

# Flavours of Scone

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*Note: Thank You to Marcus, Martin, Mirja, and Matt for reviews  
Any mistakes, of course, belong to Spencer  
(Comments are also welcome if your name doesn't start with "M" 🕶)*

# On-Path \*-SCONE-\* Proposals as of IETF 121 I-D Cutoff

[draft-joras-scone-quic-protocol-00 - A new QUIC version for network property communication](#)

[draft-thomson-scone-train-protocol-00 - Transparent Rate Adaptation Indications for Networks \(TRAIN\) Protocol](#)

[draft-ihlar-scone-masque-mediabitrade-01 - MASQUE extension for signaling throughput advice](#)

(Several other drafts are elsewhere on the agenda)

- These proposals are not competing - in some cases, they are complementary
- The purpose of this presentation is to focus on what the working group needs

## Charter-conformant attributes of on-path proposals

	<u>SCONE</u>	<u>TRAIN</u>	<u>Masque</u>
Application Level	Yes	Yes	Yes
Client Initiated(*)	Yes	No	Yes
Useful advice for ABR applications	Yes	Yes	Yes
Network element initiates update	Yes	No	Yes
Focuses on QUIC	Yes	Yes	Yes

(\*) Question about whether this is useful is in working group charter

# Great News! All the proposals are in charter!!

*Before we think about picking one, let's think about what we want*

Rather than proceeding IMMEDIATELY to the baby beauty contest ...

(a classic example of a competition with no objective criteria)

*(Art designed by Freepik - <http://www.freepik.com>)*

# Architectural differences between on-path proposals (1)

	<a href="#">SCONE</a>	<a href="#">TRAIN</a>	<a href="#">Masque</a>
Endpoint discovers/ talks to	Network Element that supports SCONE	Network Element that supports TRAIN	MASQUE proxy
Network element must support ...	New QUIC version	New QUIC version	New MASQUE capsule
Signal Encryption	New QUIC version, signal unprotected	New QUIC version, signal unprotected	Encrypted in a MASQUE capsule
Transport mode	SCONE packet in a separate UDP datagram	TRAIN packet included in an E2E UDP datagram	THROUGHPUT_ADVICE capsule within QUIC tunnel connection
Separate UDP datagrams for throughput advice?	Yes	No	Yes

# Architectural differences between on-path proposals (2)

	<a href="#">SCONE</a>	<a href="#">TRAIN</a>	<a href="#">Masque</a>
How throughput advice is initiated	Client sends SCONE packet to network element, network sends advice to client	Server sends TRAIN packet with unprotected Rate Signal field, network element updates unprotected field and forwards to client	HTTP client sends "Throughput-Advice: ?1" to HTTP proxy, proxy sends THROUGHPUT_ADVICE capsules to HTTP client
Bi-directional throughput advice	No	Yes	No
Throughput Advice	Unsigned 32 bit field: kbps	6-bit field with IANA registered values.	QUIC Varint: kbps
Throughput Advice Extensibility	Add a flag and an associated field	Mint a new QUIC version repurposing bits	Define a new capsule

# Possibly Reasonable Observations from Spencer

- SCONE and TRAIN are closer to each other than to the MASQUE proposal
  - SCONE and TRAIN would discover "network elements", MASQUE discovers HTTP proxies
  - TRAIN/SCONE use of QUIC Initial packets has implications for observability, and for spoofing
  - As the MASQUE proposal says - "if you're already doing HTTP proxying anyway" ...
- TRAIN relies on endpoints encapsulating QUIC packets in TRAIN packets
  - TRAIN only allows network elements to update advice when an endpoint sends a packet
  - If both endpoints don't support TRAIN, the endpoint that does not will drop QUIC packets
  - SCONE only requires one endpoint and the network element to support SCONE
- TRAIN's extensibility for new bitrates **and** new advice is intentionally limited
  - The MASQUE proposal is easier to extend, and SCONE is somewhere in the middle
- SCONE explicitly provides for forwarding SCONE to other network elements
  - We've talked about having multiple network elements providing advice. Were we serious?

# Discussion and next steps

- Are there other architectural attributes we should be looking at?

*#include discussion.here*

- Does the working group have opinions about these attributes?

*#include discussion.here*



*Thank you!*  
*(and I apologize for the lack of scone pictures)*

