



# Wholesale and Peering Link Management

## WHOLESALE AND PEERING LINK MANAGEMENT BENEFITS

- Delivers a measurably improved customer experience by measuring and managing peering links containing the most popular content
- Gets more from existing peering links and ensures upgraded bandwidth occurs only when links will deliver better QoE to important applications and content
- Provides better peering insights for all peers, including per AS path, origin, and transit QoE, as well as application usage; these insights ensure the right actions can be taken for maximum optimization

Minimize costs and maximize QoE by precisely managing peering links

### MARKET OVERVIEW

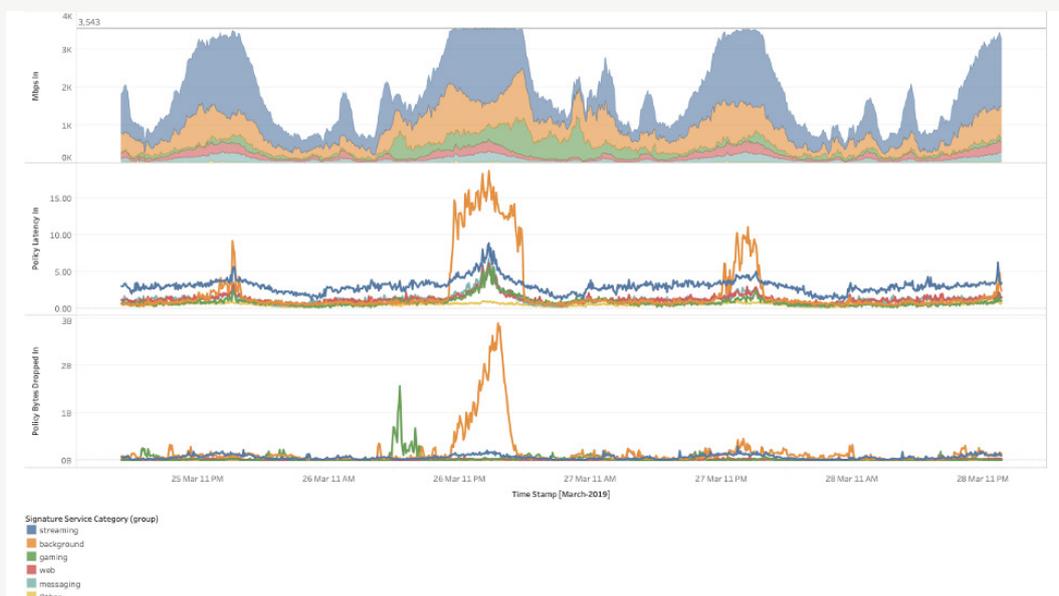
Not all network routes are created equal. When service providers connect to one another, some routes are more expensive than others, some are purchased or leased, while others are part of peering arrangements. Some contribute positively to quality of experience (QoE) while others have a negative impact.

Typically, these leased arrangements include smaller service providers connecting to multiple, larger (higher tier) networks. In order to maximize the most out of these leased links (i.e., better prices and for redundancy purposes), the smaller service providers need to manage the traffic based on the traffic destination, capacity available on each of the links (during outage and outside of outage), and cost per Mbps.

Service providers leading wholesale access links need to be able to control their throughput cost for peak traffic, while having the tools available to limit the peak traffic to maintain contractual obligations while also ensuring a good QoE. Additionally, these service providers are looking for ways to offer differentiated services to a diverse population on a shared resource. For example, service providers can differentiate by offering speed tier packages and associated pricing as well as provide an upsell opportunity for heavier or premium users.

Figure 1

Traffic management is applied to background traffic during peak time





The first step to control costs and ensure fair execution of peering arrangements is to enforce peak bandwidth levels on a per-link basis; however, a basic approach to peak enforcement can have significant negative side effects, as heavy users will dominate bandwidth usage, lowering QoE for other users and driving up peering costs.

Unfortunately, internet routers do not provide the flexibility and control over traffic selection and management needed to precisely control the available resources and QoE.

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## USE CASE OVERVIEW

**Sandvine's Wholesale and Peering Link Management use case leverages network-wide visibility and intelligent traffic management capabilities, allowing service providers greater control over links and the ability to define different traffic priorities.**

### This use case is designed to:

- Limit overall traffic levels to a service provider-defined peak
- Deprioritize the lowest priority traffic when traffic levels approach that peak; traffic is limited in this manner until a defined minimum threshold for the lowest priority traffic is reached, thereby preventing "starvation"
- Limit the next-lowest priority traffic when the lowest priority traffic has reached its minimum threshold
- Limit the highest priority traffic only when all lower priorities of traffic have reached their minimum thresholds
- Limit based on real-time versus non-real-time applications (i.e., P2P)

## Sandvine's Wholesale and Peering Link Management Key Capabilities

### Advanced Traffic Management

Sandvine's ActiveLogic delivers powerful and flexible shaping with advanced queue management algorithms, including fairness with weighted fair queueing, connection fairness, and normal or tiered subscriber fairness. ActiveLogic is designed to deliver the highest possible throughput through sophisticated algorithms, which is even more crucial at the scale and performance required for managing peering links.

### Application Layer Visibility

Sandvine offers application-layer visibility for QoE KPIs – throughput, latency, and packet loss – for all traffic on the peering link.

### Per AS Path Visibility and Control

Each BGP peer has statistics at the application layer and can set traffic control parameters (e.g., shaping, priority, weight). Sandvine also delivers visibility into up to 10 AS paths as well as transit versus origin. This visibility enables service providers to identify content networks (not directly peering with) that could benefit from a direct peering relationship, both for cost and QoE purposes (i.e., offloading a heavily congested peer or improving costs).



By using Sandvine to manage peering and transit links, network service providers can control costs by enforcing strict peaks, while at the same time maximizing the value and priority of the traffic carried over each link. Aside from general cost savings, service providers can further benefit by managing P2P traffic to favor more cost-effective networks versus running over expensive transit links.

**Additionally, by using Sandvine's unique QoE metrics, service providers can evaluate the quality delivered by each link and peer. Using this information, they can optimize peering and routing arrangements to protect – and even to raise – the QoE for applications – video, social sharing, and web browsing.**

## 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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