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# SCONE WG

Standard COmmunication with Network Elements

IETF 121 Dublin

Thursday 7 November 2024

Qin Wu + Brian Trammell, co-chairs

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# Note Well

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## Goals for Today's Meeting

- Review and understand the **charter**
  - **Review and compare designs** elaborated from the BoF stage
    - And use this to narrow the requirements for the protocol we'll build
  - Review **related work** that might inform a standard protocol
  - Determine **how** we as a WG want to converge on a standard.
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## Goals for Today's Meeting

- Review and understand the **charter**

09:30 *you are here*

- **Review and compare designs** elaborated from the BoF stage
  - And use this to narrow the requirements for the protocol we'll build

09:45 protocols + Flavors of Scone

- Review **related work** that might inform a standard protocol

10:45 NRLP

- Determine **how** we as a WG want to converge on a standard.

10:55 establishing SCONE + discussion

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# The Problem

- **Network rate limits** protect bandwidth allocation.
    - This leads to QoE problems, especially for video.
  - Video is a **bitrate-adjustable application**.
    - No way to publish limits without **actually dropping/marking packets**.
  - There is no way to make this path-linked metadata **explicit**.
    - **So let's build one!**
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# The Charter (1/3)

This WG aims to establish a mechanism for network elements capable of rate-limiting a UDP 4-tuple to communicate an upper bound on achievable bitrate, termed "**throughput advice**", to the sender of packets matching the **UDP 4-tuple**.

This mechanism will allow an application to receive notifications containing throughput advice for **both upstream and downstream traffic** from any network elements **capable of dropping or delaying packets on the path** of a UDP 4-tuple.

The throughput advice serves as a guideline to enhance user experience and represents the maximum bitrate manageable by a single network element for that user's current connection. It is not a strict indicator of network congestion. This mechanism focuses on throughput advice **intended for adaptive bitrate applications** and is **not a replacement for congestion control algorithms**.

Owing to the possibly dynamic nature of throughput advice, **network elements may need to provide updates** on the throughput advice.

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# Not The Charter (2/3)

## Explicit non-goals:

The solution produced by the working group

- must not require looking inside an encryption envelope.
  - need not be a congestion signal appropriate to be used as input to a congestion control algorithm.
  - need not provide information other than the throughput advice.
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# The Charter (3/3)

To achieve the goals listed above, the working group will determine

- whether it is necessary for an endpoint to explicitly signal its capability of receiving throughput advice, and
- whether it is necessary for an endpoint to confirm its receipt of throughput advice.

The working group will initially focus on developing a **solution for QUIC**.

The WG is expected to:

1. Develop a **proposed standard protocol to communicate an upper bound on achievable bitrate** – termed "throughput advice"– from network elements to the endpoint.
  2. Develop an **Informational Applicability and Manageability specification**.
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# Baking SCONEs

Working Procedures



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# Converging on a design

**Goal 1:** we have 3-ish protocol proposals. Let's quickly converge on the properties of each we need for the PS protocol doc.

Do we need a design team?

Establish [github.com/ietf-wg-scone](https://github.com/ietf-wg-scone) repo for a converged doc?

Schedule virtual interim meeting(s) before IETF 122?

**Goal 1a:** support iterative development of the converged design based on running code

Hackathon at IETF 122?

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# Applicability and Manageability

**Goal 2:** publish an informational document on applicability and manageability of the eventual protocol

Synthesize contributions in this space into a single document.

Appoint editors? or adopt one document as basis?

*We can start working on this in parallel, but let's focus on getting a converged protocol design first.*

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## Additional related work

The charter is very clear that we have two deliverables.

Protocol need not be forever limited to throughput guidance.

But work on applications beyond the charter is *not a priority*.

The [scone@ietf.org](mailto:scone@ietf.org) mailing list and *lightning talks* can be used to discuss new related work at IETF meetings until then.

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# Discussion

