Diameter Congestion And Filter Attributes

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Supplement to
draft-bertz-dime-congestion-flow-attributes-01
RFC 5777 Foundation

• RFC 5777
• Filter–Rule AVP
  – The basis our work.
  – Condition/Action design

Filter-Rule ::= < AVP Header: 509 >
  [ Filter-Rule-Precedence ]
  ; Condition part of a Rule
  ; ------------------------
  [ Classifier ]
  * [ Time-Of-Day-Condition ]
  ; Action and Meta-Data
  ; ------------------------
  [ Treatment-Action ]
  ; Info about QoS related Actions
  ; -------------------------
  [ QoS-Semantics ]
  [ QoS-Profile-Template ]
  [ QoS-Parameters ]
  [ Excess-Treatment ]
  ; Extension Point
  ; --------------
  * [ AVP ]
Congestion Management

• Filter-Rule does not support ECN in 2 ways
  1. No AVP to add to condition part to Classify ECN marked traffic
  2. No Congestion-Treatment Action Set (RFC has Excess-Treatment and Treatment-Action AVPs)

• We need to build many filters for Congestion Management
  – How do we know they are working? (Is any traffic captured)
  – What can we observe on existing filters in order to remove unused ones OR ones deprecated by new filters?
Progress since IETF86

• No real progress in 3GPP UPCON
  – Struggling with solution
  – Off-path (OAM) Solution is insufficient
  – Application layers will continue to push for ECN
    • Emergency calling, IMS, others

• Multipath TCP is ramping up
  – Need path level congestion marking

• Network Coding is seeing progress
Questions for Consideration

• Should we add TCP ECE and CWR filters?
• Should we add Classifier support for ECN for RTP over UDP (RFC 6679)?
• What other extensions like RFC 6679 exist and should they be incorporated?

What can we do to progress this Draft?
Background
ECN Specific AVPs

- **ECN-IP-Codepoint AVP (Enumerated)**
  - Specifies the Explicit Congestion Notification codepoint values to match in the IP header.
  - Use: Place in Filter-Rule’s Classifier

- **Congestion-Treatment AVP (Grouped)**
  - Similar in design/use to Excess-Treatment AVP
  - NOTE: Criteria for Congestion or traffic under congestion is out of scope of the AVP specification
  
  - **Flow-Count AVP (Unsigned64)**
    - Indicates the number of protocol specific flows. The protocol is determined by the filter

  - **Packet-Count AVP (Unsigned64)**
    - Indicates the number of protocol specific packets.
Filter AVPs for maintenance

• Two AVPs
  – Flow-Count AVP (Unsigned64)
    • Indicates the number of protocol specific flows. The protocol is determined by the filter
  – Packet-Count AVP (Unsigned64)
    • Indicates the number of protocol specific packets.

• Uses
  – Use in accounting/reporting to determine if Filter is working as planned
  – Can be combined with other AVPs to provide rudimentary traffic profile (e.g. bytes per flow, bytes per packet, etc.)
  – Can be sent in Filter-Rule as prescriptive