QoS Yang Model

http://www.ietf.org/id/draft-asechoud-rtgwg-qos-model-10.txt

Aseem Choudhary, Norm Strahle, Ing-Whar Chen, Mahesh Jethanandani, Ebben Aries

IETF 105, Montreal

July, 2019
Topics

- Overview
- QoS Framework Modules
- Derived Modules
- Vendor Specific Augmentations
- Summary
- Next Steps
Overview

- This is a QoS YANG model draft in RTGWG
  - It is a RTGWG candidate working group draft
  - This draft was moved from NETMOD to RTGWG

- Presenting an RTGWG draft in TSVWG is intended to promote awareness of QoS work
Model Overview

Three levels of models:

• **Base infrastructure:**
  Classifier, Action, Policy, Target
  Frameworks and building blocks

• **Derived Modules:**
  Diffserv Module
  Queue Policy Module
  Scheduler Policy Module

• **Vendor specific:**
  Typically, vendors would augment base and derived models
  Stitches some of the building blocks together
QoS Framework Modules

• **Classifier Module**
  • Defines a classifier object referred by a name
  • A classifier object contains one or more filter entries
  • Logical OR/AND operation of different Classification Parameters
  • Same classifier object can be referred by multiple policy objects

• **Policy Module**
  • Defines QoS policy object referred by a name
  • A policy object contains one or more classifier entries and actions
  • A classifier entry may be defined inline or may refer to a classifier object
  • A packet matching the first classifier entry will skip further classification in the policy
module: ietf-qos-classifier

  +--rw classifiers {classifier-template-feature}?
    +--rw classifier-entry* [classifier-entry-name]
      +--rw classifier-entry-name string
      +--rw classifier-entry-descr? string
      +--rw classifier-entry-filter-operation? identityref
    +--rw filter-entry* [filter-type filter-logical-not]
      +--rw filter-type identityref
      +--rw filter-logical-not boolean
Policy Module Tree Diagram

**module:** ietf-qos-policy

- **rw policies**
  - **rw policy-entry* [policy-name policy-type]**
    - **rw policy-name** string
    - **rw policy-type** identityref
    - **rw policy-descr?** string
  - **rw classifier-entry* [classifier-entry-name]**
    - **rw classifier-entry-name** string
    - **rw classifier-entry-inline?** boolean
    - **rw classifier-entry-filter-oper?** identityref
  - **rw filter-entry* [filter-type filter-logical-not] {policy-inline-classifier-config}?**
    - **rw filter-type** identityref
    - **rw filter-logical-not** boolean
  - **rw classifier-action-entry-cfg* [action-type]**
    - **rw action-type** identityref
  - **rw (action-cfg-params)?**
QoS Framework Modules

• **Action Module**
  • Defines grouping for metering, marking, Queuing, Scheduling
  • Meter model as one rate two colors, one rate three colors and two rates three colors

• **Target Module**
  • Augments ietf-interface module
  • Policy is applied to inbound and/or outbound Traffic
Derived Modules

- **Diffserv Module**
  - Models Diffserv architecture as defined in [RFC 2475, RFC 3260](https://www.rfc-editor.org/rfc/rfc2475)
  - Diffserv MIB [RFC 3289](https://www.rfc-editor.org/rfc/rfc3289) is used as reference for parameter definitions
  - Supported filter types are: DSCP, source IP address, destination IP address, source port, destination port and protocol
  - DSCP, source/destination port and protocol are defined as range. Multiple ranges of the same filter type can be configured
  - Source/destination IP address are defined as address value and prefix length. Multiple of address prefix and prefix length can be configured in a filter
  - Inline Queuing and Scheduling Parameters
Derived Modules

- **Queuing Policy Module**
  - Augments Policy module to define Queuing Policy
  - Classification is based on Traffic-Group
  - Actions include Priority, Min-rate, Max-rate

- **Scheduler Policy Module**
  - Augments Policy module to define Scheduler Policy
  - Match all parameters
  - Actions include associated Min-rate, Max-rate, Queuing Policy
Vendor Specific Augmentations

- Vendors specific module may have additional matches and actions
- It may have new policy-types
- Different Vendors may support additional parameters
Summary

- The current model defines QoS framework of Policy, Classifier, Actions, Target
- Derived Modules including Diffserv, Queues & Schedulers Model are augmented to Base framework
- Adaptable to any vendor QoS model. The three examples of Company A, B and C models are added.
- Augmentable to other Matches and Actions
- Extensible through various feature definitions
Next Steps

- Comments from IETF Community