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**SCTP Socket API Extensions for Concurrent Multipath Transfer**  
**draft-dreibholz-tsvwg-sctpsocket-multipath-01.txt**

Abstract

This document describes extensions to the SCTP sockets API for configuring the CMT-SCTP and CMT/RP-SCTP extensions.

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## 1. Introduction

This draft describes extensions to the SCTP sockets API (see [[I-D.ietf-tsvwg-sctpsocket](#)], [[RFC4960](#)]) which allow an application to configure the behaviour of the Concurrent Multipath Transfer (CMT) extensions CMT-SCTP, CMT/RPv1-SCTP and CMT/RPv2-SCTP (see [[I-D.tuexen-tsvwg-sctp-multipath](#)], [[Globecom2010](#)], [[ConTEL2011](#)], [[AINA2010](#)], [[IAS2006](#)]).

## 2. Concurrent Multipath Transfer and Resource Pooling Activation/Deactivation (SCTP\_CMT\_ON\_OFF)

This socket option activates or deactivates CMT and sets the corresponding Resource Pooling variant to be applied. The `sctp_assoc_value` structure is used to specify the association for which the CMT state should be changed and the new CMT state.

Definition of the `sctp_assoc_value` structure:

```
struct sctp_assoc_value {
    sctp_assoc_t  assoc_id;
    uint32_t      assoc_value;
};
```

`assoc_id`: Holds the identifier for the association of which the CMT state should be changed. Ignored for one-to-one style sockets.

`assoc_value`:

- 0 Turns CMT off.
- 1 Turns plain CMT-SCTP on. No Resource Pooling is applied.
- 2 Turns CMT-SCTP on. CMT/RPv1 Resource Pooling as defined in [[AINA2010](#)] is applied.
- 3 Turns CMT-SCTP on. CMT/RPv2 Resource Pooling as defined in [[ConTEL2011](#)] is applied.

## 3. Security Considerations

Security considerations for the SCTP sockets API are described by [[I-D.ietf-tsvwg-sctpsocket](#)].



#### **4. IANA Considerations**

This document does not require IANA actions.

#### **5. Acknowledgments**

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#### **6. References**

##### **6.1. Normative References**

[RFC4960] Stewart, R., "Stream Control Transmission Protocol",  
[RFC 4960](#), September 2007.

[I-D.ietf-tsvwg-sctpsocket]  
Stewart, R., Tuexen, M., Poon, K., Lei, P., and V.  
Yasevich, "Sockets API Extensions for Stream Control  
Transmission Protocol (SCTP)",  
[draft-ietf-tsvwg-sctpsocket-29](#) (work in progress),  
April 2011.

[I-D.tuexen-tsvwg-sctp-multipath]  
Becke, M., Dreibholz, T., Iyengar, J., Natarajan, P., and  
M. Tuexen, "Load Sharing for the Stream Control  
Transmission Protocol (SCTP)",  
[draft-tuexen-tsvwg-sctp-multipath-01](#) (work in progress),  
December 2010.

##### **6.2. Informative References**

[ConTEL2011]  
Dreibholz, T., Becke, M., Adhari, H., and E. Rathgeb, "On  
the Impact of Congestion Control for Concurrent Multipath  
Transfer on the Transport Layer", Proceedings of the 11th  
IEEE International Conference on  
Telecommunications (ConTEL), April 2011.

[AINA2010]  
Dreibholz, T., Becke, M., Pulinthanath, J., and E.  
Rathgeb, "Applying TCP-Friendly Congestion Control to  
Concurrent Multipath Transfer", Proceedings of the IEEE  
24th International Conference on Advanced Information  
Networking and Applications (AINA), April 2010.

[Globecom2010]



Dreibholz, T., Becke, M., Rathgeb, E., and M. Tuexen, "On the Use of Concurrent Multipath Transfer over Asymmetric Paths", Proceedings of the IEEE Global Communications Conference (GLOBECOM), December 2010.

[IAS2006] Iyengar, J., Amer, P., and R. Stewart, "Concurrent Multipath Transfer Using SCTP Multihoming Over Independent End-to-End Paths", Journal IEEE/ACM Transactions on Networking, October 2006.

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