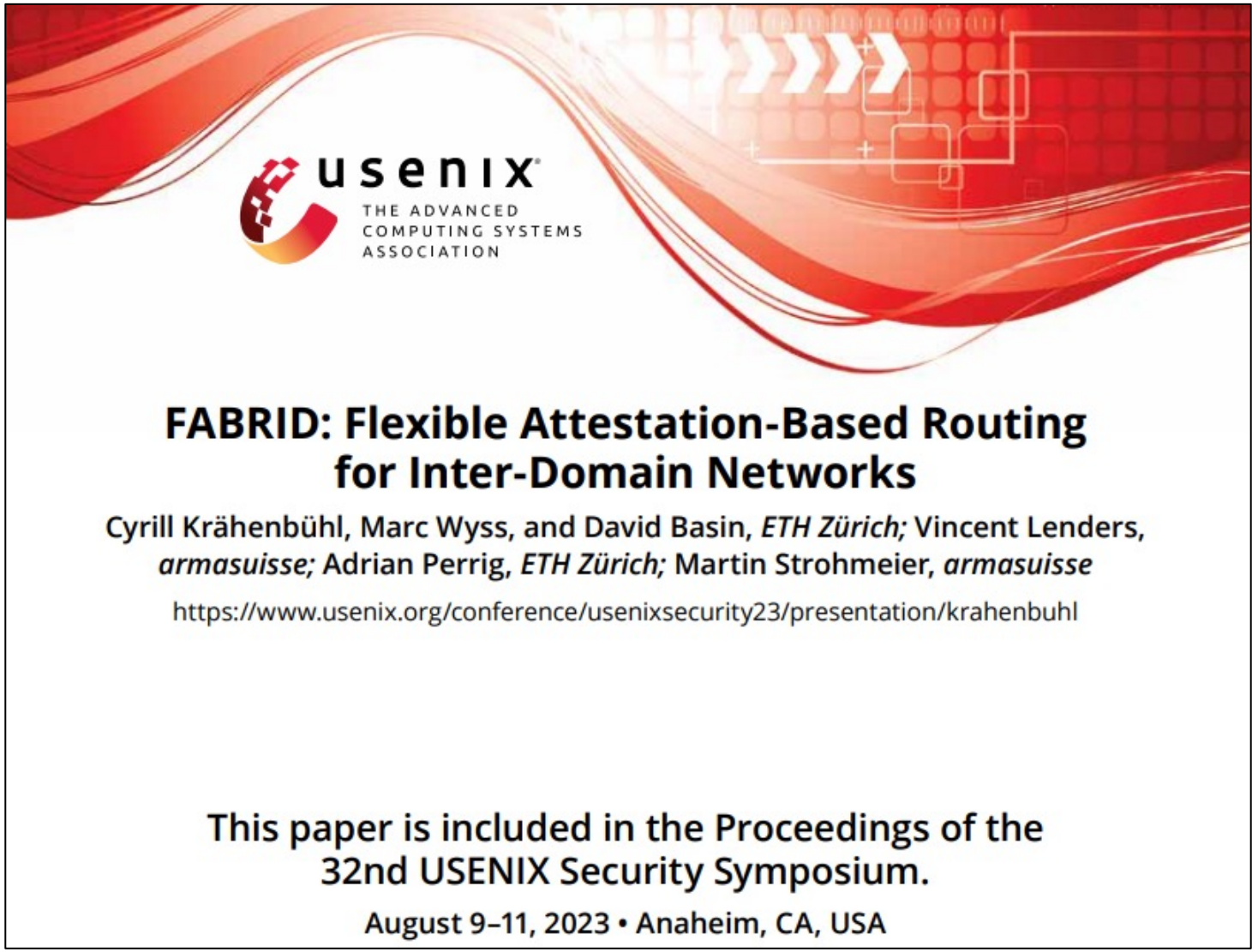


<u>Use Case 2</u>: Routing of sensitive international traffic

➡ enhanced security

<u>Use Case 3</u>: Path Selection based on Router Properties

➡ more control

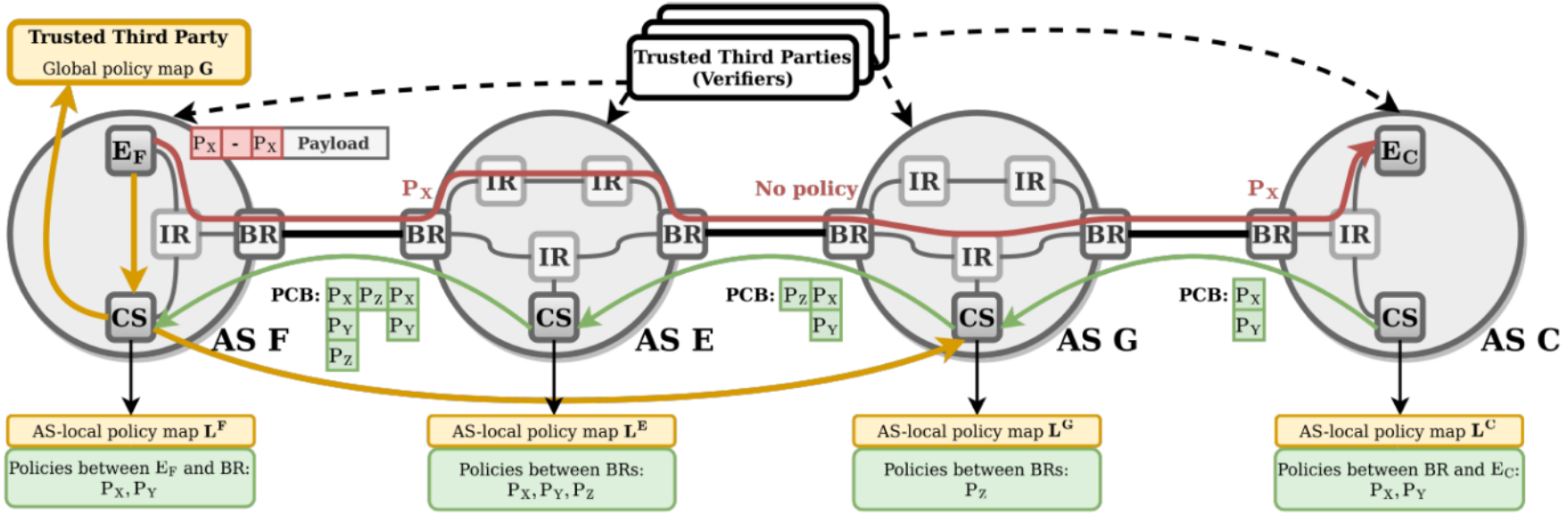

usenix
THE ADVANCED
COMPUTING SYSTEMS
ASSOCIATION
FABRID: Flexible Attestation-Based Routing for Inter-Domain Networks
Cyrill Krähenbühl, Marc Wyss, and David Basin, ETH Zürich; Vincent Lenders, armasuisse; Adrian Perrig, ETH Zürich; Martin Strohmeier, armasuisse
https://www.usenix.org/conference/usenixsecurity23/presentation/krahenbuhl
This paper is included in the Proceedings of the 32nd USENIX Security Symposium.
August 9–11, 2023 • Anaheim, CA, USA

FABRID: Attestation-Based Inter-domain Routing

Users can select paths based on **router policies**

- E.g.: avoid paths with routers from Huawei, Cisco, etc
- E.g.: use only paths with routers in Switzerland, EU, and USA

- Network provides **route attestation** across different network domains and providers



Relevant Router Policy Properties

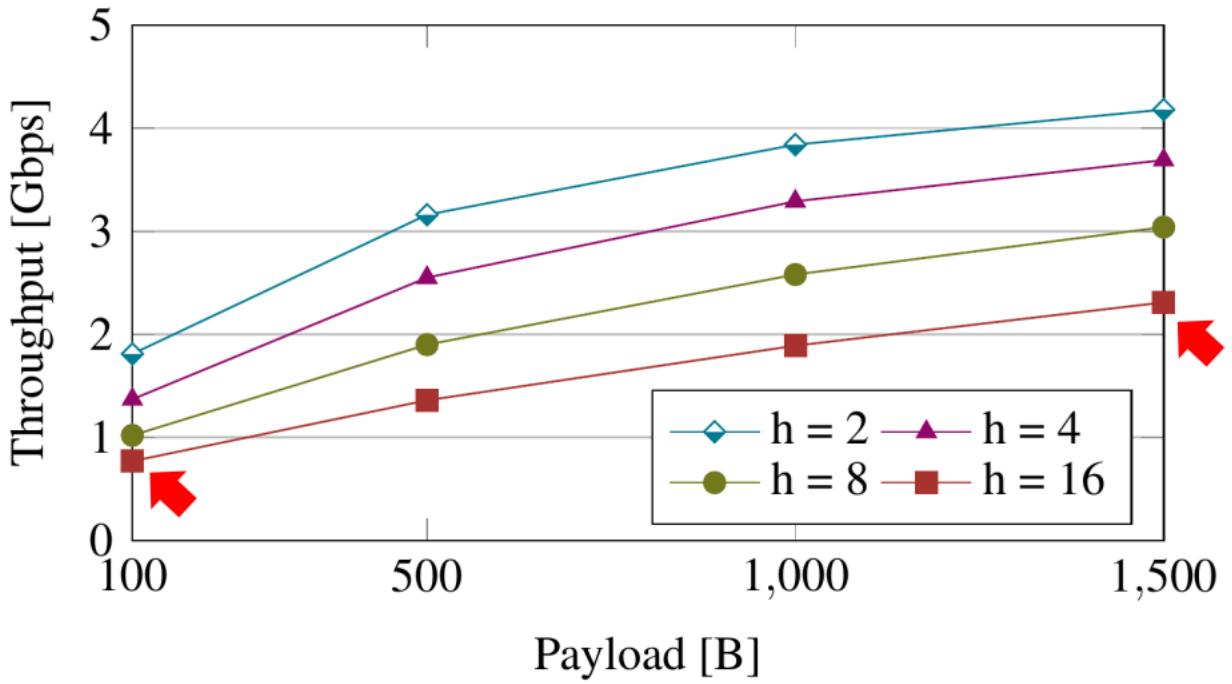
- Manufacturer
- Hardware
- Software (+ patch level)

} Verifiable via remote router attestation

- Geolocation
- Jurisdiction
- CO_2 Emissions

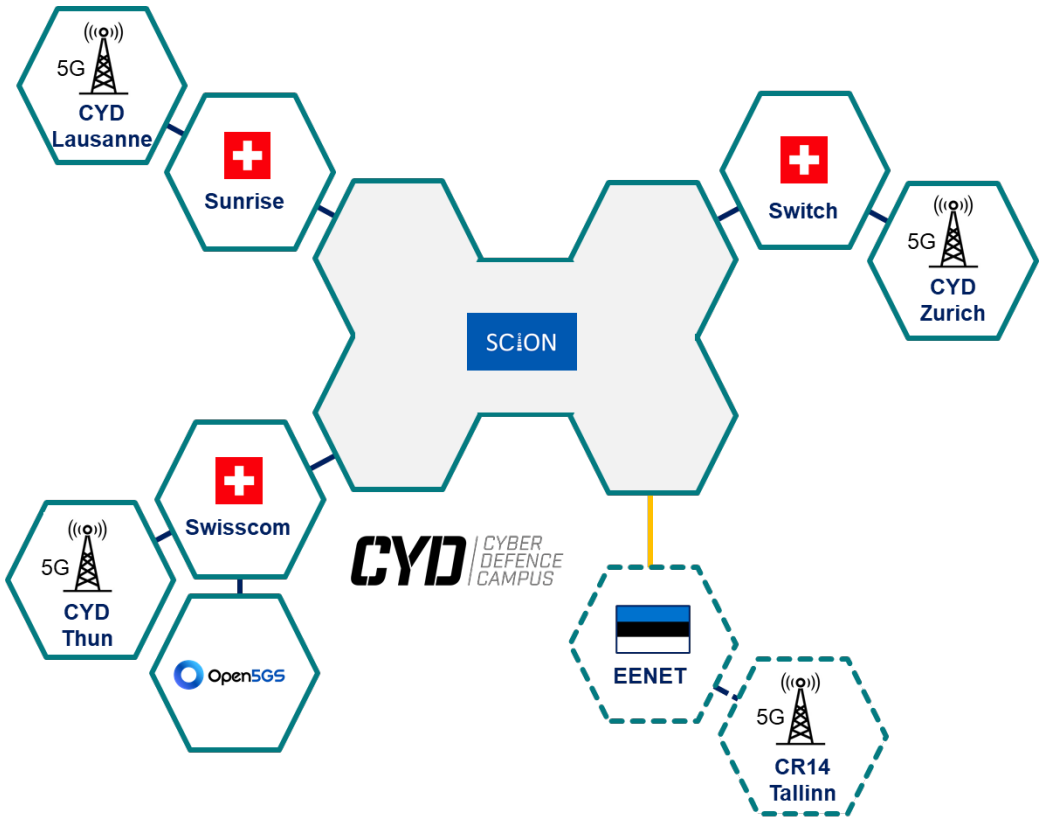
Evaluation of FABRID Performance on SCION

- Border Router Forwarding: Up to 160Gbps with fewer than 16 cores
- Endhost Traffic Generation: Over 1Gbps with a single core (h: path length)



Teaser: Upcoming 5G Testbed over SCION

- **5G** Core network and access
- **Scion**-based backbone
- Connecting 4 cities over 4 different commercial Scion ISPs
- Test Scion and 5G security features
- Evaluate real-world deployment use cases of 5G and Scion




Great discoveries
and improvements invariably
involve the cooperation
of many minds.
— Alexander Graham Bell

Thank you for your attention!

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