5View™ NetFlow

Powerful Real-time Application Flow Monitoring and Analysis

In today's business services environment, a key directive for enterprise IT and their service providers is ensuring that the business-critical applications running over the IP network are performing as required to support the organization's business activities. To do so, they need visibility into the amount and nature of the IP traffic across the network and within today's modern data center with its multi-tiered applications and virtualized server environment.

Flow-based monitoring and analysis is an important technique enabling this visibility. Contributing to datacenter monitoring and application-aware network performance management (AaNPM) strategies, a comprehensive application flow analysis solution will provide the relevant information needed to understand how the network and data center are being utilized. Armed with the answers to the "who, what, where, when" traffic flow questions, enterprise IT and the service provider are better equipped to ensure that applications are delivered as expected and are operating as efficiently as possible.

Why 5View NetFlow?

Incorporating all of the industry best practices for application flow analysis, InfoVista's 5View™ NetFlow appliances offer the most real-time, scalable, flexible and easy-to-deploy flow management solution available today. With models to support the needs of service providers and enterprise IT organizations, these purpose-built appliances supply a focused set of out-of-the-box features for network traffic analysis, monitoring, reporting, and troubleshooting. The timely and pertinent information that 5View NetFlow provides can be used to:

- Track, troubleshoot and quickly resolve application-based issues

- Easily identify bandwidth intensive applications or the cause of network congestion

- Quickly detect rogue activity on the network or the effect of newly deployed applications

- Understand application traffic distribution to maximize provider VPN use and ensure appropriate bandwidth and resource engineering (per site/campus)

- Validate or improve on quality of service (QoS) deployment and class of service (CoS) configuration

- Intelligently advise customers or corporate management on optimization opportunities, design and deployment decisions
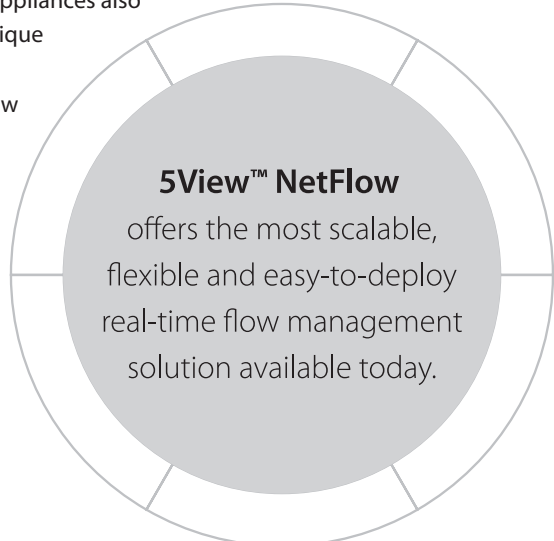
Real-Time IP Traffic Analysis

Attached to the network, 5View NetFlow or 5View NetFlow SP act as NetFlow collectors, leveraging the flow records from leading network infrastructure vendors, such as Cisco, Juniper, Alcatel-Lucent, and Huawei. Tracking 100% of NetFlow, Jflow, cflowd, NetStream, SFlow, and IPFIX data, it's designed to produce sophisticated IP data records (IPDRs) to better manage and manipulate the flow data. Thanks to indicators such as link activity, geographic object pair matrices, IN/OUT flow measurement, undefined IP address detection, throughput, number of IP communications, and more, the appliance provides users with the pertinent factual information to answer questions around the monitoring of IP traffic volumes and application performance, such as "who are the top talkers on a link," "who is communicating with who," "what applications/protocols are being used," and "how long do connections last."

Unlike other solutions that focus on post-mortem transactional analysis, the 5View solution's approach is to provide ready-to-use, *real time* statistics on network traffic and relevant QoS information on the application flows transmitted over the network and throughout the data center. With more timely access to traffic usage data, Operations is able to detect potential and real issues sooner and act on them before service and end-user experience is affected. For faster mean-time-to-repair, troubleshooting and proactive performance management, real-time visibility is always more valuable than historical, after-the-fact information.

The 5View NetFlow appliances also incorporate some unique features such as de-duplication of NetFlow records—enabling the user to access accurate data faster.

5View™ NetFlow offers the most scalable, flexible and easy-to-deploy real-time flow management solution available today.
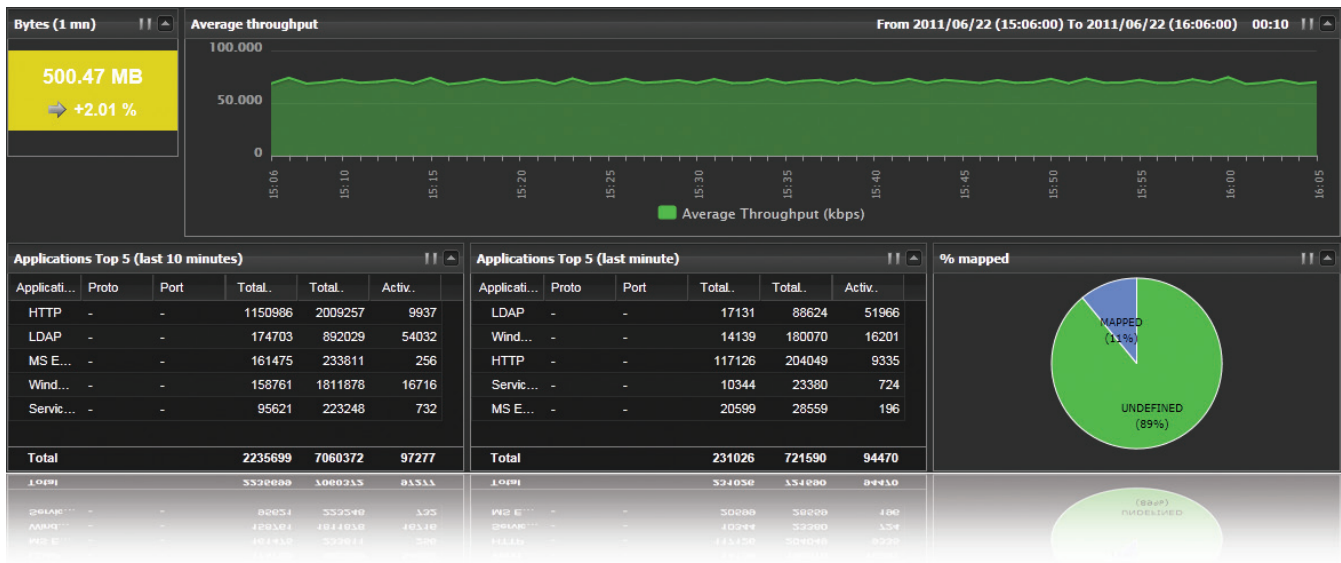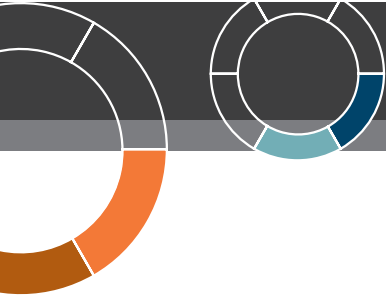
Figure 1. *Real-Time Dashboard with View of Traffic Throughput and Top Active Applications*

Models to Meet a Variety of Needs – Service Provider, Enterprise, Data Center
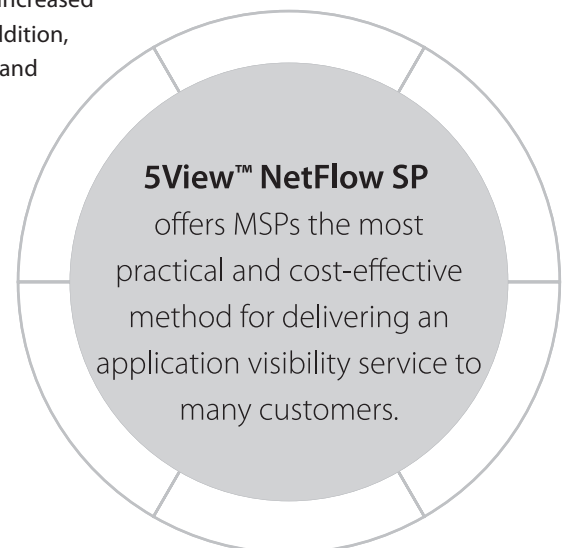
Unlike the majority of NetFlow monitoring solution vendors, InfoVista can address the needs of network and data center flow monitoring for both the enterprise internal IT department and the managed service provider (MSP)—offering a variety of models.

A self-contained, standalone appliance, the **5View NetFlow** models have been designed for single organization deployment, connecting the appliances at customer edge (CE) routers for traffic monitoring and troubleshooting across multiple sites of that enterprise. As such, they offer exceptional value out-of-the-box with no additional software or hardware integration required to start reaping immediate benefit.

Designed to support the carrier-grade requirements of the MSP that needs to monitor multiple customers in a shared IP VPN network, the **5View NetFlow SP** models incorporate a true multi-tenancy feature, reducing the complexity and cost issues surrounding traditional customer premise equipment (CPE)-based collection and analysis. With provider-edge (PE)-based collection and analysis enabled, these models reduce a service provider's total cost of ownership by supporting multiple customers from a single appliance. In conjunction with InfoVista's Service Data Manager software, it offers the MSP a practical and cost-effective method for delivering application usage reporting to many customers in an enhanced or expanded VPN business service offering.

Extending visibility deeper into the data center, 5View NetFlow can also be deployed as virtual appliances. Leveraging NetFlow data from data center switches, such as Cisco Nexus series, a network administrator gains increased visibility for traffic analysis to, from, and between virtual machines in the data center. In addition, virtual probe deployment removes the need for additional hardware, thus reducing costs and enhancing the ability to easily scale up as datacenter needs evolve.

For specifics on the configurations of each model, see the "Product Specifications" section.

5View™ NetFlow SP offers MSPs the most practical and cost-effective method for delivering an application visibility service to many customers.

Scalability

5View NetFlow and NetFlow SP scale from the smallest to the largest networks, with the ability to process up to 350,000 flow records per second. In a distributed environment of multiple appliances, the 5View solution scales to manage millions of records per second. With such robust performance (plus the unique multi-tenancy feature of 5View NetFlow SP), the same job can be accomplished with fewer 5View appliances than are needed with the competitor's solution, simplifying deployment and lowering total cost. The scalability of InfoVista's 5View appliances (and optional software) lies not just in their processing power but also in their ability to efficiently present the information to the end user. Business relevant hierarchical groupings, individual and group-aggregated statistics, single, multi-interface, enterprise site-wide and multi-customer perspectives all make InfoVista's usage monitoring solution a standout in terms of slicing and dicing the volumes of flow data created on a large enterprise or service provider network.

Flexible Interface and Reporting

With 5View NetFlow, it's easy to access application-related flow data through built-in context-sensitive drill downs and matrix capabilities. 5View's traffic views and alerts, which are grouped by client, server, application, service, and infrastructure, equip service providers and enterprises with the information to assist with troubleshooting application problems, capacity planning and usage control, security issues investigation, and QoS deployment and class of service (CoS) alignment. 5View NetFlow's rich data set and multiple report formats make it easy for the 5View user to track trends in application behavior and efficiently perform in-depth application flow analysis.

Ease of Use

A 5View NetFlow appliance can be up and running, collecting data, and reporting in a day. Its intuitive Web 2.0 interface makes it very easy to use, whether by the seasoned flow management expert or a novice. Deploying 5View NetFlow as a standalone appliance rarely requires additional training or professional services. Simply plug and play and you are ready to go!

Figure 2. *Report Example Showing Indicators on Traffic Volume by Application*

Centralized Management of 5View NetFlow Data
Integration with InfoVista Solutions

5View™ Service Data Manager and Application Usage Manager Option

InfoVista's 5View Service Data Manager (SDM) provides the robust, carrier-class application performance management platform and out-of-the-box feature set needed by service providers and large enterprises in large scale and multi-customer deployments. Able to take the massive volumes of data collected by multi-tenant 5View NetFlow SP appliances or individual 5View™ NetFlow appliances, SDM processes, aggregates, and stores the multi-appliance, multi-customer data in a centralized repository. With the ability to properly segment and present the relevant data in both customer-facing and service provider views, the out-of-the-box KPIs, reports and views provided by SDM's Application Usage Manager option offer the most effective means to do application-centric customer reporting, troubleshooting, traffic engineering, capacity planning, and quality of service assurance–in a managed services environment.

In addition, SDM's support of a fully multi-tenant architecture (software and appliances) and its ability to handle a variety of service usage data types greatly simplifies the complexity and cost for service providers to launch and commercially manage the performance of a broad portfolio of services, including application-aware VPNs, unified communications, and mobile data services.

5View™ Mediation

InfoVista's 5View Mediation complements Service Data Manager with advanced business intelligence capabilities. Data collected either directly from multiple 5View NetFlow appliances or via SDM's centralized multi-customer data platform can be brought into Mediation's single OLAP database. Supporting near real-time advanced data mining, specialized business relevant reports and custom workspaces can be made available to different audiences including executive, engineering, and capacity planning. 5View Mediation can process statistics for over 2 million IP addresses, providing advanced level application-based visibility into the usage by each individual IP user or each subnet.

Core Features & Functionality

- Support for the most common NetFlow formats: Cisco NetFlow V5, V9, Flexible NetFlow, Alcatel-Lucent cflowd, Juniper JFlow, Huawei Netstream, SFlow, IPFIX

- Support for IP V4 and IP V6

- De-duplication of NetFlow records

- Creation of sophisticated IPDR's to better manage and manipulate NetFlow data

- Multi-tenancy, supporting collection of multiple customers' data from single appliance (5 View NetFlow SP)

- Ability to define application by CoS, group applications in sets for real-time monitoring and easy filtering, grouping of applications in classes (which share alarm parameters)

- Ability to define business and technically relevant names for interfaces, applications and groups

- Advanced configuration option to manage complex networks including HSRP routers

- Support for virtual appliance deployment

- Integration with InfoVista's Service Data Manager platform and its Application Usage Manager option for centralized management of multi-customer, multi-appliance flow data

- Integration with InfoVista's Mediation product for advanced business intelligence and data mining

General Application Reporting Capabilities

- Out-of-the-box reporting, custom reporting, and top-down analysis through drill downs

- By business relevant hierarchical groupings, such as offices, region, country, business applications

- Multiple export formats including print, HTML, and CSV

- Retain and access approximately 3 months of data (in standalone appliance)

- Bi-directional (in, out, in vs. out) traffic and usage monitoring

Traffic Analysis Reporting and Flow Forensics

- Real-time 1 minute collection

- Applications defined by port and server combination

- View of IP traffic: mapped vs. undefined, by IP protocol field, by ToS, by destination, by application (TCP/UDP ports)

- Flow matrix (router interfaces pairs, AS numbers pairs, site or business relevant pairing)

- Displays an IP flow matrix in blocks that can be mined successively to isolate IP interval couples generating the most traffic, communication, flow, etc.

- Detection of IP addresses that don't match any predefined range but are exchanging data with a particular business entity and connecting as a client or server for a particular application

Alarms

- Alarms on ToS, Throughput

- Ability to send alarms/traps to NMS systems

Compatibility

- 5View Application Usage Manager option of Service Data Manager version 3.2
- 5View Mediation version 4.1 and above

Models and Configurations

Appliance	5View NetFlow models				5View NetFlow SP
Appliance Model Part Number	IVNF_O_2111	IVNF_O_2112	IVNF_O_3211	IVNF_O_3212	IVNF_O_2011
Form Factor	1U x 19" x 30" rack (482.6mm x 762mm)	1U x 19" x 30" rack (482.6mm x 762mm)	2U x 19" x 28" rack (482.6mm x 711.2mm)	2U x 19" x 28" rack (482.6mm x 711.2mm)	2U x 19" x 28" rack (482.6mm x 711.2mm)
Management Interface	Copper: 1 x 10/100/1000 Mbps (RJ45 connector)				
Maximum Netflow Throughput Monitored	10,000 NetFlow records/sec	50,000 NetFlow records/sec	150,000 NetFlow records/sec	350,000 NetFlow records/sec	350,000 NetFlow records/sec
Memory	3 GB	6 GB	6 GB	12 GB	12 GB
Storage	3 x 146 GB SAS (15Ktr/min) raid 5 – 2.5 inches	6 x 146 GB SAS (15Ktr/min) raid 5 – 2.5 inches	8 x 146 GB SAS (15Ktr/min) raid 5 – 2.5 inches	8 x 146 GB SAS (15Ktr/min) raid 5 – 2.5 inches	8 x 146 GB SAS (15Ktr/min) raid 5 – 2.5 inches
Weight	18 Kg	18 Kg	26 Kg	26 Kg	26 Kg
Power supply	1 x 717 watts (hot swap)	1 x 717 watts (hot swap)	2 x 870 watts (hot swap)	2 x 870 watts (hot swap)	2 x 870 watts (hot swap)
Voltage	90-264 VAC, autoranging, 47-63Hz	90-264 VAC, autoranging, 47-63Hz	90-264 VAC, autoranging, 47-63Hz	90-264 VAC, autoranging, 47-63Hz	90-264 VAC, autoranging, 47-63Hz
Certifications	CE mark (EN55022 class A, EN55024, EN61000-3-2, EN61-3-3, EN60950) FCC Class A, VCCI Class A, UL-1950, CSA 950, EN60950				

Appliance	Virtual 5View NetFlow models		
Appliance Model Part Number	IVNF_1_2111	IVNF_1_2112	IVNF_1_3211
Maximum Netflow Throughput Monitored	10,000 NetFlow records/sec	50,000 NetFlow records/sec	150,000 NetFlow records/sec
Number of CPU	2	2	4
Memory	3 GB	3 GB	6 GB
Management Port	1	1	1
Acquisition Port	0	0	0
Disk Space Requirement	50 GB	50 GB	100 GB
VM Version	7	7	7