Service Control EasyApp: Fair Usage Policies

Summary

This Cisco® Service Control Engine (SCE) EasyApp guide explains the importance of fair usage policies for managing consumer broadband traffic. It then provides best practices for their implementation on Cisco SCE platforms.

EasyApp Category	SCE Equipment and Software Version	Type of Effort
Bandwidth Optimization	**Hardware:** Cisco SCE 2000 and 8000 Series Service Control Engine. **Software:** Release 3.5 or later.	Depending on the approach taken, may require as little as several hours to set up or a more comprehensive effort requiring new service definition and policy integration.

Fair Usage Policies

Delivering a high-quality broadband experience is becoming more and more difficult for network operators. Growing contention for the available network capacity, new delay-sensitive applications, and a subscriber base that is increasingly concerned about privacy, neutrality, and fairness are pressuring operators to carefully think their traffic management policies. Cisco recommends that network operators follow these two core principles:

- **Fairness:** The broadband network is a shared resource, used by all broadband users. As such it is critical that the network's traffic management policies help to ensure that bandwidth is allocated fairly between all users and applications. Policies should also be transparently communicated to subscribers, in a simple and easy-to-understand fashion.
- **Proactive Approach:** Since broadband networks do not have unlimited capacity, congestion is a common occurrence. While operators must continuously monitor their network and add capacity when appropriate, they must also proactively manage how traffic is distributed among subscribers during periods of congestion. In the diverse and demanding traffic patterns seen in broadband environments, simply taking no action results in a poor customer experience for the average user.

From a technical perspective, the goal is to make the best use of network resources in a fair and nondiscriminatory way. Cisco SCE offers administrators technical options to accomplish this. It's also important to carefully examine the terms-of-service provided to subscribers and make sure to communicate any relevant service terms in a straightforward and transparent manner.

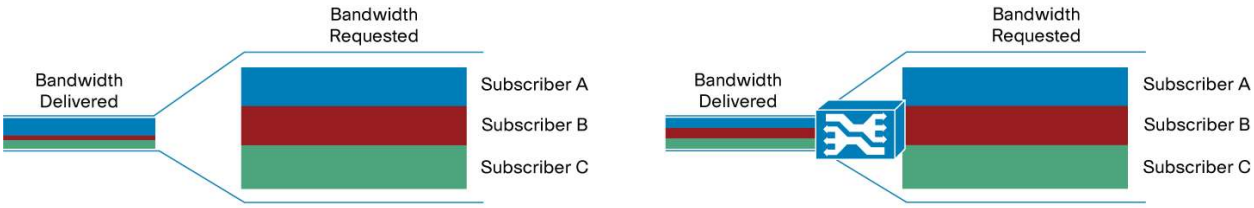
Implementation

This section briefly explores the different capabilities of the SCE for implementing fair usage policies (FUP).

Real-Time Equitable Bandwidth Allocation

Starting at the most basic level, the Cisco SCE platform manages traffic by distributing available bandwidth equally between subscribers, bandwidth allocated to a particular Cisco SCE bandwidth controller is automatically distributed evenly between the subscribers assigned to it. As Figure 1 illustrates, equitable bandwidth allocation provides the first layer of proactive fairness by ensuring that at any given moment, subscribers receive an equal share of bandwidth resources.

Figure 1. Equitable Bandwidth Allocation



Scenario A: Without equitable bandwidth allocation, certain subscribers may not be getting a fair share of available capacity.

Scenario B: With the Cisco SCE, each subscriber receives a fair portion of the available bandwidth.

Transient Subscriber Quotas

Another FUP tool offered by the Cisco SCE is to set per-subscriber transient quotas. Through quotas, you can define a policy based on how much bandwidth a subscriber has already consumed in the last hour. For example, the SCE can be setup to grant high-priority to the first 10 MB of traffic a subscriber consumes each hour. Traffic generated after the first 10 MB will be given less priority, so that network traffic of other subscribers, who are still within the 10 MB boundary, is prioritized. This provides an added measure of fairness because all subscribers will be able to consume their 10 MB/hour, eliminating situations where those subscribers that generate a lot of network activity overshadow those that have a more occasional usage pattern. The SCE transient subscriber quotas are non-persistent and maintained internally within the SCE, without requiring external operations support system integration or policy elements. They provide a simple way to govern the distribution of traffic over the course of an hour.

Subscriber Usage Quotas

The final layer of fairness is realized by taking a longer-term view of subscriber's usage profiles. In addition to the transient quotas just described, you can use the Cisco SCE in conjunction with a policy server to keep track of usage on a longer term (typically monthly periods) to implement usage-based service plans.

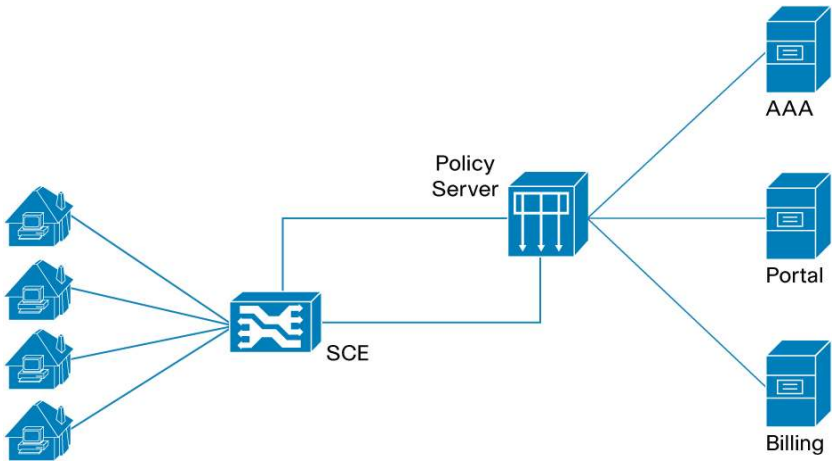
Subscriber usage quotas allow the operator to specify rules and actions such as:

- Lowering the priority of user's traffic if they consume more than 500 GB per month.
- Creating a billing record for every 1 GB or excess traffic above 400 GB per month.
- Implementing a subscriber-facing portal with a real-time usage gauge, historical data, and quota repurchases.
- Notify the network operator about subscribers consuming more than 1 TB per month.

Usage quotas are a great way to identify and automatically manage the small percentage of users who violate the network's AUP by generating massive amounts of traffic. The percentage of users who consume more than their fair share of the network's bandwidth is typically much less than 1 percent of the subscriber user base.

Figure 2 shows a typical service-provider ecosystem where the SCE works in conjunction with the policy-server to enforce real time usage quotas on subscriber traffic. A service-portal is used to convey the quota levels for each subscribers and allow them to take self-service actions (such as upgrading their service or replenishing their account).

Figure 2. Cisco SCE Integrated with a Policy Server, Billing System and Service Portal



For More Information

The Cisco SCE EasyApp guides provide practical, actionable advice on the Cisco SCE platform that will help you learn more about network usage patterns, and also help you to reduce costs and optimize the network's behavior to provide a superior experience for your users. Browse the full selection of Cisco Service Control EasyApp guides at http://www.cisco.com/go/servicecontrol.

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