



Subscriber Service Analysis

Rapidly identify sources of subscriber QoE issues



SUBSCRIBER SERVICE ANALYSIS DELIVERS:

- Proactive identification for diagnosing and troubleshooting subscriber-centric issues before they escalate
- Meaningful metrics and insight into subscriber, application, device, QoE, and plan usage patterns
- Preventative action by identifying customers with a high propensity to churn
- Improved customer loyalty by introducing relevant services in response to, or in anticipation of emerging demands
- Increased revenue from incremental activations by recognizing under-served customer segments

MARKET OVERVIEW

With the introduction of 5G and the increasing complexity of applications, it has become paramount for service providers to shift from a network-centric view to one that prioritizes users, enabling rapid resolution of subscriber-related network issues.

The traditional network-focused view tells only half the story in today's application-dominant market, because from a user's perspective, the reliance isn't on the network per se but on the various entertainment and business applications that drive society and the economy.

Although service providers always monitor operation performance quality to ensure they are meeting customer standards, their current efforts rely on traditional network key performance indicators (KPIs), like individual link congestion or node failures. With only this data, application QoE issues become buried under larger network quality issues. In their networks today, service providers have a limited view of the QoE individuals or subscriber groups are receiving, and whether this has a direct impact on potential churn indicators such as speed tests – until customers complain.

Additionally, there is the mounting pressure – from a cutthroat competitive landscape – to deliver high quality of experience (QoE), preventing churn whether to a direct competitor or to an access alternative (i.e., 5G in the place of fixed). Therefore, service providers need to take a holistic approach in understanding subscriber experience, conducting root cause analysis, and look for opportunities for improvement, such application QoE scores or personalizing services.

USE CASE OVERVIEW

Sandvine's Subscriber Service Analysis puts subscriber QoE in the forefront and empowers service providers to troubleshoot subscriber issues.

This use case and its rich data allows a service provider to conduct troubleshooting investigation for subscriber-related problems. Subscriber Service Analysis provides cross-sections of the subscriber base (e.g., by plans, devices) to highlight correlations. It can answer key root cause analysis questions, such as:

1. Is QoE poor because low-end plans can't support video streaming well enough?
2. Are Apple devices performing OS updates across the network, thereby deteriorating their experience?

It achieves this perspective by looking at the metrics that can a subscriber's overall experience, which can be summarized by the following:

- **Application Performance:** application QoE scoring (based on throughput, latency, and packet loss)
- **Network KPIs:** Internal/external round-trip time, packet loss and throughput
- **Last-Mile KPIs:** Performance indicators specific to the access network
- **Device KPIs:** Device types can have impact on QoE with screen resolution, performance, or even known bugs

Subscriber Service Analysis



Beyond these metrics, Sandvine provides service providers with a holistic view into subscribers and the network, enriched with contextual awareness such as device, application, content, location, and quality. At a granular level, service providers gain insight into the performance of individual applications and application categories, cloud-based services, speed test utilities, individual protocols, and more.

As stated, this use case looks at application QoE, relying on Sandvine's QoE scoring to measure the quality experienced by subscribers for popular applications, including video, web, social, VoIP, gaming, upload, and download. Aside from their adoption and high usage, these are also the key categories subscribers use when evaluating their service provider's performance.

As part of the use case, Sandvine delivers all the data via the ANI Portal, which is organized into the following panes:

Overview

The overview provides quick analysis of QoE as perceived from the subscriber standpoint (versus the network view in Sandvine's Performance Monitoring and Analysis). The initial focus is on poor score, but data grids can be configured to present popular services (by subscriber percentage, by volume), as well as combined views of metrics (e.g., average score for top services by volume).

These results can also be split by plan, where subscribers on lower-speed tiers may experience poorer quality for video sooner, as an example. It will also display the speed test providers, so that service providers can more easily identify why subscribers are seeing the reported throughput, latency, etc.

With Sandvine's Subscriber Service Analysis, service providers benefit from a subscribercentric view, which allows them to better troubleshoot subscriber issues, offer more personalized services, create competitive differentiation, and achieve customer loyalty.

Figure 1

Subscriber Service Analysis Overview



Subscriber Service Analysis



Recreate some of the reports from the Sandvine Global Internet Phenomena report (i.e., top upstream and downstream applications by volume percent) via Subscriber Service Analysis Overview

The overview pane (**Figure 1**) provides a high-level view of subscriber experience based on the period selected, which is then further categorized by subscriber classification – light, moderate, power, and extreme users. It answers the following questions:

1. Are the users with the highest data consumption experiencing poor/average QoE?
2. If the moderate users make up the majority of the subscribers, how good is their experience?

Combined with other use cases, such as Performance Monitoring and Analysis, this overview allows for a quick assessment via a troubleshooting workflow. For example, when a problem is reported at a location it can determine:

1. What services, plans, or devices are generating traffic at that location?
2. Is there a correlation between score and a device model/manufacture?
3. Is there a high presence of extreme users that may be contributing?

Figure 2

Example of Filtered List

Subscriber	Plan	Classification	Score	Volume total
000935C31029	Gold	Power Users	4.3	808.1 MB
000935A09218	Platinum	Extreme Users	4.2	1.02 GB
000935555479	Platinum	Power Users	3.9	956.5 MB
00093585A482	Bronze	Light Users	3.8	815.8 MB
000935CD96C8	Bronze	Moderate Users	3.7	789.8 MB
00093555C682	Silver	Power Users	3.6	589.4 MB

Figure 2 shows a filtered view of the Subscriber Service Analysis overview, which can then be drilled down further via an advanced option – the Real-Time Subscriber Insights use case (if deployed).

Plan Insights

The plan insights view (**Figure 3**) takes a deeper view and allows for the quick assessment and comparison of metrics between configured plans. It combines usage trends and subscriber QoE to aid in plan creation and subscriber management policies.

It answers key planning-related questions:

1. How are subscribers using the provisioned service?
2. Who are potential candidates for tier upgrades/transitions?
3. Is there a sudden change in plan adoption?
4. Are application usage trends varying between plans?

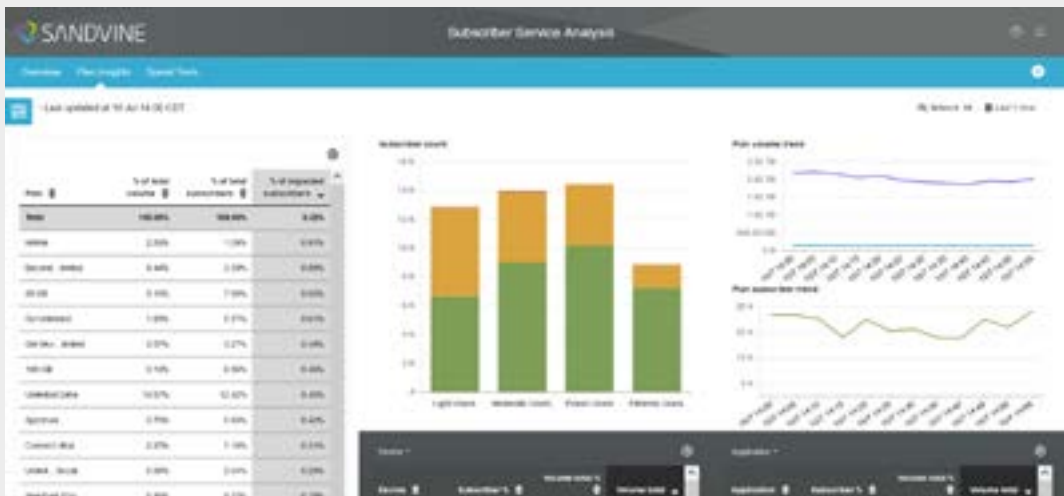
All these questions can quickly be assessed with the plan selection table, used to update the metrics without needing to re-apply filters.

Subscriber Service Analysis



Figure 3

Plan Insights



If Heavy User Management is being considered, this view will aid in defining “heavy”, and what traffic may be targeted based on consumption by Power/Extreme classifications.

When creating speed-based plans, service providers lack visibility into the types of subscribers and the traffic served on the plan. This view addresses this issue, and it also provides service providers with insights into the services and devices by each plan. It arms them with the necessary information to cross-sell or upsell, enabling proactive offers at the right time or escalating customer service priorities based on the customer segment.

Speed Tests

Whether perceived or actual congestion exists, subscribers often run speed tests when network QoE is in question. To aid service providers in preventing churn, this view (Figure 4) indicates when/where subscribers are generating speed tests, which are an indicator of perceived poor QoE and therefore require investigation. This view will show the locations with a high volume of speed tests reported, indicating parts of the network where most users are experiencing poor quality.

Figure 4

Speed Tests View



Subscriber Service Analysis



ABOUT SANDVINE

Sandvine's cloud-based Application and Network Intelligence portfolio helps customers deliver high quality, optimized experiences to consumers and enterprises. Customers use our solutions to analyze, optimize, and monetize application experiences using contextual machine learning-based insights and real-time actions. Market-leading classification of more than 95% of traffic across mobile and fixed networks by user, application, device, and location creates uniquely rich, real-time data that significantly enhances interactions between users and applications and drives revenues. For more information visit <http://www.sandvine.com> or follow Sandvine on Twitter @Sandvine.



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