

## 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.

EasyApp Category	SCE Equipment and Software Version	Type of Effort
Visibility and Business Intelligence	<ul style="list-style-type: none"> <li>• <b>Hardware:</b> SCE2000 and SCE 8000</li> <li>• <b>Software:</b> Release 3.5 or later</li> </ul>	A few hours for configuration and report generation. We recommend repeating the process once every month to gain insights from developing trends.

### 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

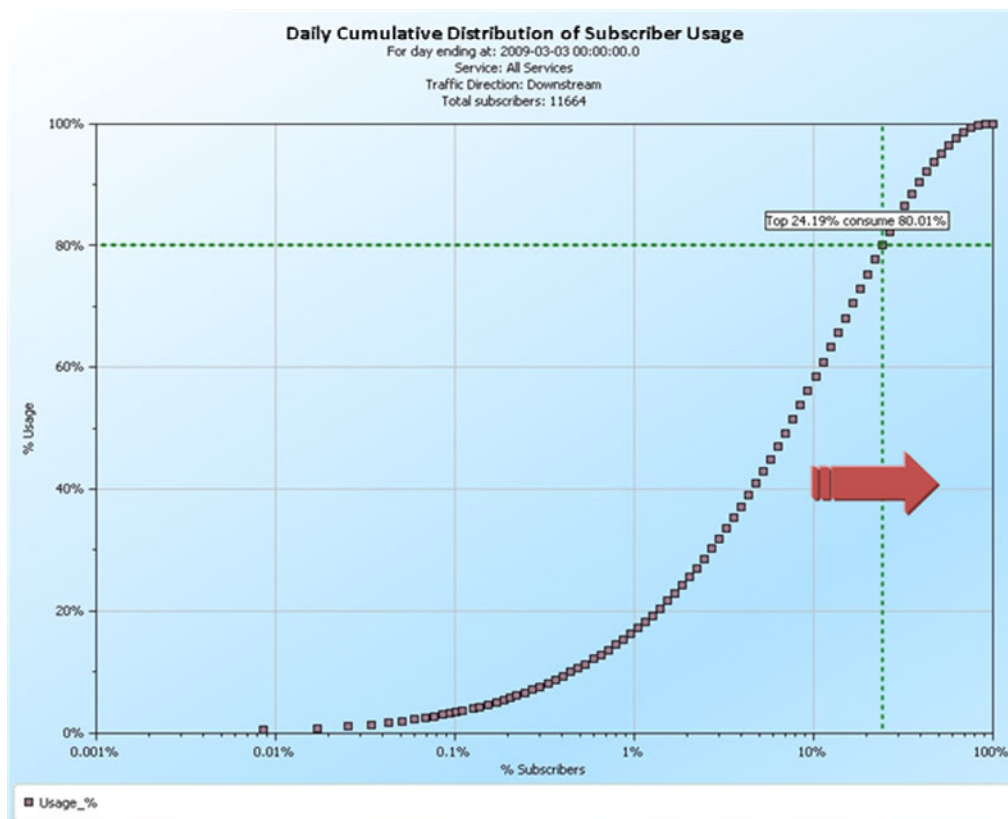
When assessing QoE, one needs to look at the *trends*, namely the change in value over time to determine whether the experience is improving or deteriorating. The following highlights critical reports for reviewing QoE. The red arrow indicates where the trend would go if QoE is improving.

#### 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.”

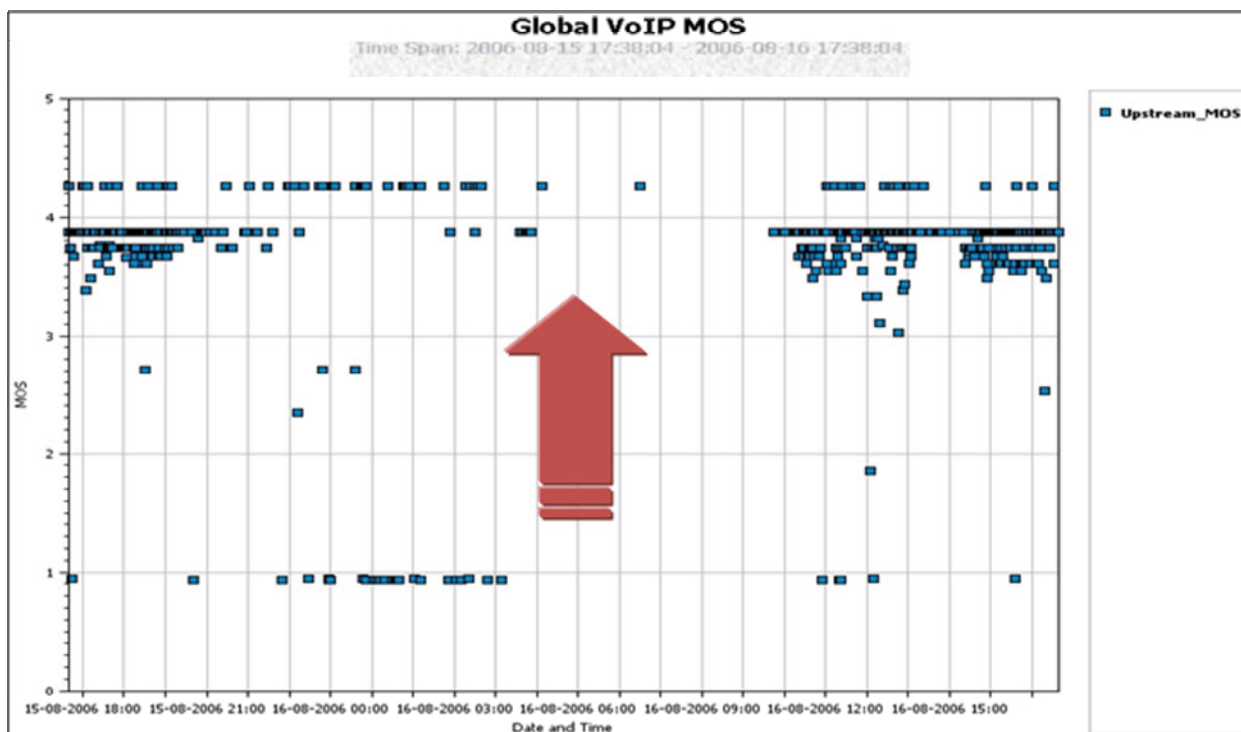
Figure 1.



### 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.

Figure 2.



### 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.

Figure 3.

Domains	Hits	Max_Hourly_Unique_Visitors	Avg_Duration_Second
facebook.com	16505112	1278	63
google-analytics.com	10247759	2260	28
google.com	10017499	2102	41
yting.com	5529366	662	24
imrworldwide.com	4257174	1303	1
conduit.com	4061690	1163	9
yieldmanager.com	4009852	1177	2
msn.com	3704496	1092	58
eset.com	3606333	1248	2
adserverplus.com	3362689	893	1
themarket.com	3142982	629	23
microsoft.com	2767503	1777	18
collarity.com	2658910	876	103
icq.com	2635430	1006	46
pas-rahav.com	2464866	1421	64
yahoo.com	2282869	552	11
rapidshare.com	2022972	129	103
live.com	1567608	620	38
youtube.com	1504824	822	52
googlesyndication.com	1467417	1151	27
symantecliveupdate.com	1438513	620	67
nuconomy.com	1343220	450	13
aolcdn.com	1294418	648	104
webbystreaming.com	1273767	1421	66
securestudies.com	1240561	53	1
xvideos.com	1209053	78	22
ceipmsn.com	1003624	171	2
keshet-i.com	905049	111	9
atwola.com	904254	827	239
zedo.com	897099	454	57
nod32.com	727345	42	0
quantserve.com	719998	428	9
zynga.com	716977	85	13
megaupload.com	700826	49	182
score777.com	619991	33	0
pornhub.com	532524	38	14
googlevideo.com	513667	244	85
iforex.com	509236	682	71
windowsupdate.com	481628	814	81
tube8.com	406812	26	19
youporn.com	406524	46	20
vip-file.com	392179	11	1921
extreme-dm.com	332771	307	0
fileflyer.com	311505	46	454
photobucket.com	304307	217	10
xvideolive.com	270686	55	4

### 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> to improve your network today.



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