Eyal-ACC Conversion Sub Layer and QoS

Product Description

The Eyal-ACC Conversion Sub Layer provides packet identification and matching according to strict, predefined rules. This tagging and matching process of traffic identification is known as traffic policing.

The Eyal-ACC Conversion Sub Layer also provides the functions of traffic conversion, compression and acceleration. The Sub Layer works in conjunction with the CoS Module to provide these functions as well as the following functionality:

1. Traffic recognition/classification up to layer 3.5
2. Management of policy rules: (Add, Delete, update etc.)
3. Traffic match to some particular managing rules.
4. QoS tagging
5. Furnishing information about packets to the system modules

The Conversion Sub Layer module may be used as a stand-alone module or integrated inside third party software tools to provide these functions.

Eyal-ACC Provision Manager Function
Eyal-ACC Provision Manager Innovations
Eyal-ACC Provision Manager Schematic

Eyal-ACC Conversion Sub Layer and QoS Function

In order for the Conversion Sub Layer to accurately recognize and classify incoming packets correctly, it must first be able to retrieve the useful information from incoming packet content and unify this information in system data structures that provide system wide access to the data.

The Conversion Sub Layer can retrieve following information from incoming packets:
- Packet service (2nd and 3rd layer packet classification)
- OSI Headers: MAC Header, IP header, Transport Headers
- Well Known Protocol Headers: HTTP, FTP, and etc
- Packet Data Content: HTTP URL

The CoS module presents packet content and packet information in some normalized forms to cover following cases:

- IP6 vs. Vs IP4
- Big endian / Little-endian
- VLAN Tagging
- Tunneling

The module is able to do a sanity check to guaranty packet protocol integrity:
- Ethernet
- IP Protocols
- TCP, UDP Protocols

The CQS tags each incoming packet with time stamp for later use by other system components (e.g TTL calculations and other statistics.)

Eyal-ACC Conversion Sub Layer and QoS Innovations

The Eyal-ACC Conversion Sub Layer and QoS makes dynamically use of both the Policy rule set and the Flow rules from the Provision Manager. Each Policy rule set corresponds to particular unit station policy. The number of policy rule sets varies with the number of BSs managed the Conversion Sub Layer. The Flow rule set defines rules for identifying the start or end of sessions created by the Provision Manager.

Flow Rule Set and Policy Rule Sets are organized as matching chains in such way that each packet has to be matched against both rule sets. The result of this matching will correspond to different actions:
- Pass packet processing to Provision manager (if there is match in Flow Rule Set or there is no match in Policy rules)
- Pass packet processing to Conversion module (if there is no match inside Flow Rule set and there is match inside one of Policy rule sets).

The Eyal-ACC Conversion Sub Layer also provides dynamic admission control by changing the SLA according to the link budget. Removal of service functionality is also supported and is provided according traffic priority, service type and terminal link budget. The terminal link budget prioritizes service according to content.

Quality of Service is provided according to uniform weight function parameters without excluding any one type of traffic completely. These parameter include time bound (Jitter, delay), bandwidth (minimal, maximal and average), and traffic sensitivities (packet lost, burst profile etc). Frame number synchronization IAW the IEEE1588 standard is supported as well as well as multicast traffic tagging. Dynamic decisions are also made in cases of dropped packets.

Eyal-ACC's innovative use of packet control rather than session control allows the system to continue to function indefinitely in an overloaded status, without denying service to any type of traffic. At the same time most users never experience a noticeable loss of service at all while moving from location to location. By allowing the system to be overloaded in this way, the service provider will earn more $ per data time unit, increasing income significantly without any additional equipment investment.

Eyal-ACC Conversion Sub Layer and QoS Schematic

Insert DWG :

CoS interacts with the following components:

1. Packet Handler - Provides an API to work with packet logical data structure
2. Service DB – database of recognizable services
3. Rule Table – a database of policy rules
4. Conversion - a CQS sub module that does traffic conversion, compression and acceleration
5. Provisional Manager - see ref
6. Logical Scheduler – See ref
7. System Shell – a framework component that manages XL-Rate modules.

During the initialization process, the CoS receives packets from Packet Handler and preloaded Services and Rules. Conversion Sub Layer together with the Provision Manager, process the packet and register it in the CQS for receipt and processing. This process is repeated at run time as well.

During the run time for each packet, is passes through CsS for classification and matching to some type of service according to one of the loaded rules. The CoS identifies the packet whether it matches one or more flow rules and/or policy rules. The resolution of ambiguities is applied by using the matching rules after which the appropriate actions are performed. The Provision Manager can update CoS rules set dynamically

For more information call us at 972-3-9510010 and ask for an Eyal-ACC support engineer today or email us now: aviw@eyal-acc.co.il.