Diffserv Yang Model

http://www.ietf.org/id/draft-asechoud-netmod-diffserv-model-00.txt

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Topics

- Motivation
- Diffserv Yang model overview
- Diffserv Yang modules
- Operational data
- Possible changes in next revision
- Questions

Motivation

- To define a model which is based on well defined architecture and widely used
- To define a generic base model which is flexible, scalable and extensible

Diffserv Yang Model Overview

- Defines Yang model for configuration and operational data on a device
- Models Diffserv architecture as defined in **RFC 2475**, **RFC 3260**
- Diffserv MIB **RFC 3289** is used as reference for parameter definitions
- Defines Classifier, Policy, Action and Target modules
- Scalable object based model
- Vendor specific configuration or operational data is augmentable as vendor extensions

Classifier Module

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

Classifier Module

```
module: ietf-diffserv-classifier
    +--rw classifiers
      +--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
        |  +--rw (filter-param)?
        |     +--:(dscp)
        |     |  +--rw dscp-cfg* [dscp-min dscp-max]
        |     |     +--rw dscp-min    inet:dscp
        |     |     +--rw dscp-max    inet:dscp
        …   …
        +--ro classifier-entry-statistics
              +--ro classified-pkts?    uint64
              +--ro classified-bytes?   uint64
              +--ro classified-rate?    uint64
```

Policy Module

- Defines Diffserv 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
- Classifier entry within a policy object may refer other policy object for further classifications and actions
- Classifier entries are ordered-by user
- A packet matching the first classifier entry will skip further classification in the policy

Policy Module

```
module: ietf-diffserv-policy
  +--rw policies
    +--rw policy-entry* [policy-name]
      +--rw policy-name          string
      +--rw policy-descr?        string
      +--rw classifier-entry* [classifier-entry-name]
        +--rw classifier-entry-name           leafref
        +--rw classifier-entry-inline?        boolean
        +--rw classifier-entry-filter-oper?   identityref
        +--rw filter-entry* [filter-type filter-logical-not]
        |  +--rw filter-type                  identityref
        |  +--rw filter-logical-not           boolean
        …
        +--rw classifier-action-entry-cfg* [action-type]
        |  +--rw action-type    identityref
        |  +--rw (action-cfg-params)?
        +--rw child-policy?                   leafref
```

Action Module

- Models metering, marking, dropping, scheduling, min rate and max-rate
- Extendible meter model as token bucket
- Color blind and color aware meter
- Diffserv code point marking
- Supports drop algorithms - tail drop, head drop, WRED

Target Module

- Augments ietf-interface module
- Policy is applied to inbound and/or outbound Traffic

Operational Data

- Classifier statistics: classifier packets, bytes and rate
- Meter statistics: metered packets, bytes and rate
- Queuing statistics: output packets, bytes, queued packets, bytes, drop packets bytes
- Additional WRED statistics: early drop packets, early drop bytes

Possible changes in the next revision

- IPv6 flow label support
- ECN support
- WRED profile ID to uniquely configure a WRED profile when multiple WRED profiles are configured

Questions?