Standard Communication with Network Elements
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MASQUE extension for signaling throughput advice
draft-ihlar-scone-masque-mediabitrate-02

Abstract

This document specifies a new Capsule (RFC9297) that can be used with CONNECT-UDP (RFC9298), CONNECT-IP (RFC9484), or other future CONNECT extensions to signal throughput advice for traffic that is proxied through an HTTP server.

About This Document

This note is to be removed before publishing as an RFC.

Status information for this document may be found at https://datatracker.ietf.org/doc/draft-ihlar-scone-masque-mediabitrate/.

Discussion of this document takes place on the Standard Communication with Network Elements Working Group mailing list (mailto:scone@ietf.org), which is archived at https://mailarchive.ietf.org/arch/browse/scone/. Subscribe at https://www.ietf.org/mailman/listinfo/scone/.

Source for this draft and an issue tracker can be found at https://github.com/mirjak/draft-masque-mediabitrate.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on 4 September 2025.

Table of Contents

1. Introduction

This document specifies an HTTP Capsule (RFC9297) that can be used with CONNECT-UDP (RFC9298), CONNECT-IP (RFC9484), or other future CONNECT extensions to signal throughput advice for traffic proxied through an HTTP server.

The extension can be used with the HTTP CONNECT method when the :protocol pseudo-header is equal to "connect-udp" or "connect-ip", as well as with future CONNECT protocols that use the Capsule Protocol.

2. Conventions and Definitions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

3. Indicating Support for Throughput Advice Signaling

A client that wishes to receive throughput advice capsules can indicate support by sending a request header with the boolean-valued Item Structured Field: "Throughput-Advice: ?1". The HTTP proxy can indicate support by sending a response header with the same boolean-valued Item Structured Field: "Throughput-Advice: ?1". See Section 3.3.6 of [RFC8941] for information about the boolean format.

Once support has been established, a proxy MAY send THROUGHPUT_ADVICE capsules at any time during the lifetime of the stream that originated the request.

4. THROUGHPUT_ADVICE Capsule Type Format

The THROUGHPUT_ADVICE Capsule has the following format:

```
THROUGHPUT_ADVICE Capsule {
  Type (i) = 0xTBD,
  Length (i)
  Rate Limit (i)
  [Average Window (i)]
}
```

The capsule has the following fields:

Rate Limit: The maximum sustainable throughput that the client can expect for proxied traffic, expressed in kilobits per second.

Average Window: Indicates the duration over which the bitrate is enforced, expressed in milliseconds. This field is optional.

5. Applicability

A proxy that intends to rate limit proxied traffic can notify clients using the THROUGHPUT_ADVICE capsule. Reasons for rate limiting traffic through a proxy include enforcement of access network policies, proxy resource management and proxy service differentiation.

If the sole purpose of the communication between a client endpoint and a network element is the exchange of throughput advice, it is RECOMMENDED to use more lightweight approaches than HTTP proxying, such as [TRONE].

6. Security Considerations

TODO Security

7. IANA Considerations

7.1. Capsule types

This document adds following entries to the "HTTP Capsule Types" registry:

Capsule Type	Value	Specification
THROUGHPUT_ADVICE	TBD	(This document)

Table 1: New Capsule Type to register

7.2. HTTP headers

This document adds following entry to the "Hypertext Transfer Protocol (HTTP) Field Name Registry":

Field Name	Template	Status	Reference	Comments
Throughput-Advice		permanent	(This document)	

Table 2: HTTP Field Name to register

8. References

8.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <https://www.rfc-editor.org/rfc/rfc2119>.

[RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <https://www.rfc-editor.org/rfc/rfc8174>.

[RFC8941] Nottingham, M. and P. Kamp, "Structured Field Values for HTTP", RFC 8941, DOI 10.17487/RFC8941, February 2021, <https://www.rfc-editor.org/rfc/rfc8941>.

8.2. Informative References

[TRONE] Thomson, M., Huitema, C., Oku, K., Joras, M., and L. M. Ihlar, "Transparent Rate Optimization for Network Endpoints (TRONE) Protocol", Work in Progress, Internet-Draft, draft-thoji-scone-trone-protocol-00, 3 March 2025, <https://datatracker.ietf.org/doc/html/draft-thoji-scone-trone-protocol-00>.

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TODO acknowledge.

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