

Hillstone StoneOS QoS

1. Introduction

The tremendous growth of the internet and corporate intranets, the wide variety of new bandwidthhungry applications, and convergence of data, voice, and video traffic over consolidated IP infrastructures has had a major impact on the ability of networks to provide predictable, measurable, and guaranteed services to these applications.

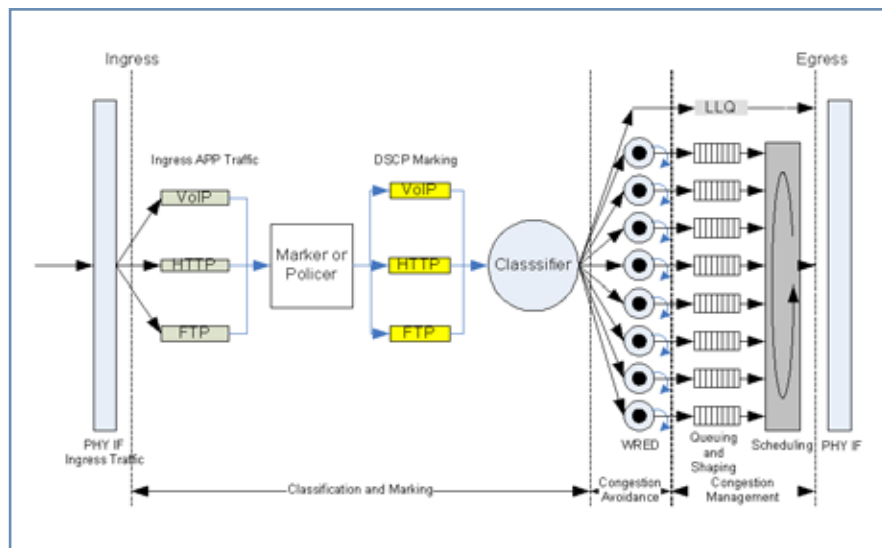
Fundamentally, QoS enables you to provide better service to certain type of traffic. This is done by either raising the priority of one type of traffic or limiting the priority of another type of traffic. The type of traffic can be controlled by multiple factors: application type, people using it, where and how people connects to the network, and their security profile.

StoneOS QoS is a tool box, which ensures service availability, manages bandwidth resource effectively and prioritizes applications across the network.

2. StoneOS Basic QoS Architecture

StoneOS QoS implementation is based on the following fundamental modules:

- QoS identification and marking for coordinating QoS from end to end between network elements



- QoS within a single network element (for example, queuing, congestion avoidance, scheduling, policing and traffic-shaping)
- QoS policy, management and accounting functions to control and administer the traffic

3. The Hillstone Solution

Combining following techniques, StoneOS offers innovative and patented technologies to deliver powerful and flexible QoS solutions:

- DSCP Marking based on RFC
- IP QoS
- User and Role Based QoS
- Application QoS
- Mixed QoS
- Application Marking
- Flex QoS

3.1 Inter-op with 3rd Party Vendors

QoS is a joint effort among different vendors networking equipments. In the network environment of a large enterprise, Hillstone device can act as the edge gateway of a branch office. It can works together with routers from major networking vendors. To ensure QoS in the whole network functions properly, both devices must using the same rule to define the traffic priority. DSCP values can be expressed in numeric form or by special keyword name, called per-hop behaviors(PHB). Three defined classes of DSCP PHBs exist: Best-Effort(BE or DSCP 0), Assured Forwarding (AFxy), and Expedited Forwarding (EF). Hillstone's QoS solution strictly follows RFC 2547, 2597 and 3246, which guarantees the inter-op capability with other vendor's networking devices, like Cisco, Juniper and etc.

3.2 Manage and Prioritize Applications Bandwidth

Hillstone offers proprietary IAI (Intelligent Application Identification), which can classify hundreds of network applications, even encrypted P2P(Bit Torrent, Emule, Xunlei etc.) and IM traffics. Traffic can be identified and marked according to its applications type. Traffic bandwidth can be controlled and prioritized according to the application identification and marking result. One typical scenario is that critical ERP and OA traffic can have higher priority to guarantee bandwidth. For Web surfing and P2P downloading traffic, the administrator can assign a lower priority and limit the maximum bandwidth they consumed. In another scenario, NetCafé user can use this functionality to manage and prioritize their entertainment traffic.

3.3 Role Based QoS

Working together with Hillstone's role based behavior control and IP QoS, administrator can easily contain and prioritize the traffic behavior for critical user. Hillstone device can support prioritization and bandwidth control (inbound and outbound) of up to 20K different IP addresses.

Combining with application QoS, Hillstone device offers another level of traffic control. Hillstone can manage and prioritize application traffic for each user. For example, for different traffic generated from one IP address, user can specify the priority and bandwidth consumption based on the application classifying result.

3.4 Maximizing Bandwidth Utilization

During off-peak time, users often find their network bandwidth not fully utilized. Hillstone's Flex QoS solution can detect network's egress/ingress bandwidth utilization in real time and adjust the bandwidth assigned to certain users or application dynamically. This method offers great flexibility to the users to fully utilize their bandwidth resources and also guarantees their network performance during peak time.

3.5 Visualizing the Network

Hillstone QoS solution also offers variety of reporting and monitoring method to users to visualize their network condition. Users can easily find out the interface bandwidth consumption, bandwidth consumption of different applications, and bandwidth consumption of different IP address. History data about bandwidth consumption can be collected for future analyzing.

4. Conclusion

Hillstone QoS solution offers user a very powerful method to manage his network.