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Update of the List of Configurable SCTP Protocol Parameters  
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## Abstract

In the SCTP protocol stack implementations available for deployment in operational networks, it has been usually observed that the list of parameters that can be configured by the operators is often restricted to the list of SCTP protocol parameter values that are recommended for SCTP given in the IETF [RFC 4960](#). However, this list is not exhaustive.

This document updates the IETF [RFC 4960](#) by including the SACK delay as part of the list of SCTP protocol parameters that can be configurable by an SCTP administrator. The associated recommended value is also given, according to the IETF [RFC 4960](#)

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## Table of Contents

<a href="#">1.</a>	Introduction . . . . .	<a href="#">2</a>
<a href="#">2.</a>	Terminology . . . . .	<a href="#">3</a>
<a href="#">3.</a>	SACK Delay . . . . .	<a href="#">3</a>
<a href="#">4.</a>	List of Configurable SCTP Protocol parameters . . . . .	<a href="#">4</a>
<a href="#">5.</a>	Suggested SCTP Protocol Parameter Values . . . . .	<a href="#">5</a>
<a href="#">6.</a>	IANA Considerations . . . . .	<a href="#">5</a>
<a href="#">7.</a>	Security Considerations . . . . .	<a href="#">5</a>
<a href="#">8.</a>	Acknowledgments . . . . .	<a href="#">5</a>
<a href="#">9.</a>	Normative References . . . . .	<a href="#">6</a>
	Authors' Addresses . . . . .	<a href="#">6</a>

## [1.](#) Introduction

The Stream Control Transmission Protocol (SCTP) is specified in the IETF [RFC 4960](#) [[RFC4960](#)], document that obsoletes IETF [RFC 2960](#) and [RFC 3309](#). In the [section 15](#) of IETF [RFC 4960](#) [[RFC4960](#)], there is a list of SCTP protocol parameter values that are recommended. This list is given below:

RT0.Initial - 3 seconds

RT0.Min - 1 second

RT0.Max - 60 seconds

Max.Burst - 4

RT0.Alpha - 1/8

RT0.Beta - 1/4

Valid.Cookie.Life - 60 seconds

Association.Max.Retrans - 10 attempts

Path.Max.Retrans - 5 attempts (per destination address)

Max.Init.Retransmits - 8 attempts

HB.interval - 30 seconds

HB.Max.Burst - 1

In the SCTP protocol stack implementations available in the operational field, it has been usually observed that the list of parameters that can be configured by the operators is often restricted to the list of parameters given in the [section 15](#) of the IETF [RFC 4960](#) [[RFC4960](#)]. However, this list is not exhaustive and therefore, depending on the SCTP stack implementations, some parameters may or may not be part of the list of parameters that can be configured by the SCTP administrators.

## [2.](#) Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

This document uses terminology defined [[RFC4960](#)].

## [3.](#) SACK Delay

As part of the parameters that are not listed as configurable parameters, a specific parameter is the Selective Acknowledgement (SACK) delay. In SCTP, the SACK (3) is sent to a peer endpoint to acknowledge received DATA chunks and to inform the peer endpoint of gaps in the received subsequences of DATA chunks as represented by their Transmission Sequence Numbers (TSNs). This SACK should be sent within a maximum delay. The following recommendation is given in the [section 6.2](#) of the IETF [RFC 4960](#) [[RFC4960](#)] "Acknowledgement on Reception of DATA Chunks":

Specifically, an acknowledgement SHOULD be generated for at least every second packet (not every second DATA chunk) received, and SHOULD be generated within 200 ms of the arrival of any

unacknowledged DATA chunk.

Moreover, in the same section, there is the following implementation note:

IMPLEMENTATION NOTE: The maximum delay for generating an acknowledgement may be configured by the SCTP administrator, either statically or dynamically, in order to meet the specific timing requirement of the protocol being carried.

The following normative statement is also added:

An implementation MUST NOT allow the maximum delay to be configured to be more than 500 ms. In other words, an implementation MAY lower this value below 500 ms but MUST NOT raise it above 500 ms.

Based on the statements given in the [section 6.2](#) of the IETF [RFC 4960](#) [RFC4960], it is implied that the maximum delay for generating a SACK must also be configurable by the SCTP administrator. If the recommended delay for sending a SACK is 200ms, this delay must not exceed 500ms, which leaves latitudes for the setting of the SACK delay value. However, as SCTP stack implementers usually refer only to the [section 15](#) of the IETF [RFC 4960](#) [RFC4960] to identify the list of configurable SCTP parameters, the configuration of the maximum delay for generating a SACK is commonly not supported.

It is then proposed to update the IETF [RFC 4960](#) [RFC4960] to include the SCTP protocol parameter "SACK.Delay" as one of the configurable SCTP protocol parameters, in addition to the existing parameters given in the [section 15](#) of the IETF [RFC 4960](#) [RFC4960].

#### 4. List of Configurable SCTP Protocol parameters

This document updates the IETF [RFC 4960](#) [RFC4960] by including the SACK delay as part of the list of SCTP protocol parameters that MUST be configurable. The updated list is given below:

```
+++++
|      SCTP Parameters      |      Description      |
+++++
```

RTO.Initial	see <a href="#">section 6.3.1</a> [RC4960]	
RTO.Min	see <a href="#">section 6.3.1</a> [RC4960]	
RTO.Max	see <a href="#">section 6.3.1</a> [RC4960]	
Max.Burst	see <a href="#">section 6.1</a> [RC4960]	
RTO.Alpha	see <a href="#">section 6.3.1</a> [RC4960]	
RTO.Beta	see <a href="#">section 6.3.1</a> [RC4960]	
Valid.Cookie.Life	see <a href="#">section 5.1.3</a> [RC4960]	
Association.Max.Retrans	see <a href="#">section 8.1</a> [RC4960]	
Path.Max.Retrans	see <a href="#">section 8.2</a> [RC4960]	
Max.Init.Retransmits	see <a href="#">section 4</a> [RC4960]	
HB.interval	see <a href="#">section 8.3</a> [RC4960]	
B.Max.Burst	see <a href="#">section 5.4</a> [RC4960]	
SACK.Delay	see <a href="#">section 6.2</a> [RC4960]	
+++++		

## [5.](#) Suggested SCTP Protocol Parameter Values

This document updates the IETF [RFC 4960](#) [RFC4960] by including the SACK delay recommended value in the list of suggested SCTP protocol parameter values. The updated list is given below:

+++++		
SCTP Parameters	Recommended Values	
+++++		
RTO.Initial	3 seconds	
RTO.Min	1 second	
RTO.Max	60 seconds	
Max.Burst	4	
RTO.Alpha	1/8	
RTO.Beta	1/4	
Valid.Cookie.Life	60 seconds	
Association.Max.Retrans	10 attempts	
Path.Max.Retrans	5 attempts (per destination address)	
Max.Init.Retransmits	8 attempts	
HB.interval	30 seconds	
B.Max.Burst	1	
SACK.Delay	200 milliseconds	

+++++

IMPLEMENTATION NOTE: The SCTP implementation may allow Upper Layer Protocol (ULP) to customize some of these protocol parameters (see [Section 10](#) of the IETF [RFC 4960](#) [[RFC4960](#)]).

Note: RT0.Min SHOULD be set as recommended above.

## [6.](#) IANA Considerations

This document makes no request for IANA.

Note to RFC Editor: this section may be removed on publication as an RFC.

## [7.](#) Security Considerations

This document does not modify the security considerations given in [section 11](#) of the IETF [RFC 4960](#) [[RFC4960](#)].

## [8.](#) Acknowledgments

The authors of this document want to thank... (TBC).

## [9.](#) 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, <<http://www.rfc-editor.org/info/rfc2119>>.

[RFC4960] Stewart, R., Ed., "Stream Control Transmission Protocol", [RFC 4960](#), September 2007, <<http://www.rfc-editor.org/info/rfc4960>>.

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