

Riverbed Cascade Differentiation and Comparison

Attribute	Importance of this functionality and Competitive Position	Cascade	OPNET	NetQoS*	NetScout	SolarWinds
Detailed data capture, retention and processing	<p>The ability to capture and retain all data (applications, flows...) in minute-by-minute intervals (rather than summarized or rolled up intervals) as well as to analyze (analytics or policy) all data provides critical visibility and control of the network and applications traversing it. Scaling to networks with more than top-N clients or servers, extended problem solving, long term process improvement, and regulatory and security concerns all require long term high resolution data storage.</p> <ul style="list-style-type: none"> •Cascade captures & stores 100% of the traffic with no loss of resolution capture ceilings or storage duration limits •OPNET, NetQoS, NetScout and SolarWinds all suffer from a variety of ceilings on how granular they are with data, how many systems they can capture data from and how long they can retain it 	●	○	○	○	○
Join together flow data with packet and performance data into a single record	<p>Combining flow data with layer 7 application information and TCP health and performance metrics significantly reduces deployment costs, implementation times and MTTR. Unified data records are necessary to transition from monitoring raw infrastructure components, to monitoring the delivery and performance of applications traversing those components.</p> <ul style="list-style-type: none"> •Cascade creates unified data records, enabling the transition from monitoring raw infrastructure components, to monitoring the delivery and performance of applications traversing those components •OPNET, NetQoS, NetScout and SolarWinds all fail to create unified records 	●	○	○	○	○
De-duplicate flow and packet data, while maintaining an accurate link based view	<p>De-duplication enables maximum visibility, leveraging flow and packets from all devices in path, without worry of misreporting traffic volume. De-dupe facilitates end-2-end tracking of asymmetric paths, packet loss and QoS changes, as well as sharing knowledge (layer-7, RTT...) between different types of exporters. Without de-duplication you would either misreport volume, or be forced to know where on your network a problem can be found, BEFORE you begin triage.</p> <ul style="list-style-type: none"> •Cascade de-duplicates all flow and packet data, facilitating maximum visibility and the ability to track change during the course of application delivery, all while still preserving accurate link based detail •OPNET, NetQoS, NetScout and SolarWinds all fail to de-duplicate flow records, and only report per interface metrics 	●	○	○	○	○
Security anomaly detection	<p>Security threats are an immediate risk to the availability and performance of an application, as well as a longer term threat to the integrity of the data the application relies upon. Security anomaly detection automatically alarms upon meaningful change in the behavior of users or servers on the network, as well as access to data stored on the network. This intelligence can be leveraged as part of specific PCI, SOX or other security initiatives, or simply as valuable knowledge when triaging an availability and performance issue.</p> <ul style="list-style-type: none"> •Cascade delivers a suite of security based anomaly detection algorithms that automatically alarm upon meaningful change in the behavior of users on the network, as well as access to data stored on the network •OPNET and SolarWinds offer no functionality in this area •NetQoS and NetScout offer optional modules with entry level functionality. Their inability to de-duplicate connections as well as to process 100% of the available data taints the remaining data and greatly limits its security value 	●	○	◐	◐	○
Virtual Machine (VM) visibility	<p>Virtualization has created a visibility black hole. Traffic on the internal vSwitch is hidden from monitoring, creating operational risk.</p> <ul style="list-style-type: none"> •Cascade offers vShark as a means to inspect and report on this traffic, and optionally capture it to disk •OPNET, NetQoS and NetScout all offer means to inspect and report on this traffic, but no virtual packet capture •SolarWinds offer no functionality in this area 	●	◐	◐	◐	○























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Application Discovery and Dependency mapping	<p>Understanding all the components associated with the delivery an application is critical for successful monitoring. Depiction of client <-> server and server <-> server relationships enables education on all the 'moving parts', and allows for understanding of change and incident impact on service delivery. This data also serves to reduce risk and allows for incident prioritization. Operationally these relationship maps also form the foundation for successful data center consolidation / move initiatives. This data automates and improves the planning process, while minimizing implementation disruption and risk.</p> <ul style="list-style-type: none"> •Cascade, leveraging a discovery wizard draws real time, end-2-end application dependency maps, showing all client to server and server to server relationships, including discovery across load balancers and NATs •OPNET has a separate product offering here that creates dependency maps, but fails to integrate back into the operational monitoring workflow, and fails to leverage NetFlow data for discovery input •NetQoS, NetScout and SolarWinds have no functionality in this area 	●	◐	○	○	○
Switch port discovery	<p>Let's operators know exactly what switch port a host is plugged into. Data center teams will achieve significant time savings on move and inventory projects, operations teams can leverage this data when working with "remote hands", and those troubleshooting network and security problems have a physical starting point.</p> <ul style="list-style-type: none"> •Cascade maps IPs to switch ports, giving all problems a physical starting point •SolarWinds provides this functionality via a separate product offering •OPNET, NetQoS and NetScout offer no functionality in this area 	●	○	○	○	●
Active Directory to IP# resolution	<p>Displays the users name logged into a workstation, in addition to the IP# of that system. Shortens triage time for tracking down a problem a user is experiencing, as well as finding the owner responsible for the system(s) experiencing problems.</p> <ul style="list-style-type: none"> •Cascade offers this functionality out of the box at no additional cost •SolarWinds provides this functionality via a separate product offering •OPNET, NetQoS and NetScout offer no functionality in this area 	●	○	○	○	●
Analytics to automatically detect change to application availability and performance	<p>Notification of meaningful change from normal delivers early warning to availability and performance problems. Detection via behavioral analytics vs. thresholds allows for scale, growth and fast time to value. Effective analytics rely on comprehensive daily and weekly baselines.</p> <ul style="list-style-type: none"> •Cascade analytics understand multi-tier business services and automatically learn what traffic for a typical day and week are, alarming upon meaningful change, and highlighting the outlying traffic. Analytics are automatically provisioned as part of service discovery, and visibility into problems is highlighted on an executive dashboard •OPNET offers static and sliding window based alarms called dynamic thresholds. These detect rapid change within a small sliding window, but have no notion of historical norm. IE if change was caused by a legitimate business process, OPNET will alert day after day. Note that restrictions of top-N in nature further diminish the value of this functionality. •NetQoS offers some functionality in this area, though it is greatly limited in effectiveness due to; no service knowledge, only discrete metrics, no bandwidth data, and based on hardware choices may only operate on 5 minute interface averages, not per connection granular data •NetScout does have an optional analytics package; however lack of automated service discovery and data de-duplication make this very operationally challenging to deploy and maintain, and breadth of what gets monitored, as well as accuracy of the analysis are curtailed •SolarWinds offers no functionality in this area 	●	◐	◐	◐	○



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Manage across non-optimized and Riverbed Steelhead optimized environments	<p>WAN Optimization is of growing prevalence in today's networks, and a single tool that can report across both optimized and non-optimized environments is necessary for consistent management of application delivery</p> <ul style="list-style-type: none"> • Cascade delivers 100% of the same value across both optimized and non-optimized environments, requiring no additional hardware, software or licensing to understand optimized traffic • OPNET and NetQoS can work in mixed environments, but both require the use of software probes placed at every remote site and data center, significantly increasing CAPEX and OPEX • NetScout can work in mixed environments, but required the use of hardware based probes placed at every remote site and data center, significantly increasing CAPEX and OPEX • SolarWinds offers functionality only as a result of duplicate, manual reporting efforts 					
Identify application delivery path	<p>Automatic and historical knowledge of all interfaces traversed from client to server allows for faster triage, delivery optimization & change impact assessment</p> <ul style="list-style-type: none"> • Cascade reports on the actual delivery path taken from client to server, and has a historical record of this path • OPNET and NetQoS can both display a traceroute approximation, but it is not guaranteed to be the path that the traffic you are investigating traversed. Historic availability is limited to top-N, pre-defined traceroutes • NetScout is able to report the order of probes traversed, a likely subset of the delivery path. • SolarWinds offers no functionality in this area 					
Operational integrations	<p>Integrating into existing operational workflows, tools and infrastructure is critical to the successful operationalization of a product within the enterprise. APIs and out of box integrations enable cost effective and operationally efficient deployments. Ticketing systems, NOC portals, DHCP servers, SIEMS... are all high value integrations.</p> <ul style="list-style-type: none"> • Cascade bi-directional integrations support ticketing systems, NOC portals, CMDBs, Active Directory, DHCP servers... • OPNET, NetQoS, NetScout and SolarWinds all can push SNMP traps to other systems; however all lack bi-directional APIs, as well as ties to infrastructure services 					
User-defined policies (Ability to set distinct policy-based alarms)	<p>This provides flexibility to monitor high and low performance and utilization, governance policy, or use/gauge the need for policy throughout the enterprise. Provides for monitoring on an ongoing basis. For example, alert when:</p> <ul style="list-style-type: none"> • SIP traffic appears anywhere on the network NOT marked with DSCP label EF • Traffic other than SIP appears anywhere on the network marked with DSCP label EF • VoIP telephone calls are have a MOS below 4.1 • An interface delivering SAP experiences an RTT > 350ms • Users are accessing an internal DNS server not in their country • Any interface is above 85% utilization for more than 2 minute <p>• Cascades' robust policy engine allows alarming on any combination of attributes</p> <p>• OPNET, NetQoS, NetScout and SolarWinds offer limited functionality. Their inability to join flow with performance data limits flexibility, and their inability to aggregate & de-duplicate records leads to multiple alarms for the same event.</p>					



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Leverage of NetFlow beyond just per interface reporting	<p>The use of NetFlow segment by segment rather than probes, combined with a single strategically placed probe, achieves greater breadth of coverage at a fraction of the cost of conventional instrumentation. Conversational, rather than interface records enable policy and analytic monitoring, dependency mapping, consolidation efforts, security audit trails...</p> <ul style="list-style-type: none"> • Cascade captures, analyzes and records 100% of a networks flow data, supports all flow protocols, stores 100% of the captured data for unlimited duration, and correlates flow data with probe data, yielding high value at low cost • OPNET only captures the top N devices and treats NetFlow as a low value bandwidth reporting protocol. OPNET does not join flow and probe data. Many product features are only available with probes, not flow data • NetQoS only analyzes the top N flow records failing to monitor all traffic. NetQoS can't leverage flow to look end-2-end and relies instead on its probed based (SuperAgent) product to do this. NetQoS Can only use flow relative to an interface, not when searching for traffic between host pairs or by application • NetScout has a series of flow capacity limits, never joins the data with its probe or packet data, and treats NetFlow as a low value bandwidth reporting protocol • SolarWinds offers limited scale around flow, and begins data summarization after only four hours. SolarWinds does not have a probe or packet offering 	●	◐	◑	◒	◓
Packet Capture	<p>Record to disk 100% of traffic/packets traversing the network. Complex troubleshooting, retrospective analysis, performance and forensic investigation will sometimes necessitate examination of individual packets.</p> <ul style="list-style-type: none"> • Cascade offers a range of appliances allowing combinations of gigabit and 10 gigabit interfaces, line rate capture capabilities, and storage options of 4 to 32TB • OPNET offers several appliances, but all consume more rack space per TB of storage, offer fewer collection interfaces per system, and provide significantly lower capture to disk speeds than those from Cascade • NetQoS offers packet capture only through an OEM relationship with Network Instruments • NetScout offers a range of capture appliances, but when aligned with equivalent Cascade models cost 2x Cascade • SolarWinds offers no functionality in this area 	●	◑	◑	◒	○
Packet Capture index	<p>When accessing captured packets, one can apply filters and work with lightweight index data stored onboard the capture appliance, or one can copy entire sections of the PCAP over the network to their desktop for filtering and examination. Accessing remote indexes saves significant time and network bandwidth.</p> <ul style="list-style-type: none"> • Cascade continuously indexes all captured packets and offers a large number of data views, all without the need to transfer packets across the network • OPNET and NetQoS (OEM) both require that the PCAP be moved across the network before any analysis can begin • NetScout has several different analysis consoles, some with indexing, and some without. Performance will vary greatly based upon what analysis tool you are using. With multiple indexes being crated, capture speeds do sustain a measurable impact • SolarWinds – NA, no packet capture offered 	●	○	○	◒	○
CMDB integration	<p>Having an accurate, up-to-date CMDB is critical to its success. Ensuring complete discovery and dependency mapping for the CMDB, as well as continuous CI dependency discovery will facilitate optimized use of scanning and agents for maximum productivity and minimum impact on performance.</p> <ul style="list-style-type: none"> • Cascade can export its dependency mappings to populate CMDBs, and delivers real time CI updates from its API • OPNET, NetQoS, NetScout and SolarWinds offer no functionality in this area 	●	○	○	○	○

