SCONE Hackathon

IETF 123 Madrid

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Background

Some of the WG participants got together (both in-person and virtually) for the IETF Hackathon this weekend.

Main goals:

- Assess clarity of the spec for implementers.
- Test interoperability between QUIC clients, servers, and network elements.

Code Worked On and Tested

End-host client/server implementations:

- Python aioquic
- Ericsson prototype client/server
- Cloudflare quiche
- quicly
- Meta prototype in mvfst
- Nokia prototype client/server
- YouTube prototype

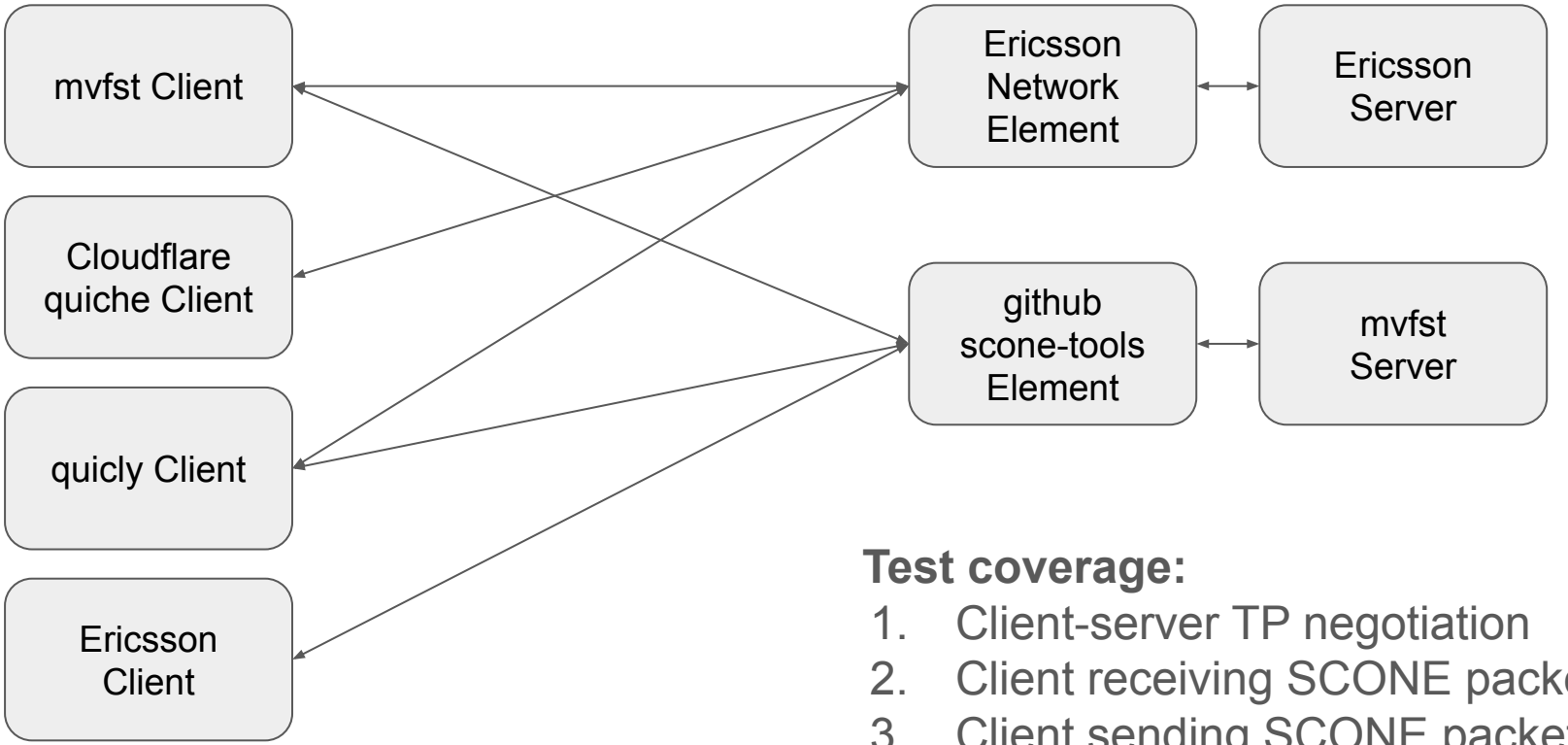
In-network implementations:

- Ericsson prototype
- Nokia prototype
- Open-source prototype using eBPF/XDP
  - https://github.com/wesley-eddy/scone-tools

Scripts to orchestrate tests.

(side quest: some work on QUIC spin bit in Google quiche.)

Tested Configurations



Test coverage:

1. Client-server TP negotiation
2. Client receiving SCONE packets
3. Client sending SCONE packets

Summary

~8 in-person individuals participated and several remote, from 6+ companies+universities, including (alphabetically):

- Ericsson
- Meta
- Nokia
- Tiktok
- UCSB
- YouTube/Google

Successful transport parameter negotiation:

- mvfst, quiche, and quicly clients w/ Ericsson server.
- Ericsson client w/ mvfst server.

Successful network element updating of SCONE packets (Ericsson element).

Two new github issues posted on the protocol spec I-D for clarification.

Notes

Established **#scone-interop** channel on quicdev Slack.

Test version numbers being used:

- 0x53434f4e
- 0x4e4f4353

TP value: 0x5c

Rate values:

- Fixed rate set by Ericsson element.
- scone-tools element tries halving the lower 7 bits.

Lessons Learned

Opened new github issues on protocol draft:

- Zero-length value for SCONE transport parameter
- Suggestion to add text on UDP checksum update.

When to send SCONE packets could be more clear in the current I-D.

The spec was simple and clear enough for several different people to get some code running in short order!

Psuedo-SCONEs

Test Matrix - Client/Server Compatibility

		Server		
		Ericsson	mvfst	etc.
Client	Meta mvfst	x	x	
	quiche	x (transport parameter)		
	quicly	x	x	
	Ericsson	x	x	
	etc.			

x = tested, worked!
x = tested, partial success!
x = tested, didn't work

Test Matrix - End-host / Network Compatibility

		In-network Elements			
		Ericsson	scone-tools	Nokia	etc.
End-hosts	Meta mvfst	x (receive SCONE)	x		
	quiche				
	quicly	x			
	Ericsson	x	x		
	etc.				

x = tested, worked!
x = tested, partial success!
x = tested, didn't work