

# Policy Control of Resource Allocation for QoS

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# Resource Allocation

- Resource Building Blocks
  - Admission Control
    - Flow Identification (Classification)
    - Flow Traffic Profile Verification (Policing)
  - Flow Aggregation
  - Flow Treatments
    - QoS Treatments
    - Forwarding Path Treatments

# Admission Control - Flow Identification

- Classification
  - IP Filters
    - frwkIpFilterTable/Entry
  - 802 Filters
    - frwk802FilterTable/Entry
  - BA Filters
    - Part of frwkIpFilterTable/Entry
  - Ingress Flow Signaling for Flow Identification

# Admission Control - Flow Traffic Profile Verification

- Policing - Meter
  - Token Bucket Definition
    - qosTBParamTable/Entry
  - Metering for Marking Purpose
    - Single Rate Three Color Marker
    - Two Rate Three Color Marker
    - Time Sliding Window Three Color Marker
  - Ingress Flow Signaling for Flow Traffic Profile Verification

# Aggregation

- Aggregation Using DSCP Marking – IP based
  - qosDscpMarkActTable/Entry
- Layer 2 Based Aggregation
  - Aggregate into Layer 2 Tunnels
    - frwk802MarkerTable/Entry
    - frwkILabelMarkerTable/Entry
- Ingress Flow Signaling for Flow Aggregation

# QoS Flow Treatment

- Congestion Avoidance
  - Algorithmic Dropper
    - qosAlgDropTable/Entry
    - qosRandomDropTable/Entry
- Transmission
  - Queueing
    - qosQTable/Entry
  - Scheduling
    - qosSchedulerTable/Entry
    - qosMinRateTable/Entry
    - qosMaxRateTable/Entry

# Policy Control of Resources

- Resource Control via Policy Rule Classes defined in Policy Information Bases (PIBs)
- Flexibility:
  - In Defining Policy Rule Classes for Specific Resources
  - For Reusing already defined Policy Rule Classes with new ones
  - For Extending already defined Policy Rule Classes
  - For Integration of multiple Resources using Policy Control

# Policy Control Protocol

- Common Open Policy Service (COPS) Protocol and its Provisioning (PR) Extension
  - Client Server Model with Connection Oriented, Reliable, Transactional Based interactions
  - Supports Policy Server Load Balancing and Fail Over
  - Indicates latest status of installed policy using Policy Feedback Report
  - Simple Protocol with Resource Allocation functionality defined using PIBs



# References

- RFC 2748, COPS (Common Open Policy Service) Protocol
- RFC 3084, COPS Usage for Policy Provisioning (COPS-PR)
- RFC 3159, Structure of Policy Provisioning Information (SPPI)
- draft-ietf-rap-frameworkpib-07.txt, Framework Policy Information Base
- draft-ietf-diffserv-pib-06.txt, Differentiated Services Quality of Service Policy Information Base