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Solution Brief

Concurrent Real-time Analysis of Every Packet and Flow across Complex Networks with Distributed Smart Ports and Automatic Triggers

EXECUTIVE SUMMARY

Modern application delivery depends on the network to connect applications, devices and end users. The new computing model relies on data centers and clouds, which imply increasing traffic volume and network speeds. Meeting users' expectations for Quality-of-Experience requires consistent performance and reliability across the entire network infrastructure. Network operations need to deliver optimal performance based on robust capacity planning and traffic engineering and to effectively troubleshoot intermittent performance issues, outages, and security incidents. While packet capture helps to troubleshoot reported problems, the premise of exhaustively capturing all the packets from every network hop at a centralized location is a prohibitive "bottleneck by design". In contrast, cPacket's innovative approach to real-time performance assurance is physically distributed and logically centralized. The unique cVu product family combines flexible forwarding, filtering, and balancing with Smart Ports, which apply granular analytics on-the-fly. A centralized dashboard unifies the access to behavioral information from all the ports of multiple cVu devices, including high resolution counters, key performance indicators, and alerts. Combining Riverbed and cPacket solutions drives better performance optimization, more proactive mitigation of imminent issues, and shorter time to resolution of critical disruptions.

TECHNICAL BACKGROUND

The unique cVu product family combines flexible matrix forwarding with Smart Ports, which inspect all ingress traffic in real time. These Smart Ports perform complete inspection of header fields and payload patterns in every packet and every flow on-the-fly. In addition to detailed analytics, the Smart Ports also deliver flow balancing, tunnel forwarding, tagging, de-duplication, nanosecond time-stamping, high resolution counters, top talkers, gap detection, and configurable alerts for abnormal traffic conditions.

cPacket's SPIFEE dashboard provides centralized access to correlated information from multiple cVu devices including key performance indicators and abnormal applications' behavior alerts. The dashboard facilitates advanced analytics and visualization of detailed performance metrics and heat maps. Furthermore, each Smart Port "grop the network" based on traffic characteristics like spikes or payload pattern matching to enable automatic drilldown. For example, users can use automatic triggers to pinpoint error events by selectively forwarding only the packets before and after this triggering error-event to Riverbed NetShark.

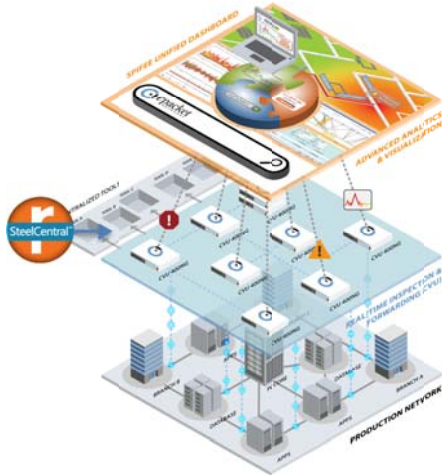
The powerful combination of cPacket's cVu devices for real-time performance assurance with Riverbed products is a comprehensive performance monitoring and troubleshooting solution. The flexible cVu matrix forwarding enables efficient deployment of downstream monitoring and security tools including NetShark instances. In addition, the Smart Ports support sophisticated alerting based on high resolution counters, behavioral characteristics, and flexible pattern matching. A nanosecond time-stamp is attached by the hardware prior to any queuing to allow accurate downstream analysis based on the actual packets arrival times without any risk of undesirable stochastic contamination. cPacket time stamping is leading the industry with highest accuracy, hardware clock synchronization, and detailed diagnostics.

The SteelCentral NetShark appliance can provide packet capture and indexing for forensic investigation. cPacket Smart Ports complement this packet capture with real time detection of traffic misbehaviors like spikes, jitter, and bottlenecks. Real-time identification is critical to enabling proactive mitigation before imminent issues degrade and become big disruptive problems.

Combining Riverbed and cPacket solutions is a comprehensive solution for real-time behavioral analysis, granular performance monitoring, and effective mitigation of outages and disruptive incidents. The correlated view of current and historical data from multiple Smart Ports and cVu devices is available from SPIFEE's centralized dashboard together with dynamic red-green maps that highlight hotspots and bottlenecks.

DEPLOYMENT

cPacket's cVu devices enable simple deployment, accurate analysis, and comprehensive visibility across the network. They facilitate real time monitoring, detailed drill-down capabilities with interactive network search, and effective troubleshooting of latency and performance issues. Riverbed and cPacket products can be deployed together as a comprehensive solution for network performance monitoring, visibility, and troubleshooting. The following deployment diagram illustrates a common deployment architecture:



cPacket's SPIFEE dashboard collects key performance indicators, alerts and metadata from distributed cVu devices to provide correlation, advanced analytics and visualization

cVu devices filter, balance, timestamp and forward relevant traffic to any toolset, including NetShark. In addition, the Smart Ports push metadata, KPIs and alerts to the centralized dashboard (top layer)

Visibility points across the physical network - TAPs and SPANs - feed traffic to cPacket Smart Ports (middle layer) which inspect every bit of every packet and every flow to provide detailed KPIs and alerts

USE CASES AND BENEFITS

cPacket solutions provide integrated approach to network performance monitoring, proactive mitigation, and troubleshooting. Some highlights of specific use cases and benefits include:

- **Scalable Deployment:** physically distributed and logically centralized approach eliminates the risk of creating unintentional "bottleneck by design". The Smart Ports inspect all the ingress traffic on-the-fly to extract Key Performance Indicators and high-resolution counters at line-rate under any traffic conditions.
- **Complete Packet Inspection:** each Smart Port inspects every bit in every packet and every flow to provide deep insight into traffic patterns, abnormal applications behavior, microbursts, spikes, and jitter. Specifically, each port can identify gaps or out-of-order applications sessions, error conditions like unreachable resources, and indications of security threats.
- **Flexible Matrix Forwarding:** aggregation, replication, flow-balancing, tunneling, tagging, and forwarding of any subset of traffic from any ingress port into any tools or a cluster of tools. In addition, built-in options like hardware time stamping, high resolution counters, top-talkers, and user-defined alerts of abnormal traffic are available at each Smart Port.
- **Analytics and Visualization:** SPIFEE centralized dashboard provides archiving, correlation, base lining, variational analysis and reporting based on the built-in and user-defined KPIs from across the entire environment.
- **Automatic triggers:** isolation of relevant sessions related to intermittent behaviors by detecting the triggering event and selectively capturing the traffic preceding and following that specific event for detailed contextual analysis of error conditions.

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Riverbed Technology, Inc.
680 Folsom St
San Francisco, CA 94105
Tel: (415) 247-8800
www.riverbed.com

cpacket
NETWORKS

cPacket Networks
765 Ravendale Drive
Mountain View, CA 94043
Tel: (650) 969-9500
www.cpacket.com