Service Control EasyApp—Measuring Quality of Experience

Abstract
This Cisco® Service Control Engine (SCE) EasyApp memo explains the concept of quality of experience (QoE), an approach to measure network users’ satisfaction with the networks’ performance for use in different applications. It then provides details on how the Cisco SCE can be used to effectively measure QoE.

<table>
<thead>
<tr>
<th>EasyApp Category</th>
<th>SCE Equipment and Software Version</th>
<th>Type of Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visibility and Business Intelligence</td>
<td>• Hardware: SCE2000 and SCE 8000</td>
<td>A few hours for configuration and report generation. We recommend repeating the process once every month to gain insights from developing trends.</td>
</tr>
<tr>
<td></td>
<td>• Software: Release 3.5 or later</td>
<td></td>
</tr>
</tbody>
</table>

Measuring Quality of Experience
Quality of Experience is an important metric all network providers should incorporate in the evaluation of the performance of their networks. Simply defined, QoE attempts to assess the quality of the experience subscribers are getting as they interact online. Are web pages loading quickly as users browse (or are there long delays)? Is the network fast enough for playing World of Warcraft (or is latency hurting the gaming experience)? Are videos from YouTube and Hulu playing smoothly (or is there a lot of buffering happening midstream)? Poor and inconsistent quality of experience will result in customer dissatisfaction, which in turn will put pressure on customer support and increase churn.

The SCE detailed network analysis and reporting capabilities help service providers to proactively manage this critical metric and gain visibility into key issues that affect their customer’s satisfaction. This EasyApp will provide guidelines to perform this and benefit the organization in several ways including:

- **Network planning:** Improve insight into future traffic needs to assess network growth, plan peering agreements, and define caching strategies.
- **Operations, support, and marketing:** Measure metrics to assess customer satisfaction to improve customer support and marketing efforts.

Service Control Implementation
When assessing QoE, one needs to look at the *trends*, namely the change in value over time to determine whether the experience is improving or deteriorating. The following highlights critical reports for reviewing QoE. The red arrow indicates where the trend would go if QoE is improving.

**Daily Cumulative Distribution of Subscriber Usage**
Execute this report and notice whether the graph is moving to the right (toward 100 percent); if so, it means that the distribution of traffic is more even among subscribers, usually an indication of more fairness and a better average QoE in the network.

**Note:** This will only work if your SCE is configured to “subscriber-aware” or “anonymous subscriber.”
Global VoIP MOS

In networks with heavy usage of voice over IP (VoIP), monitor this graph to see if the Mean Opinion Score (MOS) plots are moving upward. The more low plot value scores (1–2), the more calls with unclear voice quality.
Session Average Duration
A session’s average duration indicates the total time it took the network to deliver an HTML page for rendering on the user’s browser. A longer time usually means the user needs to wait more to read the entire page requested.

It is recommended that you pick a particular domain of interest (such as Facebook, CNN, YouTube) and monitor this average carefully.

**Note:** Average session duration does not always indicate a poor QoE. A long average duration may be a result of:

- The website’s server holding the connection open *after* delivering the full web page
- Asymmetric routing or other networking issues that result in the SCE closing the flow only after a timeout, not on its natural termination

Therefore, the recommendation is to monitor **changes in the average duration for a specific domain**. Absolute values or the differences seen on different domains should not be used to estimate browsing QoE.
For More Information

The Cisco Service Control EasyApp Guides are short, easy-to-follow guides that provide new and experienced SCE customers with information on how best to use the platform in their network. The guides contain practical, actionable advice on the SCE platform that will help you learn more about network usage patterns, reduce cost, and optimize the network’s behavior to provide a superior experience for its users. Browse the full selection of Cisco Service Control EasyApp Guides at [http://www.cisco.com/go/servicecontrol](http://www.cisco.com/go/servicecontrol) to improve your network today.