Testbed Evaluation of an Attestation-Capable, Programmable Software Switch

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Programmability in Switches

• A shift from Fixed function ASICs to Programmable ASICs.

• Flexibility in packet protocols, quick prototyping, and fast time to deploy.

• **Programmable nature of switch introduces security concerns.**

• Corruption of packets, dropping packets or modifying the dataplane.
Identifying a compromised network

FRAMEWORK AS MENTIONED IN ‘A CASE FOR REMOTE ATTESTATION IN PROGRAMMABLE DATAPLANES’ (FOLLOW THE QR CODE)

END HOSTS CREATE A CHALLENGE, AND THE PROGRAMMABLE NETWORK DYNAMICALLY RESPONDS

ATTESTER CREATES THE EVIDENCE, VERIFIER CONFIRMS THE EVIDENCE IS CORRECT, THE END HOSTS ARE INFORMED OF THE VERIFICATION RESULT
Mechanics of Remote Attestation

• Identifying the state that is used to generate the evidence

• The final representation of the evidence

• How is the evidence shared with other participating nodes in the remote attestation framework

• In-band / Out-of-band

• See our prior papers for further details:
Working, Open-Sourced Implementation!

Open-source fork of the BMv2 software switch: https://github.com/awolosewicz/bmv2-remote-attestation

Uses IPv6 extension headers (Hop by Hop) to encode the required evidence in the packet.

Prevents a malicious P4 program from modifying the generated evidence.

Come to our Demo on Tuesday (11/14) at 4:40pm at the Showfloor of SCI\textsuperscript{net} Theater (Booth 1275).
Or contact us for more information.