

DATA SHEET

Traffic Explorer

Traffic Explorer[®] is designed for use with Ciena's Route Explorer[®] product to integrate route and traffic flow analytics.

With network-wide visibility into routing and traffic behavior, service providers, enterprises, government agencies and educational institutions can operate, troubleshoot, plan and optimize their networks with unprecedented accuracy and speed. For the first time, network engineers and operators are able to view complex IPv4 and IPv6 networks as integrated systems rather than collections of discrete devices and links, enabling them to maximize IT efficiency and productivity while reducing the capital and operational expenses required to maintain top network application and service quality.



Figure 1. Traffic Explorer is a member of the Blue Planet Route Optimization and Assurance (ROA) product family. It requires the base Route Explorer license.

Unprecedented network-wide visibility

While many traffic flow analysis products claim to provide 'network-wide' visibility, in reality they deliver only a link-by-link view of traffic statistics on a small subset of the network. Without being able to view traffic flows across the entire network and understand how dynamic routing changes and failures impact traffic behavior, engineers are limited to manually correlating and interpreting disparate link traffic statistics, SNMP device polling data, router command line output and log files to construct even a rough picture of network state. This greatly limits their ability to determine the root cause of problems quickly, optimize network operation, and effectively analyze and plan for network change and growth.

Features and Benefits

- Speeds MTTR with alerts and realtime visibility into the impacts of routing changes and failures on traffic flows
- Identifies link congestion quickly with end-to-end traffic path views
- Eliminates finger pointing over SLA disputes with real-time and historical views into Layer 2 and Layer 3 VPN traffic behavior
- Avoids service interruptions by simulating planned network changes and error conditions to understand the impact they will have on routing and traffic behavior
- Enables easy viewing of traffic and routing data analyses for optimizing peering/transit costs, data mining and group-based usage monitoring
- Brings up new customers and services faster with fewer issues by modeling them beforehand on the current network topology
- Uses what-if routing simulations and historical traffic matrices for error-free traffic engineering and accurate capacity planning
- Features a small deployment footprint, minimal network load and continuous auto-discovery for delivering fast time-to-value with low management overhead

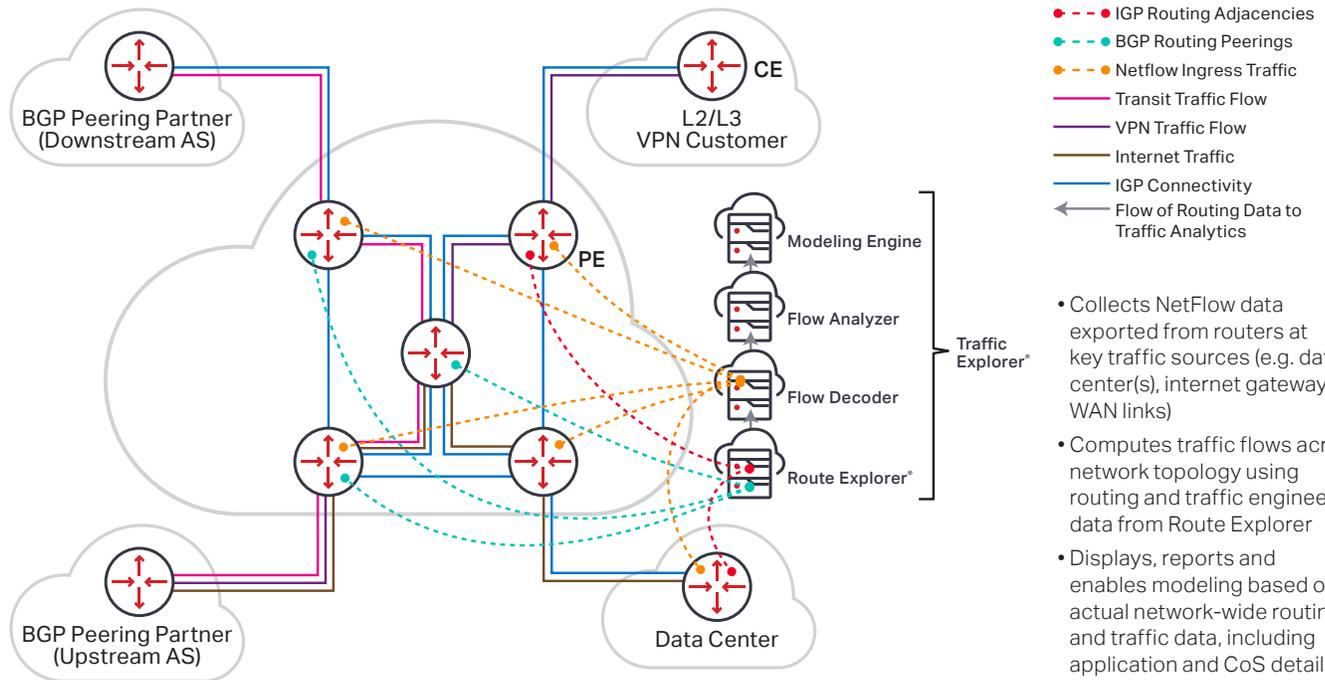


Figure 2. How Traffic Explorer works

By leveraging the real-time network topology intelligence of Route Explorer, the industry's leading route analytics platform, Traffic Explorer extends traditional traffic analysis beyond interface-centric reporting. Without using probes and adding the network overhead associated with polling-based techniques, Traffic Explorer gives unique visibility into traffic flows over every link in the network, enabling network professionals to work smarter. Engineers can interact with an 'as-running' model of their network, with traffic flow information dynamically mapped on a Layer 3 topology map. This includes IGP, BGP and multicast traffic, as well as traffic flowing across TE tunnels as well as Layer 2 and Layer 3 VPNs. Traffic Explorer's comprehensive view of network-wide traffic gives network engineers and operators an unmatched, real-time picture of network-wide behavior, while delivering significant bottom-line benefits to any organization.

Superior root cause analysis

Traffic Explorer's topology-based approach goes beyond traditional traffic analysis tools, helping engineers to quickly diagnose network problems and perform sophisticated root cause analysis. Since Traffic Explorer knows the actual routed path through the network for every flow, operators can quickly focus their attention on suspect devices or links, rapidly pinpointing the cause of poorly performing applications. Traffic Explorer also shows the impact of routing changes or failures, as they happen, on network-wide traffic, highlighting traffic shifts that often result in network hot spots and impact application performance.

Conventional traffic analysis tools can detect sudden increases in link utilization on monitored links, but are unable to determine whether the increase is due to new traffic loads on the network, or the failure or change somewhere else in the network that caused traffic to be re-routed over the congested link. Traffic Explorer not only answers this question for every link, but also shows the impact of every routing change on network-wide traffic by application, Class of Service (CoS) and traffic engineering tunnels.

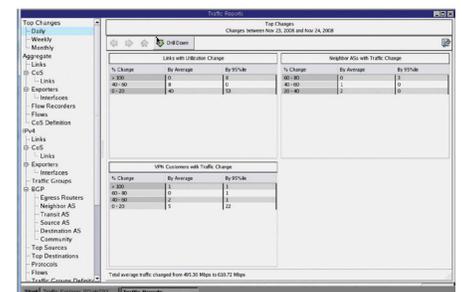


Figure 3. Top Traffic Changes: Traffic Explorer provides flexible insight into traffic volume changes exceeding user-defined thresholds on a daily, weekly and monthly basis for links, BGP Autonomous Systems (AS) and Class of Service (CoS)

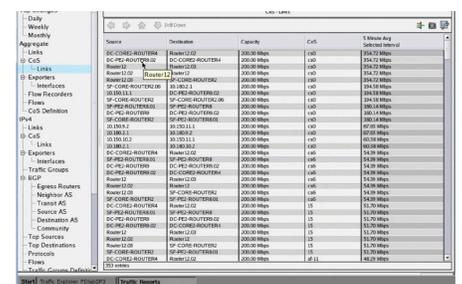


Figure 4. Detailed Flow Analysis: Traffic Explorer provides at-a-glance and detailed views of traffic volumes by links, CoS, BGP attributes, and traffic engineering tunnels

This information helps operators prioritize their response to those situations that are having the greatest impact on service delivery. Since Route Explorer understands both internal (OSPF, IS-IS and EIGRP) routing as well as external BGP routing in an integrated fashion, it provides the most accurate insight into the causes of major fluctuations in Internet or other inter-AS traffic transiting the network core, helping engineers solve congestion and service degradation problems more quickly.

Accurately model changes on the as-running network

'What-if' analysis features deliver the industry's most accurate network modeling solution, enabling engineers to easily predict the impact of network changes, whether resolving immediate issues or performing long-term planning. Existing modeling tools work offline, using 'snapshots' of previously captured network topology that quickly become outdated, along with manually entered traffic loads that are at best, crude approximations of actual network traffic. The inaccurate nature of these models limits their utility for long-term planning. By contrast, using Traffic Explorer, changes can be modeled on the 'as running' network using the actual routed topology and traffic loads, either at the current time or from historical data.

Traffic Explorer lets engineers simulate a broad range of network changes, such as adding or failing routers, interfaces and peerings; adding or moving prefixes; adjusting IGP metrics, BGP configurations or link capacities; or simulating changes in traffic loads or new application deployments. Planning with an accurate, up-to-date network model helps architects see the real impact of their changes before implementing, thereby reducing time-to-deploy and avoiding unexpected problems. IT organizations can effortlessly maintain accurate network documentation, whether for regulatory compliance requirements or as part of their best practice processes.

Globally optimize for better performance and cost

Traffic Explorer's unique capabilities give network managers new options for dealing with problems, such as congested links, while delivering a strong return on investment. Other traffic analysis solutions provide no insight into network traffic beyond the congested link, and can only suggest actions such as stopping unwanted traffic, rescheduling times when offending applications are run or adjusting priority schemes on the router. This limited, link-centric view is like managing the network with tunnel-vision, and results in local optimizations that are often not the best course of action.

Traffic Explorer's integrated view of network-wide routing and link utilizations lets engineers explore a variety of options,

such as modeling changes that re-route some traffic flows away from the congested link. In many cases, engineers can easily resolve congestion problems without the time delay and cost involved in upgrading link capacity. Traffic Explorer can similarly be used to engineer traffic paths to avoid performance problems or SLA violations during peak traffic loads. The ability to optimize globally across the entire network makes it possible for IT organizations to maximize network asset utilization and service availability, while reducing capital expenditures.

Predict and plan for network-wide capacity requirements

Traffic Explorer gives network managers the information they need to accurately predict and plan for future capacity needs across their entire network. Engineers can view and analyze historical traffic trends by volume or utilization, including breakdowns by application, CoS and traffic engineering tunnel on every link in the network, as well as by exit routers or Nexthop AS.

Going well beyond the typical link-based traffic statistics provided by other tools, Traffic Explorer helps engineers analyze and manipulate a network-wide traffic matrix, showing traffic volumes between every source/destination pair in the network. Detailed capacity projections can be accomplished by exporting the full traffic matrix to a spreadsheet, adjusting any source/destination traffic volume based on internal initiatives or forecasted loads, and then importing the updated matrix to see the impact on network-wide link utilizations.

New application deployments can be accurately 'tested' on the as-running network, before they are deployed, by adding expected traffic loads to existing traffic volumes, and viewing the resulting traffic load on every link. Engineers can quickly identify potential hot spots by application or CoS, and determine if traffic can be re-routed around the congested links to save unnecessary bandwidth upgrades, or if additional capacity is required.

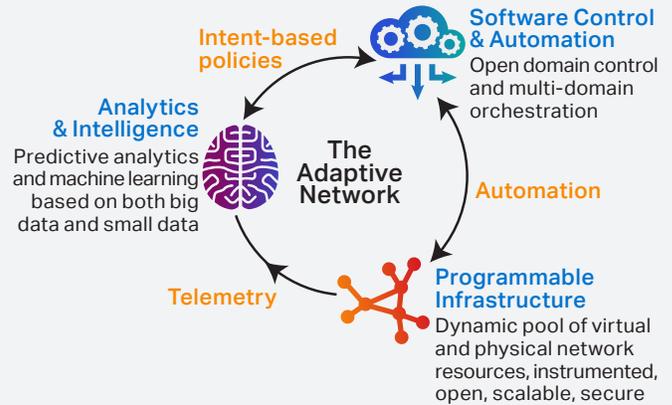
Valuable peering analysis and modeling

Optimizing peering and transit arrangements can significantly reduce service provider operating costs. Traffic Explorer arms engineers with the most complete set of capabilities including the ability to monitor peering or transit traffic to ensure it is within contracted ranges, as well as analyze, identify and justify new peering relationships.

Whether moving traffic from paid transit to settlement-free peering, or balancing between multiple transit providers, Traffic Explorer provides the information operators need to optimize their peering traffic and maximize their bottom line.

The Adaptive Network

The Adaptive Network is Ciena's vision of a new target end-state for network providers. Utilizing automation guided by analytics and intent-based policies, the Adaptive Network rapidly scales, self-configures, and self-optimizes by constantly assessing network pressures and demands. The Adaptive Network is built upon three foundational elements: Programmable Infrastructure, Analytics & Intelligence, and Software Control & Automation. The Blue Planet Route Optimization and Assurance products, including Traffic Explorer, play a key role within Software Control & Automation.



Traffic Explorer is unique in its ability to not only monitor and analyze peering traffic, but also accurately model changes to the network, allowing engineers to understand the impact on peering or transit traffic before implementing any changes. BGP configurations can be modified to move traffic between existing and potential neighbor providers, showing how actual traffic loads would be affected. New peering relationships can be simulated, allowing operators to see the impact on traffic across their entire network. Since Route Explorer understands full end-to-end routing (both IGP and BGP), service providers can even determine the impact on peering and transit traffic when making unrelated changes to the core of their network.

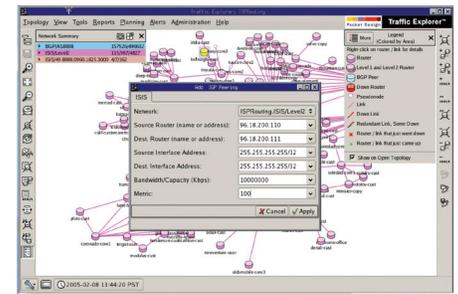


Figure 5. Routing and Traffic Planning: Explorer's modeling tools let engineers simulate additions, changes or failures to the network's actual routing or traffic, providing unmatched accuracy for predicting, planning and analyzing network behavior

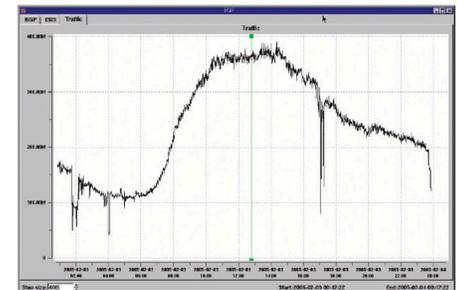


Figure 6. History Navigator: Traffic Explorer lets engineers analyze traffic trends on any link, simulate traffic growth or network changes for capacity planning, as well as review historical traffic and routing events to troubleshoot intermittent or past problems

Don't just respond to problems... prevent them

Traffic Explorer enables engineers to easily perform failure impact analyses, showing them how their network would respond in various situations. Simulating link or router failures and seeing the impact on network-wide traffic across all links is as easy as clicking on the interactive topology map. Operators can not only confirm network redundancy, but also predict link loads under different, even cascading, failure scenarios. If backup routes are non-existent, or not as desired, engineers can model changes to the routed network to maintain correct operation when things fail, and ensure ongoing service delivery. The Explorer Suite's accurate analyses of network-wide routing traffic and performance provide valuable insight into potential problems, helping to prevent service outages and maximize IT preparedness.

Minimize a top source of network problems—routine maintenance

Studies show that configuration mistakes made during routine maintenance are a major cause of network service disruptions and downtime. The combination of Route Explorer and Traffic Explorer provides network engineers with accurate network routing and traffic information, enabling streamlined and trouble-free maintenance activities.

Network managers are able to understand the impact of removing a link or router from service before taking any action, accurately predict the result of changes to router configurations, compare and document network conditions before and after implementing changes, and verify correct network operations after completing the maintenance activity, rather than relying on users' complaints for the first indication of trouble.

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