

NetReflex

Product Overview

Network service providers operate in a challenging and dynamic market. Traffic continues to grow at a prodigious pace, and traffic patterns can change rapidly with new applications, services, and changing customer behavior. Efficient planning relies on a thorough understanding of traffic and trends, but due to limitations of existing reporting solutions, many network operators are making today's decisions based on last year's data.

Juniper Networks NetReflex is a powerful network analytics engine that allows you to extract critical intelligence from your network. NetReflex gives you the deep understanding you need to optimize network planning, improve operational efficiency, and drive down network costs.

Product Description

Keeping your network running at maximum efficiency is a challenging job even in the best case scenario. Without detailed insight into routing, traffic, and VPN profiles, network planning can be even more challenging—a bit like flying a plane without instrumentation—which is possible, but not very confidence inspiring or efficient. Traditional network reporting solutions do not do enough to address these challenges. They provide basic information, but what is available is often historical and presented in the form of raw data, leaving any insights or analysis up to the operator.

Juniper Networks® NetReflex is a network-wide operational decision support system that provides the information and insights you need to keep your network running at optimal efficiency. NetReflex combines a powerful analytics engine with a state-of-the-art visual dashboard that presents insights from the network via clear and customizable graphics, statistics, and drilldowns. When combined with Juniper Networks routing platforms supporting J-Flow, the industry's highest performing network sampling technology, network operators have a complete network insight solution, combining data extraction technologies at the network layer, a powerful analytics engine, and a user-friendly dashboard.

NetReflex is available in two configurations: NetReflex IP, which provides a holistic view of the network traffic, topology, and anomalies; and NetReflex MPLS, which enables a content service provider to monitor the performance of an MPLS network, profiling capacity demands and usage for each VPN, provider edge to provider edge (PE-PE) router pairs, and class of service (CoS). Both NetReflex offerings leverage the same powerful analytics engine and unique "process first" architecture, which dramatically improves scalability, reduces costs, and enables the real-time decision making that is key to the Juniper analytics advantage.

With the powerful insights you gain from NetReflex, you can more readily:

- **Reduce costs** through more informed network and capacity planning decisions
- **Improve operational efficiency** with detailed visibility of end-to-end network traffic utilization and trends

The table below illustrates how network operators can leverage either NetReflex IP or NetReflex MPLS to reduce costs, improve efficiency, and facilitate forward-looking network planning.

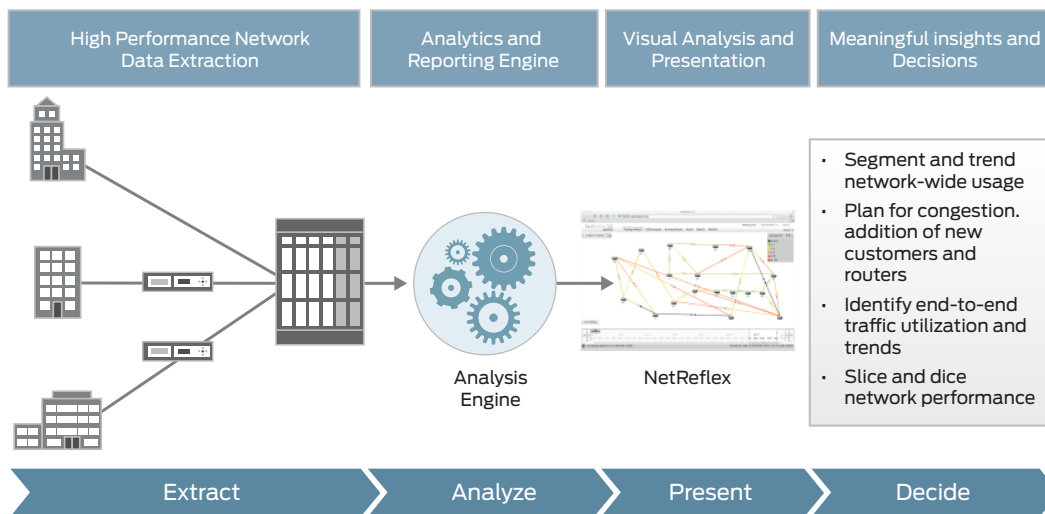


Figure 1. How NetReflex works

Table 1. NetReflex IP and MPLS Functionality

Function	NetReflex IP	NetReflex MPLS
Capabilities overview	View and segment traffic trends network-wide to plan for congestion, eliminate network errors, and monitor QoS/ QoE. Helps make decisions for capacity planning, traffic routing, caching, and other optimizations.	Segment and trend MPLS and VPN usage to plan for congestion, add new VPN customers, and add new provider (P) and PE routers.
Visualization	Use of traffic matrices and topology visualization to analyze traffic flows and network designs to optimize efficiency.	Identify traffic utilization and trends to optimize operational cost on a per VPN, PE-PE pair, or CoS basis.
Benefits	Unmatched visibility into network-wide traffic demands and traffic matrices—a global, near-real-time view of who is talking to whom on what links, across the network.	Ability to slice and dice network performance by VPN, CoS, and PE-PE router pairs provides granular insights into service usage. Link utilization of any link by VPN, CoS, and PE-PE enables more efficient planning and pricing.

Architecture and Key Components

At the heart of the Juniper Networks analytics portfolio is a unique “analyze first” architecture that simultaneously improves scale, reduces costs, and leads to better insights.

Most reporting solutions on the market today follow a similar process—as raw data is extracted from the network, it is transported to a storage array for later analysis. Given the tremendous amount of data a service provider network generates (millions of records per second), this approach requires significant storage and transport resources. At some later point, all this data is queried and a report is generated, but this is often done several days or weeks after the events were first recorded, making it difficult to make real-time decisions.

The Juniper Networks solution transforms the standard process described above. As the data is sampled from the network, it is analyzed and processed in near real time. The insights gained from this analysis are continuously streamed to the visual dashboard, where there is only a gap of one hour (due to the analysis process) between an event occurring and its analysis. After processing, the results—not the raw data—are stored to allow detailed historical analysis and trending. For the user, this unique architecture means accelerated insights, as you can move to near-real-time decision making. At the same time, the Juniper approach allows you to reduce the amount spent on storing and transporting huge amounts of raw, unprocessed data.

From a technology perspective, NetReflex consists of the following key components:

- **Network instrumentation:** At the network layer, NetReflex can collect data from several types of sources. For routing elements, NetReflex is optimally deployed in conjunction with Juniper Networks routers enabled with J-Flow because of its industry-leading scale that does not impact network forwarding performance. However, NetReflex also works with third-party network elements and services to facilitate deployment in multivendor, heterogeneous networks.
- **Collection and analysis engine:** At the heart of the solution is a powerful analytics engine that processes the data extracted from the network in near real time. Scalable up to 2 PB of data and 250 billion transactions per day, the Junos Network Analytics engine is purpose-built to handle the scale of service provider networks.
- **Presentation layer:** An analysis is only good if the user can make sense of it. NetReflex provides a state-of-the-art, customizable, visual dashboard that presents information and insights in a clear and understandable format. This includes high-level summaries double-click capabilities, context sensitive drill-downs and faster response times.

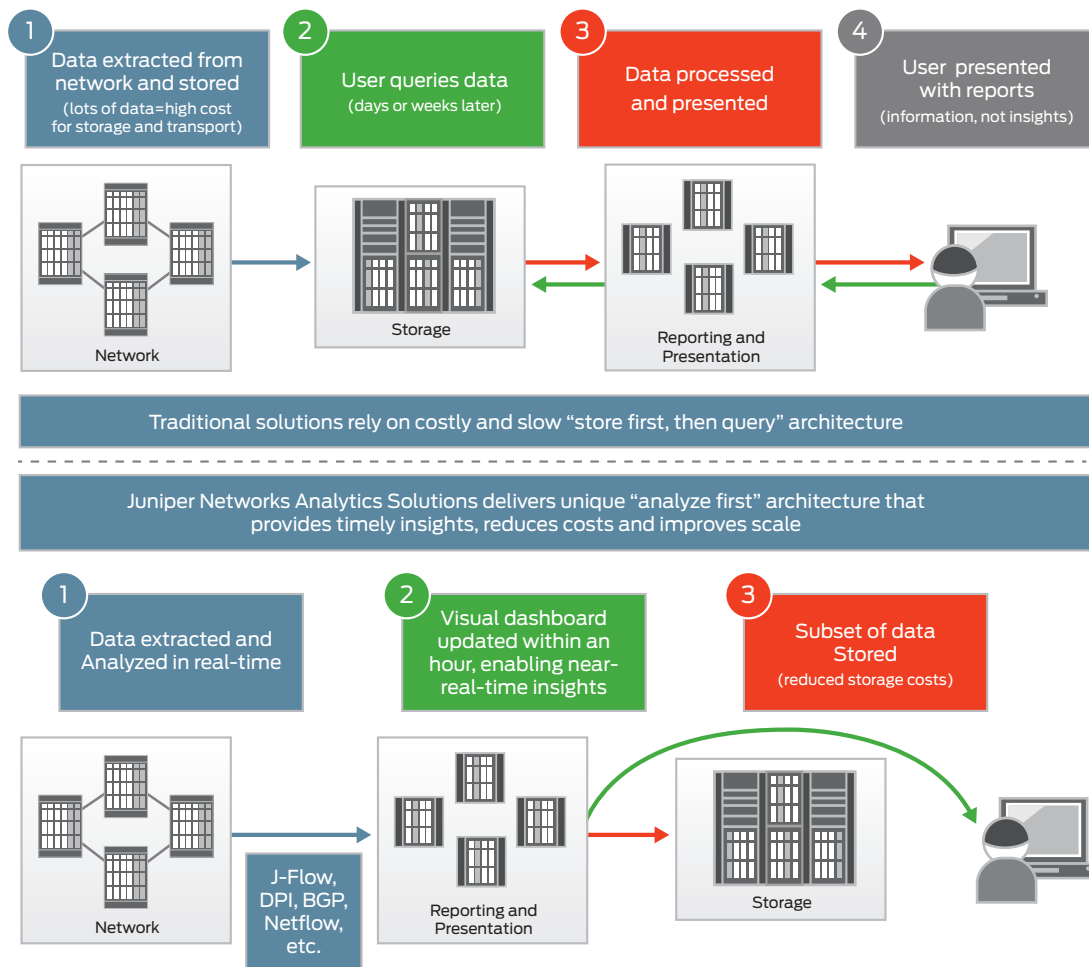


Figure 2. Juniper Networks speeds time to insight by analyzing data in near real time.

Features and Benefits

Table 2. NetReflex Features and Benefits

Feature	Description	Benefit
Unique “analyze first” architecture	NetReflex processes and analyzes network data in near real time, rather than storing massive amounts of data like traditional solutions.	<ul style="list-style-type: none"> Reduced storage costs Accelerated insights in hours versus days
High-performance network sampling	Juniper Networks J-Flow feeds the analytics engine with up to 120 million flows a second, without impacting network forwarding performance.	<ul style="list-style-type: none"> Industry-leading scalability Reduced costs
Traffic trends and analysis	NetReflex provides detailed information into network traffic trends, allowing you to drill deep into per-customer data.	<ul style="list-style-type: none"> Identify congestion points and plan accordingly Reduced costs through more efficient network designs
Topology visualization	NetReflex shows a visual representation of the network, including all links for all available points of presence (POPs) and autonomous systems (AS).	<ul style="list-style-type: none"> Quickly and easily monitor traffic and growth trends for individual links Increased customer retention
VPN analysis	NetReflex MPLS provides a view of the detailed view of all VPNs by tonnage and bit rate, and can slice and dice by CoS or tonnage between PE-PE router pairs for the selected VPN.	<ul style="list-style-type: none"> Visibility into customers’ traffic profiles and service usage to help serve customers better Can enable differentiated or tiered pricing plans
Visualization and report exporting	Data presented in an easy-to-use visual dashboard in graphical or tabular formats, which can be exported in a variety of formats.	<ul style="list-style-type: none"> Provides both at-a-glance views and detailed drill-downs Export capability simplifies report sharing
Response Times	Network events are displayed in the dashboard within an hour, not days.	<ul style="list-style-type: none"> Allows timely decision-making Be aware of issues as they arise

Specifications

Deployment Requirements

Software

- NetReflex is a software system that is deployed on industry standard x86 servers.
- Licensing is based on the size of your network and traffic/flow volume.

Hardware

- X86 blade servers sizing varies based on deployment.

Data sources

- Flow Data
 - Streamed over UDP to port 2055
 - Netflow v5, v9, IPFIX, JFlow
- Routing Data
 - BGP (route reflector/direct peering/dumps)
 - IS-IS (direct peering/dumps)
- Interface descriptions, for finding the connected entity
- Default databases, provided by Guavus
 - AS number to AS name map
 - POP to POP distance matrix (air miles)

Juniper Networks Services and Support

Juniper Networks is the leader in performance-enabling services that are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to maximize operational efficiency while reducing costs and minimizing risk, achieving a faster time to value for your network. Juniper Networks ensures operational excellence by optimizing the network to maintain required levels of performance, reliability, and availability. For more details, please visit www.juniper.net/us/en/products-services.

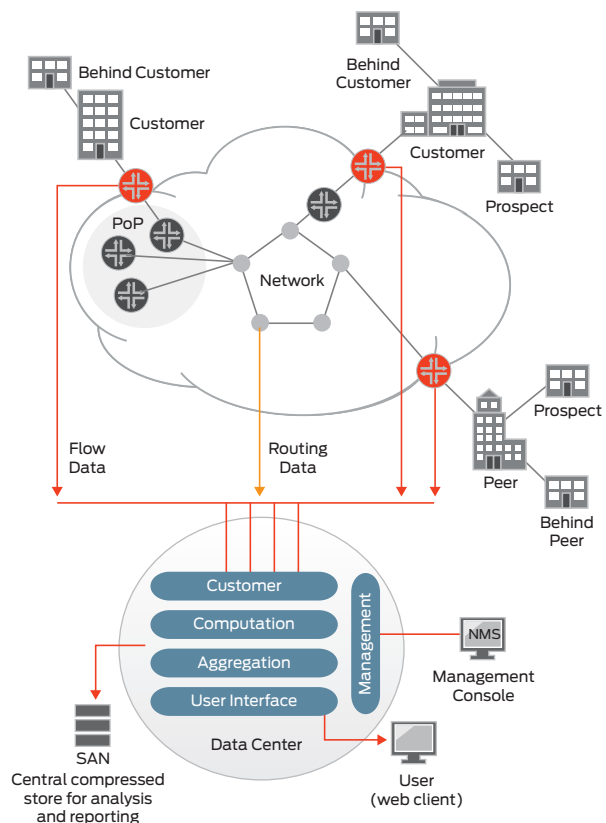


Figure 3. Junos Network Analytics architecture

About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at www.juniper.net.

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