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DATA SHEET

Riverbed AppResponse

Packet-based Network and Application Performance Analysis

When it comes to improving network and application performance, it's often a race against time. Every minute spent troubleshooting is a minute your users are unproductive. Riverbed® AppResponse provides powerful, flexible network and application analytics and workflows to speed problem diagnosis and resolution of multi-technology, multi-vendor networks. AppResponse is functional out of the box with pre-defined insights and a rich variety of performance metrics. AppResponse helps you get answers fast. It combines network forensics, application analytics and end-user experience monitoring in a single solution so you have everything you need at your fingertips to resolve network and application performance issues quickly.

The Business Challenge

Maintaining a high-performing and secure network across today's complex hybrid infrastructure requires holistic visibility. Over 58% of enterprises report blind spots in their digital delivery chain, which is a significant challenge. Infrastructure teams often have difficulty managing proactively while performance blind spots make troubleshooting difficult and time consuming across their multi-cloud hybrid infrastructure. Unfortunately, disruptive technology is only increasing this pressure. DevOps causes servers to be quickly added and retired, cloud adoption causes new network challenges, and IoT places increased burden on network bandwidth and performance. Today, IT Operations teams are overwhelmed with the complexity of managing incidents. Monitoring tools flood IT with massive volumes of data, alerts and ServiceNow tickets but fail to provide context or actionable insights. Also, limitations in diagnostic information gathering and time-consuming steps for ticket documentation result in significant inefficiencies. It is easy to miss hidden issues and difficult to prioritize tickets. Without a new, holistic approach to network observability and automation, companies will fall behind, failing to deliver the initiatives and services that drive the business.

> "The combination of Riverbed AppResponse and Packet Analyzer Plus makes it easy to find the precise set of packets I need to see if a performance problem starts with the network or the application."
>
> Richard Hurst,
> Supervisor of Network Services, OneMain Financial

The Riverbed Solution

AppResponse delivers continuous packet capture with real-time and historical application monitoring – letting you observe all network and application interactions as they cross the wire, whether they are encrypted or not. Continuous packet capture means rich troubleshooting details are always available when you need them, saving time and money by minimizing the effect downtime has on business productivity. It automates analysis and planning of multi-technology, multi-vendor networks and performs 'what-if' analyses to manage risk and

cost associated with network growth and change-accelerating application deployments and migrations to new technologies, such as VoIP, VPNs, IPv6, and more.

Deep Visibility

To meet hybrid monitoring needs, AppResponse can be deployed across all components of your network - campus/on-premise, virtual or cloud.

Actionable Insights

Often, packet data is the ultimate source of network truth. In addition to rich real-time analysis of all packets all the time, AppResponse captures and stores all packets so they are available for root-cause forensic analysis when needed.

Fast Answers

Built-in policies and adaptive thresholds highlight brewing issues happening on the network, allowing you to get ahead of them before they become full-blown incidents. Streamlined troubleshooting workflows and high-definition (HD) data help you determine answers quickly – typically in minutes.

Network Automation and AIOps

The powerful combination of Riverbed AppResponse and Riverbed IQ delivers effective 'Day 2' Network Automations that span multiple network domains for enterprises. Riverbed IQ's AI-driven automation changes the paradigm with intelligent incident response and ticketing. Capabilities include:

- Monitoring and correlation of network performance across multiple dimensions such as time, location, applications, device and users.
- Built-in alerting policies available out of the box, such as application availability, degradation and network packet loss.
- Adaptive Thresholds compares current traffic to historical baselines and alerts on anomalous behaviors.
- Can integrate with and ingest data from Riverbed Network Performance Management (NPM) suite of products (including AppResponse) and third-party tools across the enterprise.
- Replication of advanced investigations with low code automation, decision making and contextual insights.
- Integration with ServiceNow where a ticket is automatically populated with the relevant diagnostics and context, assigned the right level of priority and routed to the right Network Operations Center (NOC) team member.
- Alerts via Syslog or SNMP.
- Automated network security forensics to complement existing SOAR and SIEM tools.

Figure 1: AppResponse offers a breadth of insights that focuses on protocol analysis from an application level.

Specialized Packet Analytics Modules

In addition to collecting, storing, and summarizing packet data across your hybrid network, AppResponse offers a variety of optional modules that provide specialized analysis use cases.

Application Stream Analysis (ASA)

The ASA module delivers industry-leading rich metadata derived from packet analysis to support real-time and historical network performance analysis. It monitors all TCP and UDP applications. ASA provides a rich set of metrics/statistics that measure various aspects of network performance, such as server delays, retransmission-related delays, etc.) so you can quickly determine where to focus your troubleshooting efforts —the network, application, or endpoint.

Web Transaction Analysis (WTA)

The WTA module offers real-time web application performance analysis for monitoring business transactions. It auto discovers all URLs and end user activity to simplify monitoring. You may view end-user experience for web pages as well as detect page errors, page rates, unique users, and more. Geographic heat maps make it easy to focus triage efforts on critically affected users and sites.

Database Analysis (DBA)

The DBA module identifies the impact of the database on end-to-end application performance. By monitoring database performance at the transaction level, you can identify the particular SQL statement or database call responsible for application delay and equip your database team with actionable information. Its agentless approach introduces zero overhead on database operation and does not require privileged access to database systems or database diagnostics logging.

Unified Communications Analysis (UCA)

The UCA module provides real-time and historical analysis of voice and video performance calls. Drill down to the underlying problem to understand the interaction of voice and data traffic. Proactively monitor voice call quality and resolve issues before they affect users. Set meaningful SLA's based on how call quality is affecting the business.

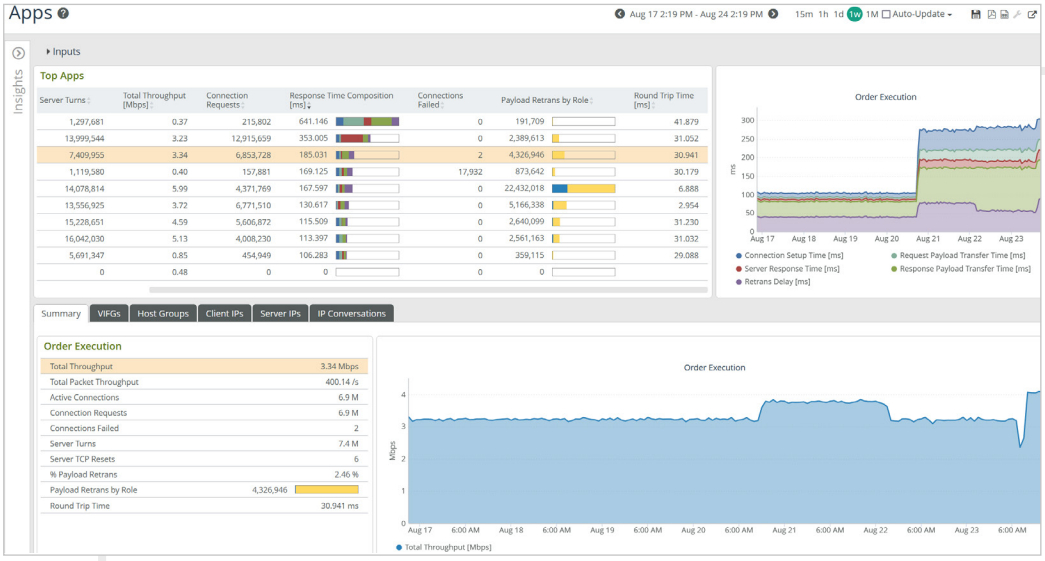

Figure 2: AppResponse provides easy-to-use analytics that show all relevant information for troubleshooting. This shows the top applications, the response time composition, and summary info for a given app. Additional drill-down investigations available by clicking on the tabs.

Key Features in Depth

Network Forensics

The Shark Packet Analysis (SPA) module is part of the base package and delivers near real-time traffic analysis of packet events with 1-second granular displays with microsecond resolution.

Deep packet inspection (DPI)

- Auto-recognizes more than 2,500 popular business and recreational applications

Multi-capture jobs

- Perform multiple, separate capture jobs and dedicate different amounts of storage or filtering Selective recording
- Capture and store just the header, the header and the first xx bits, or the whole packet. You decide

Smart packet indexing

- Real-time indexing of packet data means you can quickly search terabytes of data—without having to drag packets across the network Riverbed AppResponse

Network-layer analysis

- Provides support for network layer analysis, such as ARP, CIFS, microburst, broadcast and multicast issues

Address management protocols

- Troubleshoot DHCP and DNS issues

Application-specific analysis

- All variations of FIX
- Market Data Feed protocols include Aquis, Euronext, PITCH, LSE, CTS, CQS, OPRA, UQDF, UTDF, OMDF, IC, TMX
- Market Data Gap Detection views:
  - Market Data Gaps Over Time
  - Market Data Gap Details
  - Market Data Gaps Overview
- VDI: VMware PCoIP

Application Analytics

The Application Stream Analysis (ASA) module all TCP and UDP app and corresponding metrics with historical summary info.

Real-time and historical data analysis

- Monitor live performance for all users all the time, and alert against SLAs
- Roll-up metrics at 1 min., 5 min., 1 hour, 6 hour, and 1 day granularity and store data up to 3 years
- Stores aggregate data and individual flows and pages so you can get to the answer faster without having to go to the packets as often
- Analyze historical information for trending and capacity planning

Flexible data analysis

- Continuously automated calculation of 60+ TCP and UDP metrics including Request Bytes, Request Throughput
- Response Bytes, Response Throughput, etc.
- Aggregate traffic by 'logical objects', such as applications, users, servers, clients, conversations, and host groups
- Define a hierarchy of host groups including custom logical objects that aggregate the data based on user defined specifications
- Understand network bandwidth utilization by remote offices

Auto-discover context information from packets

- Autodiscover internal web apps
- Autodiscover Virtual interface groups (ViFGs)
  - Organize discovered VLANs into groups of up to 32 VLAN IDs

Response time analysis

- Response Time Composition Chart graphically shows network, server and client delay metrics include:
  - Connection set up, server response, payload transfer, retransmission delay, network round trip time (out), network round trip time (in), user response
  - True min and max metrics
  - User response time
  - Server response time
  - Round trip time

Web Application Analysis

The Web Transaction Analysis (WTA) module provides real-time web application performance for monitoring business transactions.

Auto recognition

- Auto-discover all URLs, page families, and end-user activity

Web page time analysis

- View metrics by Slow Pages, Page Views, Page Time, Network Busy Time (per page), Server Busy Time (per page), Unique Users, and Unique Affected

Users End-user experience monitoring (EUM)

- View response time for web pages for a true end-user perspective of performance. Passively monitor browser load time for the page level and object level of a web page or group of web pages as monitored as a single transaction

Web transaction performance

- Detect abnormal web transaction performance and directly alerts on common web application problems such as page errors, response/page, page rate, # of slow pages, and slow page times

TruePlot®

- TruePlot can render hundreds of thousands of transactions at once to reveal patterns hidden by traditional line charts. TruePlot doesn't average-out spikes and can clearly differentiate symptoms vs root causes.

Group and monitor related pages or users

- Easily monitor a group of related web pages in a common way. Customize monitoring to flexibly map your web pages to an application. Group page views together or separate pages that are monitored together by default.
- Group originating IPs of users who are using/downloading the pages

Geographic heat map

- Geographic display of performance and usage for Web applications and page views to focus triage efforts on the most critically affected users and sites
- View by web application, region, platform, and browser type

TLS analysis

- Track SSL/TLS handshakes metrics and certificate information
- Find number and versions of producing TLS/SSL, certificate status, cipher suites, error types, renegotiation, etc.

Database Analysis

The Database Analysis module (DBA) provides automatic recognition and real-time analysis of major SQL databases, including Oracle 19c.

Auto recognition

- Automatic recognition of database transactions from packet data on all network addresses and ports
- All major SQL databases recognized, including Oracle 19c

Database analysis

- Layer 7 packet decoding acquires database sessions, SQL queries, stats and timing info
- Full-text parsing and standardization of every SQL query
- Multi-key access to database sessions and SQL queries

Database transaction analyticss

- 50+ database transaction metrics computed from packet data, including DB Session Idle Time, New DB Session Logins and Logouts, DB Sessions Refused, Data Transfer Time, Transaction Time, Request Packet Rate, etc.

VoIP and Video Call Analysis

The Unified Communications Analysis module (UCA) provides real-time and historical analysis of voice and video performance calls with the ability to drill-down to the underlying problem.

Auto recognition

- Automatically recognizes more than 140 voice, audio and video codecs, including SIP, H.323 and Cisco SCCP

Call quality analytics

- Infer call quality from RTP or decrypt encrypted signaling
- Define your own call quality definitions by codec
- Signaling ladder diagram is in Riverbed Packet Analyzer Plus

UCA insights

- All UC traffic - VOIP/Video summary shows all UC traffic being monitored, e.g. Zoom, Microsoft Teams, etc.
- UC Host Group shows VOIP/Video load, performance and network anomalies of an individual host group
- Summary view delivers summary information for individual calls

UC navigator analysis

- All UC traffic, call user groups, media types, individual calls, individual channel

Advanced Visualization and Analytics- Web UI

Insights

- Pre-defined, intelligent analysis and workflows that are functional right out of the box. Enables novice users to use AppResponse and gain expertise over time. Create, save, and share your own insights.

Navigator

- Expert analysis with multidimensional drill down and pivots. Allows you to explore all dimensions of your analysis

Search

- Flexibly search for anything that is stored in the database, such as host groups, applications, IPs, IP conversations, and more

Reporting

- Easily share analysis with colleagues and executives

Certifications

- Certifications include:
  - USGv6
  - FIPS 140-2, 140-3 level 1

Internationalization / Localization

- Simplified Chinese (zh_CH)

Flexible Platform Deployment and Streamlined Operations

Major cloud vendors supported

- AWS, AWS GovCloud West, Azure. Telemetry collection options include:
  - AWS VPC Traffic Mirroring
  - Azure Virtual Network Tap (offered in preview mode by Microsoft), and Cloud packet brokers

Appliance health monitoring

- Appliance sub-system status, e.g., power supply, RAID, etc.
- Disk storage usage tracking
- Storage configuration data and RAID level
- Granular disk allocation for different performance data types

Customizable disk space allocation

- Customize allocated space for your packet, microflow indexes, aggregates, and transaction metrics storage either by data volume or retention time

Backup and restore

- Remote backup of performance and configuration data
- Aggregate data (ASA, WTA, DBA, UCA)
- Alert events
- Scheduled reports
- System metrics
- Configure scheduled backups

Streamlined platform deployment

- Easily deploy optimal collection architecture with forecasted appliance storage capacity that includes raw packet data and aggregated data (1-min, 5-min, metric data etc.)

Automated orchestration

- Ability to automatically reset AR appliance to known good/safe state

Security compliance

- Supports the most secure SSH key exchanges to minimize security vulnerabilities

Integrations and Related Products

Riverbed Network Observability

Riverbed Network Observability solutions makes it easy to monitor, troubleshoot, and analyze what's happening across your hybrid network from users to the data center to the cloud. With end-to-end visibility and actionable insights, you can quickly and proactively resolve performance issues, fortify security, and ensure your cloud workloads and SaaS applications meet your SLAs. Riverbed Network Observability solutions gather all packets, all flows, all device metrics— all the time. It does this across all environments on-premises, virtual, and cloud—to enable business-centric views across all your domains. Whether you are rolling out new applications, consolidating or virtualizing data centers, or migrating to the cloud, Riverbed provides service centric insights into existing infrastructure and applications to enhance work from anywhere users' experience.

Riverbed NetIM

Riverbed® NetIM is a holistic solution for discovering, mapping, monitoring and troubleshooting your infrastructure. It enables companies to capture infrastructure topology, detect performance and configuration issues, map application network paths, diagram your network and troubleshoot infrastructure problems. NetIM is built on a modern, containerized architecture to provide expansive horizontal scalability, ultra-high performance and cloud deployment for operational agility.

Riverbed NetProfiler

AppResponse exports flow to NetProfiler for end-to-end monitoring and reporting. NetProfiler provides troubleshooting and root cause of network and application issues with end-to-end network performance monitoring. The solution combines data from Riverbed® Flow Gateway, SteelHead, and Riverbed AppResponse appliances, as well as virtual solutions into a single, integrated view.

Riverbed Portal

AppResponse integrates with Riverbed Portal for blended viewing of end-user experience, application, network, UC, and infrastructure performance. Riverbed Portal redefines how companies visualize, monitor, report, and troubleshoot application performance by combining user experience, application, and network data into a centralized, dynamic solution. This holistic view gives operational teams a single source of truth for application performance, keeping key resources focused on strategic projects—accelerating troubleshooting, and providing meaningful data for stakeholders throughout the enterprise.

Riverbed IQ

Riverbed IQ's AIOps service captures full fidelity user experience, application, and network performance data on every transaction across the enterprise. It applies AI and ML and contextually correlates across disparate data streams to identify issues and delivers low-code automation, replicating the troubleshooting and investigations of IT experts.

Riverbed Transaction Analyzer Plus

AppResponse provides one-click access to Riverbed Transaction Analyze Plus for detailed transaction modeling for root-case analysis and predictive studies.

Riverbed Packet Analyzer Plus

AppResponse is tightly integrated with Packet Analyzer Plus, which speeds real-time network packet analysis of large trace files using an intuitive graphical user interface and a broad selection of pre-defined analysis views.

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Riverbed – Empower the Experience

Riverbed is the only company with the collective richness of telemetry from network to app to end user that illuminates and then accelerates every interaction so that users get the flawless digital experience they expect across the entire digital ecosystem. Riverbed provides two industry-leading solutions: the Riverbed Unified Observability portfolio, which integrates data, insights, and actions across IT to enable customers to deliver seamless digital experiences; and Riverbed Acceleration, which offers fast, agile, and secure acceleration of any application over any network to users, whether they are mobile, remote, or on-premises. Together with our thousands of partners, and market-leading customers across the world, we empower every click, every digital experience. Learn more at riverbed.com.