

# SCTP Performance Measurements

## USER GUIDE

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# 1 Introduction

This document describes the SCTP performance measurements.

For description of PM concepts and operations, i.e. how to work with PM jobs, refer to the [Performance Management](#).





## 2 Performance Measurement Groups

Page 3 lists the SCTP performance measurement groups.

Table 1 PmGroups

pmGroupId	Properties
Sctp	<ul style="list-style-type: none"><li>• <b>description:</b> Measurements at SCTP level. The measured object identifier is "Transport=1,Sctp=1".</li><li>• <b>pmGroupVersion:</b> 2</li></ul>
SctpAssociation	<ul style="list-style-type: none"><li>• <b>description:</b> Measurements at SCTP association level. The measured object identifier is "Transport=1,Sctp=1,SctpEndpoint=&lt;LocalPortNumber&gt;_&lt;LocalIPAddr1&gt;_..._&lt;LocalIPAddrN&gt;,SctpAssociation=&lt;RemotePortNumber&gt;_&lt;RemoteIPAddr1&gt;_..._&lt;RemoteIPAddrM&gt;".</li><li>• <b>pmGroupVersion:</b> 1</li></ul>

The update frequency is 60 seconds for all measurements.







### 3 Measurements of Sctp PM Group

Page 5 provides measurement types of Sctp PM group.

Table 2 Sctp Measurements

measurementTypeId	Properties
sctpOutSCTPPacks	<ul style="list-style-type: none"><li>• <b>description:</b> Number of transmitted SCTP packets.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of packages sent</li></ul>
sctpInSCTPPacks	<ul style="list-style-type: none"><li>• <b>description:</b> Number of received SCTP packets, including duplicates and those received in error.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of packages received</li></ul>
sctpCurrEstab	<ul style="list-style-type: none"><li>• <b>description:</b> Number of SCTP associations for which the current state is either ESTABLISHED, SHUTDOWN-PENDING or SHUTDOWN-RECEIVED. The measurement is only working when single SCTP instance is configured per payload node.</li><li>• <b>collectionMethod:</b> GAUGE</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of associations</li></ul>



Table 2 Sctp Measurements

sctpAbortedS	<ul style="list-style-type: none"><li>• <b>description:</b> Number of times that SCTP associations have made a direct transition to the CLOSED state from any state after sending or receiving ABORT chunk.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of chunks</li></ul>
sctpShutdowns	<ul style="list-style-type: none"><li>• <b>description:</b> Number of times that SCTP associations have made a direct transition to the CLOSED state from either the SHUTDOWN-SENT state or the SHUTDOWN-ACK-SENT state after receiving of SHUTDOWN ACK or SHUTDOWN COMPLETE chunk.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of packages sent</li></ul>
sctpOutOfBlues	<ul style="list-style-type: none"><li>• <b>description:</b> Number of received out-of-the-blue SCTP packets. These are packets that are correctly formed (with a correct checksum), but where the receiver is not able to identify the association to which this packet belongs.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of packages</li></ul>



Table 2 Sctp Measurements

sctpOutDataChunks	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of transmitted DATA chunks. The counter does not include retransmissions.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of chunks</li> </ul>
sctpInDataChunks	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of received DATA chunks. The counter does not include duplicates.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of chunks</li> </ul>
sctpRtxDataChunks	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of retransmitted DATA chunks, including T3 and fast retransmissions.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of chunks</li> </ul>
sctpOutCtrlChunks	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of transmitted and retransmitted control chunks. These are chunks with Chunk Type not equal to 0.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of chunks</li> </ul>



Table 2 Sctp Measurements

sctpInCtrlChunks	<ul style="list-style-type: none"><li>• <b>description:</b> Number of received control chunks. These are chunks with Chunk Type not equal to 0. The counter does not include abnormal or discarded chunks.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of chunks</li></ul>
sctpDroppedChunks	<ul style="list-style-type: none"><li>• <b>description:</b> Number of dropped chunks. The counter includes both control and data chunks.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of chunks</li></ul>
sctpSentCongestionInds	<ul style="list-style-type: none"><li>• <b>description:</b> Number of times SCTP has sent a congestion indication to the user.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of times</li></ul>
sctpSentCongestionCeaseInd	<ul style="list-style-type: none"><li>• <b>description:</b> Number of times SCTP has sent a congestion ceasing indication to the user.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of times</li></ul>



Table 2 Sctp Measurements

sctpRestarts	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of times SCTP associations have been restarted.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of times</li> </ul>
sctpSendBufferFull	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of times SCTP send buffer (M buffer) was full.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of times</li> </ul>
sctpHbTimeouts	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of SCTP heartbeat timeouts.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of times</li> </ul>
sctpDroppedUserMessages	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of user messages that SCTP has been forced to drop due to overflow in the send buffer.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of chunks</li> </ul>

Table 2 Sctp Measurements

sctpOutUnorderChunks	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of unordered chunks transmitted to the remote side.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of chunks</li> </ul>
sctpInUnorderChunks	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of unordered chunks received from the remote side.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of chunks</li> </ul>
sctpOutFragUsrMsgs	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of fragmented user messages transmitted to the remote side. The counter is incremented when the first data chunk of the fragmented message is sent.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of chunks</li> </ul>
sctpInFragUsrMsgs	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of fragmented user messages received from the remote side. The counter is incremented when the first data chunk of the fragmented message is received.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of chunks</li> </ul>



Table 2 Sctp Measurements

sctpTotalEstabs	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of times that SCTP associations have made a direct transition to the ESTABLISHED state from the CLOSED state or the COOKIE-ECHOED state. This counter is a sum of sctpActiveEstabs and sctpPassiveEstabs counters.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of associations</li> </ul>
sctpChecksumErrors	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of SCTP packets received from the remote side with an invalid checksum.</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of packets</li> </ul>



Table 2 Sctp Measurements

sctpActiveEstabs	<ul style="list-style-type: none"><li>• <b>description:</b> Number of times that SCTP associations have made a direct transition to the ESTABLISHED state from the COOKIE-ECHOED state.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of associations</li></ul>
sctpPassiveEstabs	<ul style="list-style-type: none"><li>• <b>description:</b> Number of times that SCTP associations have made a direct transition to the ESTABLISHED state from the CLOSED state.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of associations</li></ul>





## 4 Measurements of SctpAssociation PM Group

Page 13 provides measurement types of SctpAssociation PM group.

Table 3 SctpAssociation Measurements

measurementTypeId	Properties
sctpOutDataChunks	<ul style="list-style-type: none"><li>• <b>description:</b> Number of transmitted DATA chunks. The counter does not include retransmissions.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of chunks</li></ul>
sctpInDataChunks	<ul style="list-style-type: none"><li>• <b>description:</b> Number of received DATA chunks. The counter does not include duplicates.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of chunks</li></ul>
sctpAssocRtxChunks	<ul style="list-style-type: none"><li>• <b>description:</b> Number of DATA chunks retransmitted and fast retransmitted to the remote side per association.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of chunks</li></ul>



Table 3 SctpAssociation Measurements

sctpSentCongestionInds	<ul style="list-style-type: none"><li>• <b>description:</b> Number of times SCTP has sent a congestion indication to the user.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Number of times</li></ul>
sctpAssocCongestionDuration	<ul style="list-style-type: none"><li>• <b>description:</b> Accumulated time (in milliseconds) while SCTP association is under congestion.</li><li>• <b>collectionMethod:</b> CC</li><li>• <b>aggregation:</b> SUM</li><li>• <b>measurementStatus:</b> USED</li><li>• <b>resetAtGranPeriod:</b> true</li><li>• <b>measurementResult:</b> Time of congestions</li></ul>



Table 3 SctpAssociation Measurements

sctpAssocDormantNumber	<ul style="list-style-type: none"> <li>• <b>description:</b> Number of times Sctp association became Dormant (Association which has no active paths is referred as being in the Dormant state).</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Number of an times</li> </ul>
sctpAssocDormantDuration	<ul style="list-style-type: none"> <li>• <b>description:</b> Accumulated time (in milliseconds) while Sctp association was in Dormant state (Association which has no active paths is referred as being in the Dormant state).</li> <li>• <b>collectionMethod:</b> CC</li> <li>• <b>aggregation:</b> SUM</li> <li>• <b>measurementStatus:</b> USED</li> <li>• <b>resetAtGranPeriod:</b> true</li> <li>• <b>measurementResult:</b> Time of Dormant state</li> </ul>