Traffic Selector for Internet Key Exchange version 2 to add support Differentiated Services Field Codepoints (DSCP)

draft-mglt-ipsecme-ts-dscp

Migault, Halpern, Parkholm, Liu
Goal

Ensuring that traffic associated with different QoS do take different SAs.

Specifying a new TS Type TS_DSCP for IKEv2 as an additional selectors for the SPD.
RFC4301 Section 4.1 acknowledges that aggregating traffic with multiple DSCP over the same SA may result in inappropriate discarding of lower priority but recommends a classifier mechanism which dispatches the traffic over multiple SAs.

Such classifier results in inbound and outbound traffic may take SA negotiated via different IKEv2 sessions and thus makes:

- SA management more complex with an unnecessary SAs.

This is especially an issue with hardware implementations are designed with a limited number of SAs.
Defining new TS that includes a range of acceptable DSCP: TS_DSCP_LIST

<table>
<thead>
<tr>
<th>TS Type</th>
<th>Reserved</th>
<th>Selector Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>List of DSCP Values</td>
</tr>
</tbody>
</table>

List of DSCP Values:
The CREATE_CHILD_SA request for rekeying a Child SA is:

<table>
<thead>
<tr>
<th>Initiator</th>
<th>Responder</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDR, SK {N(REKEY-SA), SA, Ni, [KEi,] TSi, TSr}</td>
<td></td>
</tr>
<tr>
<td>with:</td>
<td></td>
</tr>
<tr>
<td>TSi = (TS_IPV6_ADDR_RANGE, TS_DSCP)</td>
<td></td>
</tr>
<tr>
<td>TSr = (TS_IPV6_ADDR_RANGE)</td>
<td></td>
</tr>
</tbody>
</table>

\[<-- HDR, SK \{SA, Nr, [KEr,] TSi, TSr\} \]

with:
- TSi = (TS_IPV6_ADDR_RANGE, TS_DSCP)
- TSr = (TS_IPV6_ADDR_RANGE)
Security

DSCP is a mutable field (not protected):

- only in Tunnel mode

DSCP is not a criteria used to define access control and we need to ensure that policies cannot be bypassed using different DSCP values.

- DSCP is always used in conjunction of TS_IP_ADDR_RANGE, so it is only a complementary information.
- We recommend all DSCP values be associated to the same rule, eventually DISCARD.
We are looking for a call for adoption.

Thanks!