Network Analytics: Product Overview

Sandvine’s Network Analytics is the first and only true analytics product purpose-built for converged-access communications service providers (CSPs). By deploying Network Analytics, any provider, regardless of the combinations of access technologies in place, can immediately:

- Discover a depth and breadth of insight not available from any other solution
- Improve business performance by optimizing capital investments
- Lessen risk, by making decisions in a completely informed context

Right-Time Information for Real-Life Decisions

Service providers frequently cite challenges posed by rapidly-changing subscriber behavior and the varied adoption of new consumer devices. Sometimes, the data needed to make an informed decision exists, but is spread between so many systems that the manual consolidation effort is daunting, resulting in decisions that are based on assumptions rather than observed facts.

With Network Analytics, your business analysts gain access to information and data never before possible, and without all the expensive hassles of manual collection and aggregation. You are able to leverage disconnected, but related, information sources—particularly advanced measurements from your own network—to gain a complete context for business decisions. Ultimately, this knowledge empowers you to predict tomorrow and act today.

Focused Dashboards for Focused Analysis

- Use the Network Summary Dashboard to monitor overall network developments and track your organization’s key performance indicators
- Let the Real-Time Entertainment Dashboard show you metrics that matter, including video views, duration, and video quality of experience (QoE)
- Plan your congestion management policies based on the granular insight provided by the Traffic Management Dashboard, then view the positive impact
- Dive into the segmentation provided by the Usage Management Dashboard to identify opportunities to launch new services
- Investigate the ongoing adoption of IPv6 on your network with the IPv6 Transition Dashboard, gaining insight into the applications and devices driving the trends
- Control network costs and build business cases for capital projects using the Routing Efficiency Dashboard to gain a complete understanding of interconnect relationships
- Gain insight into how devices are being used across the network for customer segmentation and data-driven service innovation using the Device Insights Dashboard
- Gain insight into your Traffic Management deployment to manage congested resources and measure overall business benefit with the Capacity Planning Dashboard
Key Benefits

Gain depth and breadth of insight—from aggregate, network-wide key performance indicators to granular location- and device-specific measurements that deliver:

- Improved business performance by increasing returns, optimizing the value of investments, and preventing avoidable losses
- Managed risk with informed decisions that provide full context, including projections of the future based on the observed past—knowing is a safer strategy than guessing
- Increased revenue potential by gaining unique insight into segmented subscriber behavior, application adoption, and device penetration
- Reduced effort and expenses associated with manually gathering data and preparing status reports and presentations

Built on Sandvine’s Traffic Classification

Sandvine’s traffic classification technology extends beyond bytes and protocols by delivering metrics that matter, like event-counting, time-based measurements (e.g., round-trip time and video duration), and calculation of per-video and interim quality of experience scores. These measurements, many of which are uniquely provided by Sandvine, provide the data on which Network Analytics applies its processing algorithms.

“Data-driven decisions served by Network Analytics are more accurate and lead to higher profitability. Mobile networks, devices, and users change rapidly and Sandvine’s Network Analytics allows us to adapt equally rapidly.”

- Chris Demange, Senior Director of Core Network Engineering, Cricket Wireless

Key Features of Network Analytics

Network Analytics is a true network business intelligence solution, and offers an array of features that maximize actionable insight without imposing complicated operational requirements:

- Trend identification and projection, based on the measured past
- Support for custom visualizations and dashboards
- Export and save data from any chart displayed as a .PNG or .CSV file for post-processing
- Open API to an integrated data warehouse, for data import and export flexibility
- Powerful extract, transform and load (ETL) process
- Reusable data model and simple user interface enable custom report creation and modification
- Easily deployed on any spec-compliant, third-party server
FlexPanels: The Insights You Need, In Vivid Detail, Shareable With Your Teams.

FlexPanels represents the next generation of purpose-built analytics for CSPs. This new technology enables a brand new way to explore, visualize, and share critical network data.

Many solutions on the market today offer operators a fixed view of their data. They define what should be seen, when, and in what form. So if you have a score for your network and want to change that view, you are out of luck. With FlexPanels, you can customize any dashboard to suit your needs, and build views that are as unique as your network. Built on top of Sandvine’s unique data foundation, operators have unparalleled access to analyze datasets in Network Analytics.

The Insights You Need

FlexPanels allows easy access to important data. With full self-service data models, you can explore your network to solve problems and spot opportunities. With drag-and-drop rapid dashboard creation, even users without a background in data analysis can build the perfect view into their data.

In Vivid Detail

FlexPanels introduces a new library of visualization options, so you can pick the view that’s best for your data and your goals. Plus, the options are always growing, thanks to a community of open source visualization builders.

Shareable With Your Teams

Sharing important insights in Network Analytics has never been easier. FlexPanels dashboards can provide a window into your data, without exposing the full data foundation and editing capabilities. That means you can build exclusive live views for other teams, embed dashboards into portals, and even create role-based accounts for people to build their own dashboards.
Big Data’s Little Brother

With FlexPanels, you can join data from other systems with data within Network Analytics to unlock new perspectives. Exporting data from multiple data sources and manually joining it in tools like Excel is both time consuming and error-prone. FlexPanels allows direct access to a massive variety of databases, including Hadoop, so you can link datasets for analysis.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Service Data Models</td>
<td>Network Analytics data is preconfigured to be easily used and accessible. That means you don't need to be a data scientist to understand valuable network data.</td>
</tr>
<tr>
<td>Data Exploration</td>
<td>True analytics means being able to solve problems and discover opportunities. FlexPanels lets you dive deeply into your data, all in an easy-to-use drag-and-drop interface.</td>
</tr>
<tr>
<td>Limitless Visualizations</td>
<td>FlexPanels introduces a new library of visualization options so you can pick the view that's best for your data and your goals. Plus, the options are always growing, thanks to a community of open source visualization builders.</td>
</tr>
<tr>
<td>Simple, Safe Sharing</td>
<td>Sharing insights has never been easier. Build custom views for other people and teams, without allowing them full control. You can even embed views via iframes to power company dashboards and portals.</td>
</tr>
<tr>
<td>Data Import</td>
<td>FlexPanels allows direct access to a massive variety of databases, including Hadoop, so you can visually link datasets for analysis.</td>
</tr>
<tr>
<td>Dashboard Import</td>
<td>Share your FlexPanel dashboard creations on Sandbox, Sandvine's online user community. If you see a dashboard someone else has built, import it into your own Network Analytics to see your own data.</td>
</tr>
</tbody>
</table>
Network Summary Dashboard

Use the Network Summary Dashboard to monitor overall network developments, track your organization’s key performance indicators (KPIs), and initiate action.

Included with all Network Analytics deployments, the Network Summary Dashboard offers screens for a wide variety of functional roles, ranging from Marketing to Engineering, and for different levels of the organization. Whether the user is an operations analyst who wants to find performance outliers, or an executive interested only in aggregate KPIs, the Network Summary Dashboard is a one-stop destination for anyone who needs to stay on top of network developments.

Focused Screens for Focused Analysis

The Network Summary Dashboard divides data between many screens, each of which focuses on a particular theme.

<table>
<thead>
<tr>
<th>Screen</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Summary Home</td>
<td>Monitor your network’s key performance metrics at an aggregate level, and track the network’s top applications, websites, and video providers.</td>
</tr>
<tr>
<td>Network News Analyzer</td>
<td>Personalize the Network News events that appear on the Network Summary screen by configuring basic rules and thresholds.</td>
</tr>
<tr>
<td>Regional Analysis</td>
<td>Explore regional variations and identify performance outliers by contrasting metrics across regions, and drilling through three levels of network hierarchy.</td>
</tr>
<tr>
<td>Subscriber Analysis</td>
<td>Better understand how usage varies between similar subscriber groups by comparing subscriber behavior between all your service plans.</td>
</tr>
<tr>
<td>Application Type Analysis</td>
<td>Determine the applications and services that are driving network usage, first by application type, and then by drilling into the Application Analysis screen.</td>
</tr>
<tr>
<td>Handset Analysis</td>
<td>Mobile operators can examine the relationship between devices and subscriber usage to determine the network impact of different handsets.</td>
</tr>
<tr>
<td>Access Type Analysis</td>
<td>Converged access operators can contrast key metrics between different access technologies.</td>
</tr>
<tr>
<td>Dynamic Analysis</td>
<td>Discover hidden relationships between variables by visually exploring your network data using an interactive heatmap analysis tool.</td>
</tr>
<tr>
<td>Dynamic Analysis by Application Type</td>
<td>Create custom analysis reports that break down Application Type by factors such as service plan and geography.</td>
</tr>
<tr>
<td>Dynamic Analysis by Application</td>
<td>Create custom analysis reports that examine applications by factors like service plan and geography.</td>
</tr>
</tbody>
</table>
Getting Data Out of the Network and Into the Boardroom

The Network Summary Dashboard provides operators with network-wide visibility into key metrics, including:

- Active and Total Subscribers
- Peak Kbps Up and Down per Active Subscriber
- Daily and Monthly Median MB
- Upstream and Downstream Usage
- Prime Time Ratio
- Cumulative Consumption Distributions
- Top 25 lists

These metrics are presented in a variety of display widgets:

- Scorecards
- Trend projection graphs
- Historical overlay graphs
- 24-hour average day views
- Histograms
- Animated bubble charts

The data is segmented for examination by factors including:

- Application and application type
- Hierarchical geographical segmentation
- Service plan
- Access type
- Handset

Network Analytics is meant to simplify your life, and that includes communicating the insights that you find. Users can:

- Save every image, table, graph, and screen as a .PNG or .CSV file, with one click
- Email direct links to dashboard screens
- Create custom reports
Real-Time Entertainment Dashboard

Real-Time Entertainment will soon be the largest source of traffic on all consumer networks, regardless of access technology, and the Real-Time Entertainment dashboard sheds a revealing light on the characteristics that are unique to video and audio traffic. As these applications grow as a percentage of total traffic, it is critical that network operators understand and measure the subscriber experience.

Included with all Network Analytics deployments, the Real-Time Entertainment Dashboard shows you metrics that matter, including number of views, media duration, and quality of experience (QoE), revealing measurement-based insight not possible with any other solution.

Focused Screens for Focused Analysis

The Real-Time Entertainment Dashboard divides data between many screens and tabs. Each screen focuses on a particular theme, and tabs show different data aggregation views: Content Provider, Content Delivery Network, Region, Market, and Point of Presence.

Filtering functionality lets the user further segment the data, making it easy to hone in on particular areas of interest.

<table>
<thead>
<tr>
<th>Screen</th>
<th>Overview</th>
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</thead>
<tbody>
<tr>
<td>Engineering Summary</td>
<td>View a high-level scorecard showing key metrics like quality of experience, number of media views, media duration, and peak period consumption.</td>
</tr>
<tr>
<td>Quality of Experience Analysis</td>
<td>Examine quality scores and the contributory factors, understand how quality varies over an average day, and view quality distribution histograms.</td>
</tr>
<tr>
<td>Plan Analysis and Calculator</td>
<td>Explore potential service plan options based on per-month usage, per-video charging, and per-minute billing based on your network's measured usage.</td>
</tr>
<tr>
<td>Over-the-Top Video Adoption and Revenue</td>
<td>Quantify the average revenue from users (ARFU) that over-the-top providers are receiving from your subscriber base, and monitor adoption rates.</td>
</tr>
<tr>
<td>Dynamic Analysis</td>
<td>Discover hidden relationships between variables by visually exploring your network data using an interactive heatmap analysis tool.</td>
</tr>
</tbody>
</table>

“Sandvine's Real-Time Entertainment Dashboard is enabling us to deliver the tools and features our clients need for valuable insight into actual subscriber metrics.”

- Bill Poellmitz, President & CEO, ClearSky
The Real-Time Entertainment Dashboard provides operators with key metrics, including:

- Video Quality of Experience Score based on measured display characteristics and transport quality
- Service Adoption Rates
- Media Duration
- Number of Media Views
- Percentage of Up, Down and Total Traffic

These metrics are presented in variety of display widgets:

- Scorecards
- Trend projection graphs
- 24-hour average day views
- Histograms
- Heatmaps

The data is segmented for examination by factors including:

- Content Provider
- Content Delivery Network
- Geographical hierarchy
- Media Stream Type (progressive or adaptive), Container, and Resolution
- Video Codec and Audio Codec
- Client Device and Operating System
- Session Protocol and Transport Protocol

Network Analytics is meant to simplify your life, and that includes communicating the insights that you find. Users can:

- Save every image, table, graph, and screen as a .PNG or .CSV file, with one click
- Email direct links to dashboard screens
- Create custom reports
Device Insights Dashboard

With more than 3.2 billion mobile subscribers around the globe, almost half of the world’s population uses mobile communications. The number of people using multiple devices or SIM cards is also expected to increase rapidly from the almost 7 billion SIM-enabled connections recorded in 2013. One main catalyst for this growth is emerging markets, where each day someone connects to the Internet for the first time, and most often their first experience of the Internet is happening on a mobile device. To prepare networks for future data demands, the growth of mobile subscribers, and to ensure that revenue is aligned to this growth, operators need dynamic insight into the devices and applications that are driving demand on the network to protect subscriber quality of experience (QoE) and develop services that subscribers will value in the future.

Using the Device Insights Dashboard

The Device Insights Dashboard provides device-level insight that is split between two screens, Device Summary and Application Analysis:

<table>
<thead>
<tr>
<th>Screen</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Summary</td>
<td>Compare and contrast performance metrics of the top devices on the network by manufacturer, operating system, and radio capability.</td>
</tr>
<tr>
<td>Application Analysis</td>
<td>Segment your subscribers more accurately with a complete understanding of the applications that are driving demand on the network, unique by manufacturer with handset-level granularity.</td>
</tr>
</tbody>
</table>

Using the available drop-down menus or the device navigation tree, refining your analysis by Manufacturer, Operating System, or Radio Capability is only a few mouse clicks away. A built-in quick search field enables you to type a few characters of text to return related devices—perfect if you’re trying to get a quick and very specific answer to a very focused, device-related question.

The Application Analysis screen provides insight into trends of top applications by manufacturer, with granularity into top devices by a single application. Top application categories reveal how usage patterns can vary widely by device and manufacturer, and analysis can be further refined for increased subscriber segmentation accuracy, while enabling marketing users to spot third-party partnership and promotional opportunities that were previously hidden.

“Sandvine’s Network Analytics product is undoubtedly the technological leader among other best-of-breed solutions. Each dashboard displays useful network data in a logical and meaningful way, so our IT and marketing teams can access the information we need to make long term service innovation, cost reduction and capacity planning decisions for our expanding network.”

- Al Zahursky, IT Manager, SRT Communications
The Device Insights Dashboard provides marketing, engineering, and operations teams with interactive, actionable insight into Manufacturer and Device-related trends, including:

- Active Subscribers
- Total Subscribers
- % of Daily Traffic
- % of Subscribers
- Median MB
- Applications

Analysis can be further refined by filtering:

- Manufacturer
- Radio Capability
- Downstream vs. Upstream
- Operating System
- Top Application
- Top/Bottom 10, 20, or 30
- Application Type

Data from the Device Insights Dashboard is presented using powerful, interactive trend and bar charts that can be exported to .PNG or .CSV, while an open API to an integrated data warehouse offers the flexibility of integrating Network Analytics data with third-party business intelligence systems.
Routing Efficiency Dashboard

Control network costs and build business cases for capital projects using the Routing Efficiency Dashboard to manage routing paths, identify high quality Autonomous Systems (AS), and gain a complete understanding of interconnect relationships.

Included within Sandvine's Network Analytics base deployments, the Routing Efficiency Dashboard provides analytics based on the Border Gateway Protocol (BGP)—used by networks to establish routing between one another. With visibility into network routing behaviors, communications service providers (CSPs) can create more efficient interconnect relationships that improve overall network quality and reduce transit costs.

Peering into Transit Relationships

Many operators provision their network based on either peak period traffic volume or a measure of per-subscriber bandwidth at peak times. To meet network demands and deliver content to subscribers efficiently and at the lowest cost, operators create transit links and interconnect relationships with other CSPs.

These relationships carry operational costs for providers defined by Peak Rate upstream and downstream as well as total traffic sent across international and domestic routing links.

Using the focused analysis of the Routing Efficiency Dashboard, CSPs gain a complete understanding of the forces driving routing utilization to manage interconnect and transit relationships more effectively.

<table>
<thead>
<tr>
<th>Screen</th>
<th>Overview</th>
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</thead>
<tbody>
<tr>
<td>Application Analysis</td>
<td>Understand the impact of application traffic across Autonomous Systems (AS), including Origin AS, First-Hop AS, and Second-Hop AS.</td>
</tr>
</tbody>
</table>

“Sandvine's Network Analytics product has been instrumental in identifying the applications and quality metrics on our network.”

- Harris Miller, Director of Network Services, EATEL
With visibility into network interconnect and transit relationships, CSPs of all access types can:

**Manage Network Costs**
- Identify inefficient & costly routing paths
- Deploy network policies to optimize routing paths over lower-cost peers or transit links
- Reduce Network Costs

**Measure & Improve Interconnect Quality**
- Isolate low-quality interconnect relationships
- Deploy network policies to distribute routing traffic over higher-quality peers of transit links
- Increase Subscriber Quality of Experience
Capacity Planning Dashboard

The combination of increasing subscriber bandwidth demands and the operation of multiple access networks simultaneously makes meeting current and future bandwidth requirements a complex and challenging proposition for network engineering, operations, and access network provisioning teams. Further complicating capacity planning decisions is that additional capacity is often added to the network based on an estimation of peak bandwidth demands, or a measure of the number of subscribers at peak without consideration for the percentage of time a resource spends in a congested state, the level of quality that a resource is delivering, or what potential savings exist on the network from deferring an upgrade decision that doesn’t impact subscriber QoE.

Using the Capacity Planning Dashboard

The Capacity Planning Dashboard provides network-wide views with location-level granularity into key business metrics (Quality Score, % of Time Congested, Deferral Period, Days to Upgrade, etc.) of congested resources across the network.

<table>
<thead>
<tr>
<th>Screen</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location Level-1</td>
<td>Examine resources utilization and congestion, and monitor a watch list of heavily-loaded Level-1 locations (e.g., BRAS, RNC, etc.)</td>
</tr>
<tr>
<td>Location Level-2</td>
<td>Examine resources utilization and congestion, and monitor a watch list of heavily-loaded Level-2 locations (e.g., DSLAM, Cell ID, etc.)</td>
</tr>
</tbody>
</table>

It features daily trend charts that provide 1-month and 13-month views into how key metrics are changing for a particular resource, to help predict what network congestion, resource quality, and even the number of subscribers at peak for a particular resource might look like in the future.

Measured Business Benefits—Estimated Total Network Savings from Fairshare Traffic Management Deployment

- Annual Discount Rate: 15%
- Capacity Upgrade Cost: $20,000
- Min. Acceptable Quality Score: 50
- Avg. Network Deferral Period: 1 month
- Total Network Savings: $6,203

“Sandvine’s Fairshare Traffic Management product is enabling us to better manage congestion and extend the lives of congested resources across the network”

- Ken Paker, VP Network Services, TDS Telecom
Getting Data Out of the Network and Into the Boardroom

The Capacity Planning Dashboard provides engineering, operations and network provisioning teams with interactive, actionable insight into network resource performance trends across the network, including:

- Quality Score
- Percentage of Time Congested
- Quality Score at Peak
- Mbps Down at Peak
- Subscribers at Peak
- Downstream Volume (MB)
- Deferral Period
- Days to Upgrade

Analysis can be further refined by isolating:

- Location Level 1 (BRAS, RNC, etc.)
- Location Level 2 (DSLAM, Cell ID, etc.)

An included Measured Business Benefits Calculator estimates the location savings and ROI of your Fairshare Traffic Management investment based on the Minimum Acceptable Quality Score, Average Deferral Period, Annual Discount Rate and Capacity Upgrade Costs.

With this intelligence, operators can manage congestion and plan additional network infrastructure investment based on resource quality.

Capacity Planning Dashboard, Location Level-2 Analysis
IPv6 Transition Dashboard

With the IPv6 Transition Dashboard, communications service providers (CSPs) can monitor the growth of IP addressing technologies on the network, and increase the accuracy of infrastructure planning activities with incredible breadth and depth of insight into the application types, applications, and devices that are powering IPv6 adoption on the network.

Included within Sandvine's Network Analytics base deployments, the IPv6 Transition Dashboard provides extreme granularity of insight, powerful out-of-the-box measurements, and forecasting capabilities to analyze IPv6 adoption trends by device, application, and application type.

Transitioning to IPv6

The IPv6 Transition Dashboard provides a number of views to assist CSPs in a steady migration to an IPv6 world:

<table>
<thead>
<tr>
<th>Tab</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>Highlights the ratio of IPv6 traffic compared to traffic from other IP technologies for all application types across the network, presented through Bubble and Trend Charts and also a network topology drill-down menu.</td>
</tr>
<tr>
<td>Application Type</td>
<td>Shows the ratio of IPv6 traffic compared to other IP technologies for selected categories of application traffic such as Real-Time Entertainment or Social Networking.</td>
</tr>
<tr>
<td>Application</td>
<td>Presents the ratio of IPv6 traffic compared to other IP technologies for the top individual applications across the network such as YouTube, Netflix, or Facebook.</td>
</tr>
<tr>
<td>Device</td>
<td>Displays the ratio of IPv6 traffic to other IP technologies for the top devices across the network such as Game Consoles, Tablets, Smartphones, and Computers.</td>
</tr>
</tbody>
</table>

As the roll out of IPv6 by content provider continues to broaden, the overall share of native IPv6 traffic on broadband networks also increases. For example, when Netflix implemented IPv6 in 2012, their share of native IPv6 traffic on a North American Fixed Access network more than doubled in less than two weeks. The bubble chart below shows how other Real-Time Entertainment applications, such as YouTube, can drive IPv6 adoption across the network as well.

These differences underscore the need for clear visibility into the application types, applications, and devices powering the adoption of IPv6 in order to accurately plan and accommodate for this growth, which only the Network Analytics IPv6 Transition Dashboard can deliver.
Getting Data Out of the Network and Into the Boardroom

The IPv6 Transition Dashboard provides operators with visibility into the applications and devices powering the adoption, including:

- Active Subscribers (%)
- Total Bytes (%)
- Average Active Subscribers
- Average Total GBs

These metrics are presented by IP Technology through interactive display widgets:

- Bubble charts
- Trend charts

Operators are able to view metrics in aggregate or segment the data for more focused analysis by factors including:

- Network Topology (Region, Market and PoP-level)
- Application Type
- IP Technology

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- Save every image, table, graph, and screen as a .PNG or .CSV file, with one click
- Email direct links to dashboard screens
- Create custom reports
Traffic Management Dashboard

Plan your congestion management policies and optimally prioritize your capital investments based on the granular insight provided by the Traffic Management Dashboard, then quantifiably demonstrate the positive impacts of your decisions.

The Traffic Management Dashboard focuses on optimizing network performance and capacity planning by letting Cable Internet providers monitor network resources for the telltale signs of congestion. Detailed measurements monitor the frequency and prevalence of congestion on a per-QAM level, letting you focus capital spending where it will provide the largest return.

Focused Screens for Focused Analysis

The Traffic Management Dashboard divides data between many screens, each of which focuses on a particular theme. Operators are able to view aggregate metrics, and can use a search utility or network hierarchy tree to focus attention on particular sections of the network.

<table>
<thead>
<tr>
<th>Screen</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Analysis</td>
<td>Examine resource utilization and congestion network-wide to spot emerging problems, and monitor a watch list of heavily-loaded network elements.</td>
</tr>
<tr>
<td>Network Analysis</td>
<td>Quantify the operational impact of network congestion by investigating detailed element utilization metrics.</td>
</tr>
<tr>
<td>Fairshare Analysis</td>
<td>Audit your Sandvine Fairshare deployment to understand the frequency and widespread positive impact of subscriber management events.</td>
</tr>
<tr>
<td>Subscriber Persona</td>
<td>Identify the usage profile of your most profitable subscribers and discover the factors behind subscriber consumption.</td>
</tr>
<tr>
<td>Capacity Planning</td>
<td>Project capacity requirements to explore the return on investment of traffic management, using your own network data and financial modeling.</td>
</tr>
</tbody>
</table>

“Sandvine’s Business Intelligence products take capacity planning to the next level.”

-Blaine Schafer, VP of Information and Telecom Systems, Cable Bahamas
Getting Data Out of the Network and Into the Boardroom

The Traffic Management Dashboard provides Cable operators with per-resource visibility into key metrics, including:

- Round-Trip Time (RTT) quality metrics: Max RTT, RTT at Peak
- Total Traffic Volume
- Percent of Time Congested
- Peak Bandwidth
- Average Peak Bandwidth per Subscriber
- Peak-to-Trough Bandwidth Ratio
- Percent of Packets Dropped and Delayed
- Subscriber Persona profiles

Fairshare Traffic Management metrics:

- Number of Managed and Unmanaged Subscribers
- Number of Management Events
- Managed Subscriber RTT
- Unmanaged Subscriber RTT

These metrics are presented in variety of display widgets:

- Scorecards and data tables
- Trend Projection graphs
- 24-hour average day views
- Histograms

Cable operators are able to view metrics in aggregate, and can use a search utility or network hierarchy tree to focus attention on particular sections of the network, down to per-QAM granularity.

Network Analytics is meant to simplify your life, and that includes communicating the insights that you find. Users can:

- Save every image, table, graph, and screen as a .PNG or .CSV file, with one click
- Email direct links to dashboard screens
- Create custom reports
Usage Management Dashboard

Understand how your service plans are performing at a network and business level using the detailed analysis provided by the Usage Management Dashboard. Use the same data to identify behavioral segments that justify the creation of new revenue-generating service plans.

The Usage Management Dashboard is closely integrated with Sandvine’s Usage Management product, and provides insight into subscriber consumption and its relationship to usage quotas and other service plan characteristics. By understanding how existing services are being used, operators can optimize these service plans and identify new opportunities.

Focused Screens for Focused Analysis

The Usage Management Dashboard divides data between eight screens, each of which focuses on a particular theme.

<table>
<thead>
<tr>
<th>Screen</th>
<th>Overview</th>
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</thead>
<tbody>
<tr>
<td>Engineering Summary</td>
<td>View data consumption statistics including overage, top-ups, and zero-rating, segmented by service plan and plotted and projected over time.</td>
</tr>
<tr>
<td>Service Analysis</td>
<td>Measure the performance of each service plan based on key metrics broken down by region, differentiating between local subscribers and roaming users.</td>
</tr>
<tr>
<td>Quota Profile</td>
<td>Assess the effectiveness of each subscription quota limit by examining the rate at which different subscriber groups consume quota.</td>
</tr>
<tr>
<td>Subscriber Profile</td>
<td>Understand why some subscribers consume more data than others by exploring different behavioral segments.</td>
</tr>
<tr>
<td>Marketing Summary</td>
<td>Gain a network-wide view of the business performance of your service plans, including revenue breakdowns by subscription, top-up, and overage.</td>
</tr>
<tr>
<td>Regional Analysis</td>
<td>Identify your most popular and profitable region and service plan combinations, and determine what makes each region unique.</td>
</tr>
<tr>
<td>Service Planning Calculator</td>
<td>Explore the potential of new billing and quota thresholds by performing scenario analysis using your own network data and service plans.</td>
</tr>
<tr>
<td>Dynamic Analysis</td>
<td>Discover hidden relationships between variables by visually exploring your network data using an interactive heatmap analysis tool.</td>
</tr>
</tbody>
</table>

“The ability to deliver optimal broadband and innovative services to subscribers, regardless of the access technology, was a key driver for our selection of Sandvine’s solutions and services.”

- Douglas Reed, Executive Head of Strategy and Innovation, Vox Telecom
The Usage Management Dashboard provides operators with key subscriber service plan metrics, including:

- Median Usage
- Median Overage
- Percent of Subscribers over Quota
- Percent of Subscribers who Top Up
- Zero-Rated Bytes
- Upstream and Downstream Usage
- Revenue from Subscriptions, Overage Charges and Top-Ups

These metrics are presented in variety of display widgets:

- Scorecards
- Trend projection graphs
- Historical overlay graphs
- Pie, column, and bar charts
- Heatmaps

The data is segmented for examination by factors including:

- Quota Name
- Quota Group
- Region
- Subscriber Segmentation by usage and frequency of quota exhaustion

Network Analytics is meant to simplify your life, and that includes communicating the insights that you find. Users can:

- Save every image, table, graph, and screen as a .PNG or .CSV file, with one click
- Email direct links to dashboard screens
- Create custom reports