SteelCentral AppResponse 11

Network-based APM



IT performance management is reactive

40% of all

network problems are experienced and reported by end-users

before

network operations is aware¹

The typical network team spends

70% of their

time fixing problems ¹

90% of IT Execs say

end-users struggle with business technology problems that company has no way to detect²



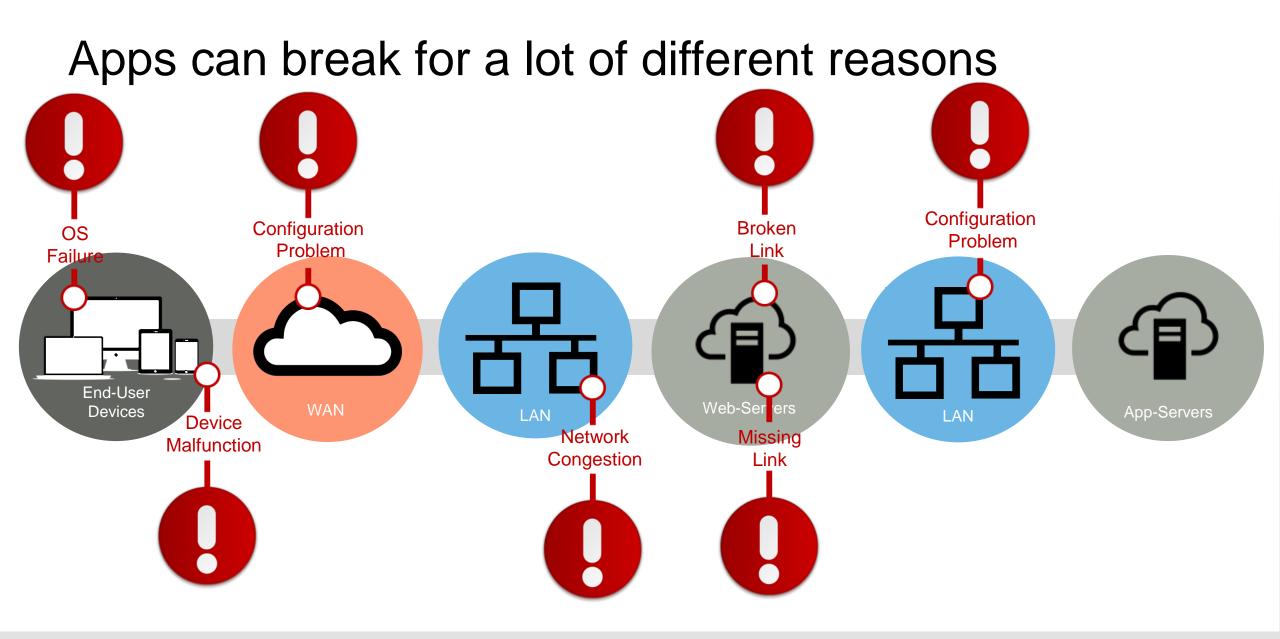
managers say troubleshooting app performance problems take too long³

¹EMA Network Megatrends, 2016

²http://www-nexthink.s3.amazonaws.com/brochures/doc/Forrester_Nexthink_TAP.pdf

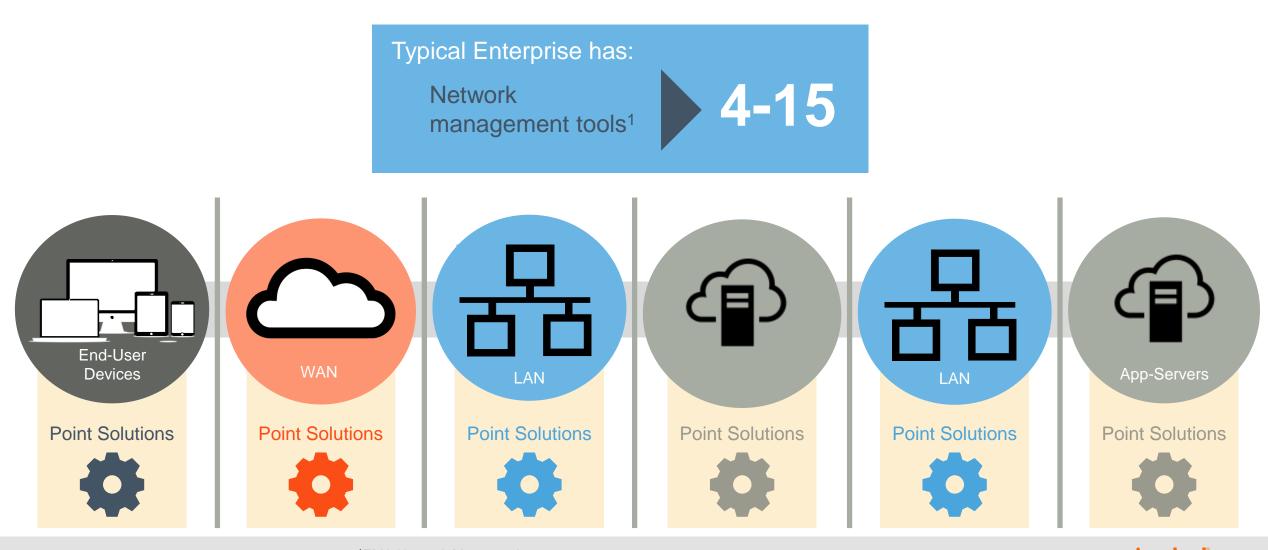
²EMA, "Application Performance Management in the Age of Hybrid Cloud," December 2013







Multiple, disjointed tools complicate troubleshooting



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¹EMA Network Megatrends, 2016

²Market Guide for IT Infrastructure Monitoring Tools," Gartner, 09 May 2016, ID: G00296324

Common causes of network failure

For the last three difficult performance/degradation issues, what were primary root causes?



¹EMA Network Megatrends, 2016



Creates Business Challenges



Complex Troubleshooting

- Long time to resolve issues
- Issues are hard to pinpoint
- Blind spots are everywhere
- Redundant tools confuse everyone
- Finger pointing between teams



Reactive Performance Management

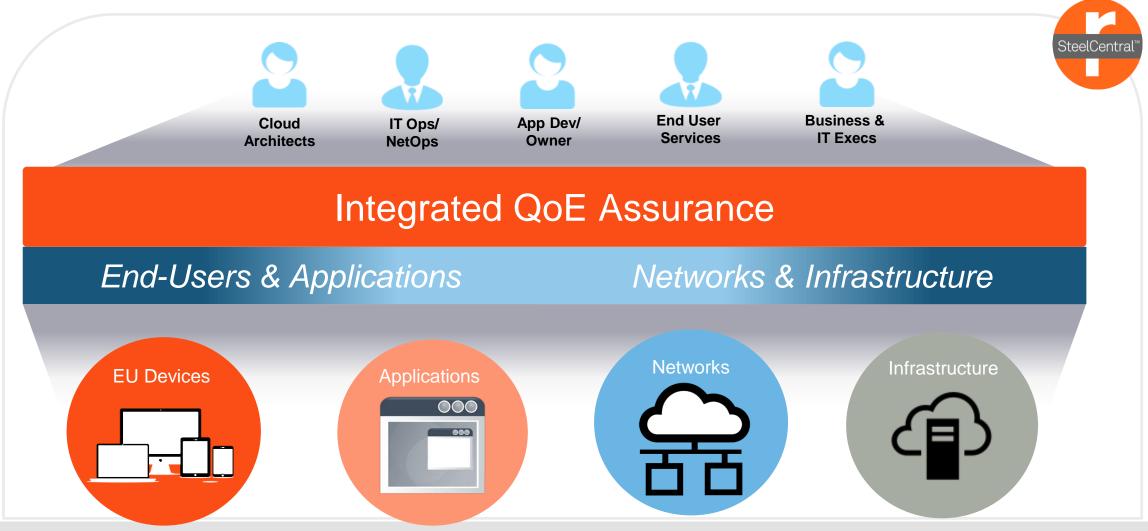
- Users are first to find problems
- Performance is hard to measure
- Emphasis on firefighting, not strategic initiatives
- High IT cost, low efficiency





AppResponse 11 within SteelCentral Platform

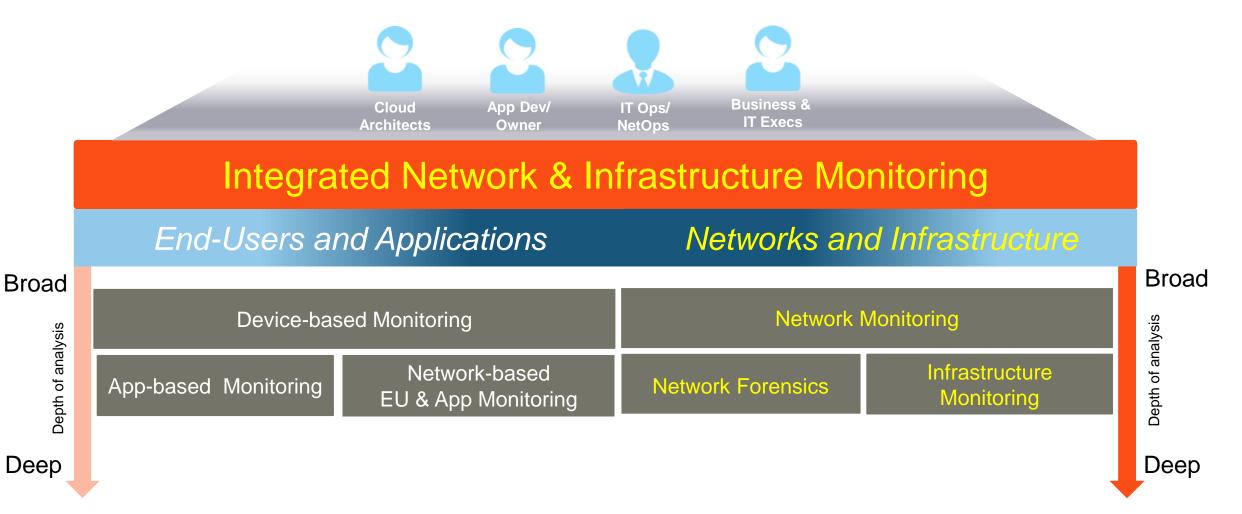
SteelCentral: Your Performance Command Center



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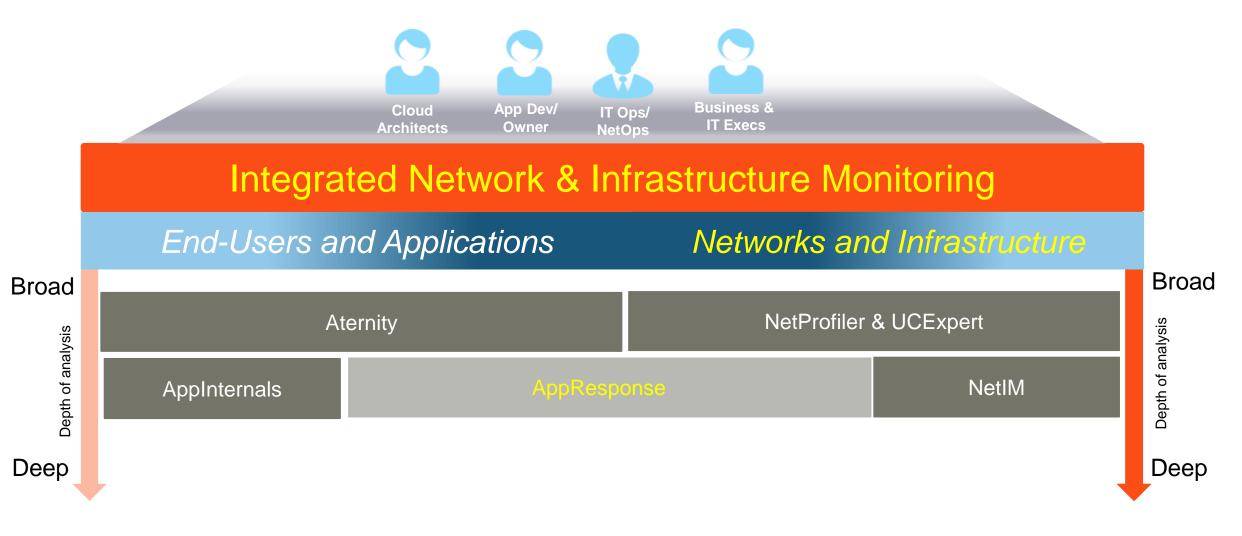


Comprehensive Network & Infrastructure Monitoring





Where SteelCentral AppResponse Fits in the Platform

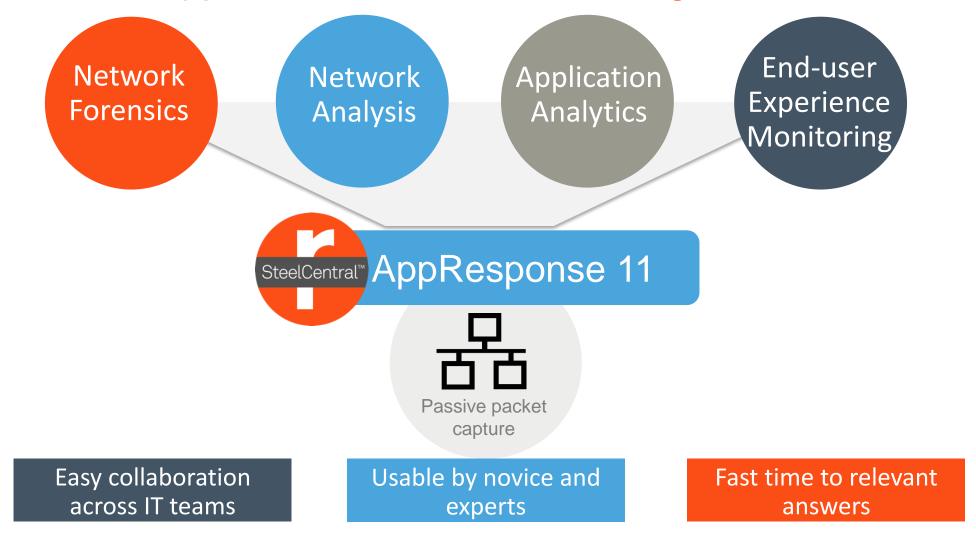




SteelCentral AppResponse 11

SteelCentral AppResponse 11

Network-based Application Performance Management



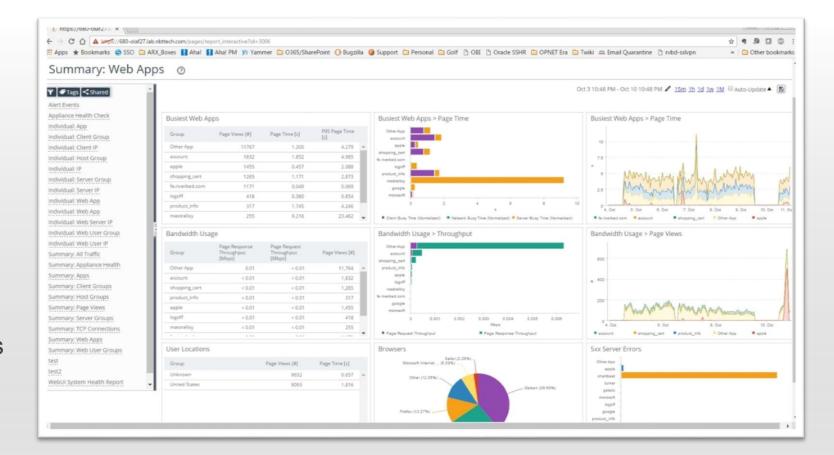


AppResponse 11 provides value across IT

Network Ops Resolve Issues Fast	Security Triage issues fast	App Ops Assure Service Delivery	App Owners Implement critical apps	Web Team Transform The Business
 Proactively identify performance problems Troubleshoot network issues 	 Proactively identify compliance & security issues Security forensics 	 Prioritize problem resolution Optimize app performance Understand how network affects app performance 	 Understand app performance Improver user experience 	 Diagnose user experience Improve user productivity Triage web app problems
몲			E	www.

AppResponse 11: Flexible analysis & workflows Speeds problem identification and diagnosis

- Functional out of the box
 - Pre-defined insights
- Richer performance metrics
 - Broader set of pivot / drill down options
 - Expert analysis
- Supports diverse users
 - Novice to experts
 - NetOps, AppOps, Security, management, LoB ,"tiger" teams



FASTER ROOT CAUSE ANALYSIS AND MTTR

New HTML5 UI

New HTML5 Web-based GUI

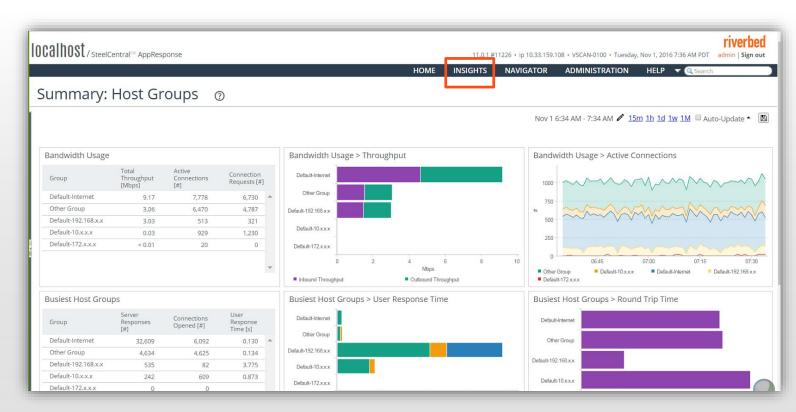
- HTML5 works with everything
- Functional out of the box
 - Shows "all" traffic metrics
 - Zero configuration needed
 - Insights: pre-configured workflows and analysis
 - Navigator: expert analysis for fast time to answers
 - Administration
 - Customize settings
 - IPv4 and IPv6, mix and match

Calhost/SteelCentral™ AppResponse		11.0.0 #11201	• ip 10.33.159.128	VSCAN-100 • F	riday, Oct 28	, 2016 9:34 AM PDT 🔹	Update before Mar 31		Sign o
		НОМ	INSIGHTS	NAVIGAT	or ai	DMINISTRATION	HELP 🔻 🤇	Search	
ummary: All Traffic 🛛 💿									
					Oct 28	8:34 AM - 9:34 AM	/ 15m 1h 1d 1v	w 1M □Auto-	-Updat
All Traffic			Total Throug	thput					
Group		All Traffic	8						
Total Throughput [Mbps]		7.74			~~~~			k	
Total Traffic [MB]		3,322.59	6						
Total Packet Throughput [#/s]		3,590	6						
Round Trip Time [s]		0.007	sdqy 4						
Request Retrans [#]		0.19	~ 9						
Response Retrans [#]		1.55							
Connections Failed [#]		1,464	2						
			0 0	8:40	08:50	09:00	09:10 0	9:20	09:30
Busiest Apps > User Response Time			Bandwidth L	Jsage					
Group	Server Responses [#] ‡	User Response Time [s] 🛊	Default-Internet Other Group						
Shop Veloce (Network)	14,673	0.076	Default-192.168.x.x						
HTTP	2,261	0.330	Veloce Servers						
SSL	297	4.063	NY Region						
SMTP	266	6.150	Veloce Beta						
TCP/25 (smtp)	256	7.828	Veloce Production						



Insights Pre-defined workflows and analysis

- Functional out of the box
 - Based on DPI
- Focused on a specific subject, e.g., individual app
- Pick content and jump to Navigator to explore
- Fully customize content and presentation
 - Modify Insights
 - Create your own
 - Easily save and reuse customizations





Navigator Validate your hunches. Explore and discover related factors.

- Explore and discover
 - Start anywhere, go anywhere, record everything
 - View aggregated groups of traffic data and metrics
- Build/assemble series of charts
 - Customize chart area content for tree table selection
- Save info as templates and/or reports
 - Create Favorites

O-SGUATINI/SteelCentral™ App	Response		11.0.0 #10566 •	ip 10.33.159.134 • VM	1ware • Monday, Ser) 19, 2016 3:39 PM PDT • (Update before Mar 31, 2017	admin Sign out
			HOME	-		ADMINISTRATION	HELP 🔻 🔍 Searc	
avigator/TCP Conr	ections 💿							
						Sep 19 3:	20 PM - 3:35 PM 🖉 1	5m 1h 1d 1w 1M
oups	Limit: 10 Top B	y: Total Traffic 🔻						
Application Stream Analysis All Traffic	Group \$		Start Time (Min) 🗘	Connection Duration [s]\$	Total Traffic [B] 🛊	Total Packet Traffic [#] 🖗	Server Response Time [s] \$	Round Trip Time [s]\$
Applications	ed1sjcb1902.we	bex.com:443on2.nbttech.com:57536 (c)	Sep 19, 2016 3:20:00 PM	900	8,908,255	11,028	0	0.017
Host Groups	a23-61-194-243.	deploy.staw7.nbttech.com:60352 (c)	Sep 19, 2016 3:25:49 PM	430.734	3,742,104	4,515	0	0
Client Groups	sfo1-ntap-eng-t	.nbttechw7.nbttech.com:61317 (c)	Sep 19, 2016 3:27:21 PM	338.235	1,915,194	6,016	0	0
Server Groups IPs	64.18.6.14:25 (s	- 192.168.77.27:46364 (c)	Sep 19, 2016 3:20:00 PM	573.734	1,712,929	4,657	< 0.001	< 0.001
Client IPs	122.252.3.230:2	750 (s) - 138.6.14.240:10000 (c)	Sep 19, 2016 3:20:39 PM	22.426	1,640,669	1,413	0	< 0.001
Server IPs	253.238.21.94:2	750 (s) - 13.249.31.104:10000 (c)	Sep 19, 2016 3:29:19 PM	40.471	1,551,071	1,298	0	0
IP Conversations	226.36.123.34:2	750 (s) - 242.46.133.44:10000 (c)	Sep 19, 2016 3:28:56 PM	22.426	1,547,822	1,340	0	0
 Advanced 	ac9045ab.ipt.ao	.com:2750181.adslplus.ch:10000 (c)	Sep 19, 2016 3:28:10 PM	22.414	1,523,313	1,286	0	< 0.001
TCP Client DSCP	118.252.15.52:2	750 (s) - 134.6.26.62:10000 (c)	Sep 19, 2016 3:27:23 PM	22.428	1,514,796	1,30 5'0''	507	
TCP Server DSCP	p5b3275f8.dip0	t-ipconnecols.spcsdns.net:10000 (c)	Sep 19, 2016 3:27:00 PM	22.420	1,508,423	1,28 50"	SA ST	
Applications (TCP Only)						3.0	30	
Host Groups (TCP Only) TCP Client Groups						2'0" 1'0"		
TCP Server Groups	*	2 In the Int Int Int		Table Sync		8 2	K # [\/\[]	
TCP Server IPs				C Table Syric				
TCP Server Ports	Time Chart			Pie Chart				
TCP Connections		Total Traffic				Total Traffic		
Web Transaction Analysis	2,000k			1	22.252.3.230:2750 (s)	. (9.16%)		
All Web Traffic Web Apps	1.500k			64.18.6.14:2	5 (s) - 192.1 (9.56%)			
Page Families								
Web User Groups	^m 1.000k							
Web Server IPs	500k	~ / /		sfo1-ntap-eng-t3.nbt	ttech (10.69%)		ed1sjcb1902.wei	bex.com:44 (49.71%)
Web Client IPs								
Web User IPs	0k 15:20 15:2	2 15:24 15:26 15:28	15:30 15:32 15:34					
Web Users		43 (s) - skrichbrinton2.nbttech.com:57536 (c)					*	
Advanced		tic.akamaitechnologies.com:443 (s) - wtai1-w7.nbttech.com am:445 (s) - pwason-w7.nbttech.com:61317 (c)	m:80352 (c)	a23-81-19-	4-243.deploy.st (20.88%	i) /		
Favorites	sto1-ntap-eng-t3.nottecn.c	5m:445 (s) - pwason-w/.nottecn.com:01317 (c)		a23-01-16-		n) >		



New HTML5 UI: Key Takeaways

 \rightarrow \rightarrow \rightarrow

New, redesigned, and browser-based Customizable Home view

More flexible Insights, and greater data diversity

Navigator: Start anywhere, go anywhere, record everything

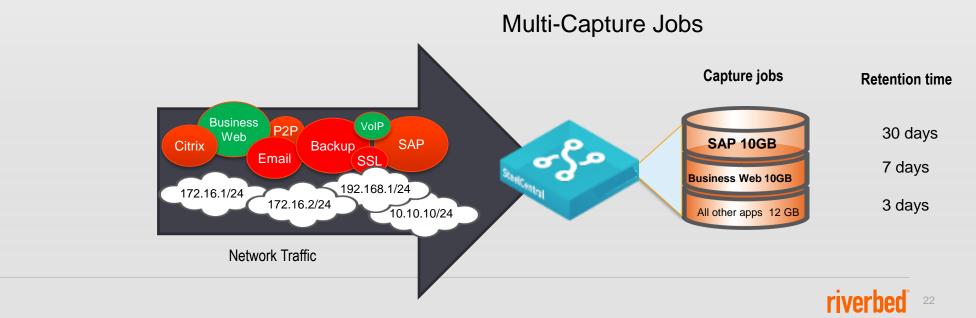
Redesigned workflows to get to the answer faster



Shark Packet Analysis Module SteelCentral Packet Analyzer Plus

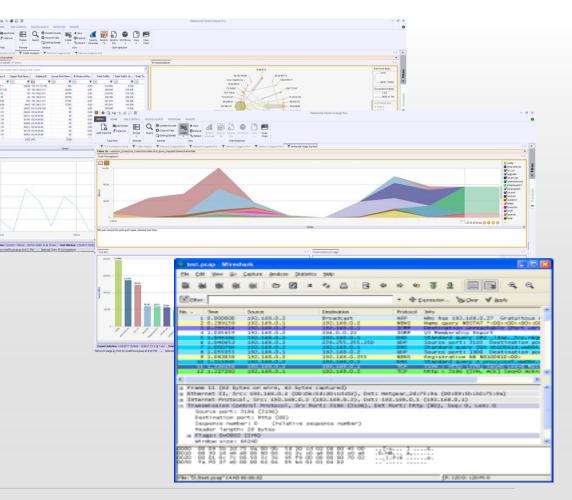
Shark Packet Analysis Module Network Forensics

- "Rewind" and analyze network, security and application issues
- Smart indexing allows blazing fast queries, zero network overhead
- Deep packet inspection (DPI) recognizes 1300+ applications
- Multi-capture jobs protect what matters most



SteelCentral Packet Analyzer Plus Powerful, visually rich packet analysis

- User Interface for SPA module
 - One-click access to rich selection of highly interactive views
 - Ability to configure and control capture jobs
- Flexible analysis
 - Packet by packet
 - Transactions across multiple segments
- Blazing fast analysis
 - 10 terabytes feels like 10 megabytes or less!
- Key integrations
 - Wireshark: world's most popular protocol analyzer
 - Transaction Analyzer: transaction analysis,
 "what if" scenarios

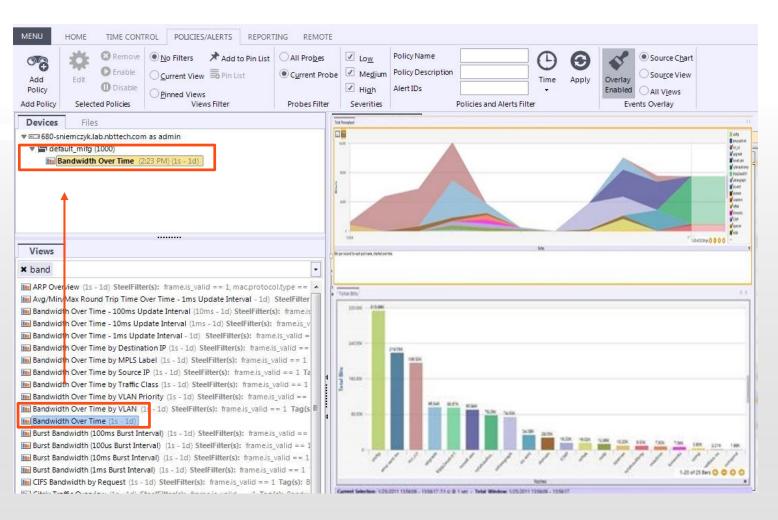


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Large Selection of Drag & Drop Views

Sample Views

- LAN/WAN troubleshooting
 - MAC, VLAN, ARP, ICMP, DHCP, and DNS
- Bandwidth usage
 - MicroBursts, IP, TCP, Web, FIX and VoIP
- Talkers and conversations
 - IP, subnets, countries, TCP, Web, and VoIP, FIX
- Performance and errors
 - IP, TCP, Web, VoIP, FIX
- User activity
 - Web, VoIP, FIX
- 802.11 WLAN troubleshooting
 - Discovery, Bandwidth, Channel Usage, Retransmissions, Signal, Noise





Application Stream Analysis – App Analysis

Application Stream Analysis Module Network Analysis

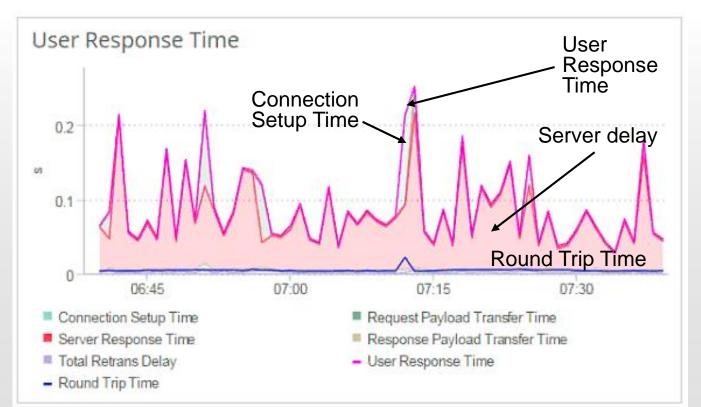
- Monitor live performance for all users, all apps, all the time, and alert against SLAs
 - Continuously automated calculation of 60+ TCP and UDP metrics
 - Roll-up metrics for 1 min., 5 min., 1 hour, 6 hour, and 1 day
 - Aggregate traffic by apps, users, servers, clients, conversations, and host groups.
 - Define a hierarchy of host groups to simply analysis for your environment

Calhost / SteelCentral	Аррисаронае				HOME INSIGHTS	NAVIGATOR ADMINIST	PM PDT • Update before Mar 31, 2017 admin Sign ou
Summary: App	os 💿						
Tags Shared						Sep 19 3:02 PM - 3:17	PM 🖉 <u>15m 1h 1d 1w 1M</u> ■ Auto-Update ▲ [
ndwidth Hogs 1	Busiest Apps				Busiest Apps > User Response Time		Busiest Apps > Network Delay
ndwidth Hogs 2 ndwidth Hogs Insight	Group	Server Responses [#] ‡	User Response Time [s]≑	Round Trip Time [s] ‡	HTTP TCP8#x2F:443 (https) TCP8#x2F:80 (http)		HTTP TCP/:443 (https)
art Test	HTTP	3,594	0.703	0.085	SSL		TCP/80 (http)
nnection Search	TCP/443 (https)	368	1.559	0.012	SMTP TCP/:25 (smtp)		SSL SMTP
O Map Insight	TCP/80 (http)	65	3.049	0.730	RTMP Doubleolick		TCP/:25 (smtp)
lividual: App	SMTP	64	2.108	0.009	Google		RTMP
lividual: Client Group		04	2.100	0.001	Google-Ads 0 20 40	60 80	Doublectick Google
dividual: Client IP						5	Google-Ads
lividual: Host Group					Connection Setup Time Server Response Time Total Retrans Delay	Total Payload Transfer Time	0 0.1 0.2 0.3
lividual: Server Group	Bandwidth Usage	2			Bandwidth Usage > Throughput		Bandwidth Usage > Active Connection
lividual: Server IP lividual: Web App	Group	Total Throughput [Mbps] \$	Active Connections [#]¢	Connection Requests [#] \$	RTP TCP/443 (https)		RTP TCP8#x2E:443 (https)
lividual: Web Server IP	RTP	1.94	0	0	TCP8#x2F;80 (http)		TCP/80 (http)
lividual: Web User Grou	TCP/443 (https)	1.28	1,436	716	HTTP TCP/2753 (de-spot)		нттр
lividual: Web User IP	TCP/80 (http)	1.21	1,105	311	TCP/2781 (fjppol-port2)		TCP/2763 (de-spot) TCP/2761 (fjppol-port2)
Transaction Search	HTTP	0.82	699	786	TCP/2750 (fjippol-port1) SSL		TCP/:2750 (fjppol-port1)
w Insight	TCP/2753 (de-spot)	0.65	60	22	TCP/:2752 (rsisysaccess)		SSL
t Destroyed					TCP/2754 (apollo-cc) 0 0.5	1 1.5 2	TCP/2752 (rsisysaccess) TCP/2754 (apollo-cc)
w Insight mmary: All Traffic					Total Throughput	Mbps	0 250 500
mmary: Apps	Highest Total Ret	rans (%)			Most Connections Failed		Most Server Resets



Application Stream Analysis (ASA)

- Response Time Composition Chart
 - Automatically dissembles user response time into 8 different components of delay
 - Quickly determine where to focus troubleshooting efforts – network or server

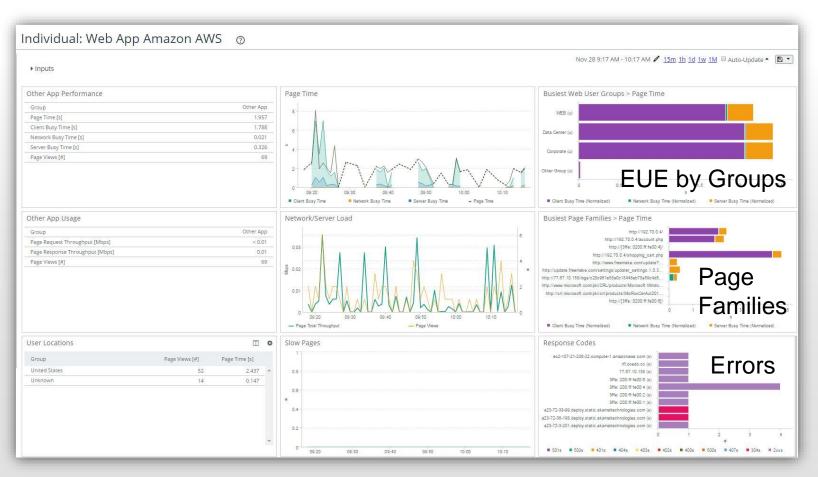




Web Transaction Analysis – Web App Analysis

Web Transaction Analysis (WTA)

- Real-time web app performance for business transactions
 - Auto-discovers all URLs, page families, and end-user activity
 - View page time for a true enduser perspective
 - Aggregate EUE by groups
- Group and monitor related pages or users
- Rich set of stats for each web page
 - Page Errors, Response/page,
 Page Rate, # of Slow Pages
- Real-time SSL decryption





Waterfall Chart

Streamline problem identification

- Quantify end-user experience
 - Shows page and object load times
 - Quickly identify web apps, pages, objects, sites, and users with high response times
 - Break down web app response times into network vs. server delays

.imit: 10 Top By: Page Time +		.pp AND PageFamily=http://192.70.0.4	n stroppin &_cui ciprip				
Group ;		Page Start Time ‡	Web User IP 🛊	Server IP Address 🛊	Status Code Value [#] :	Server Busy Time [s] :	Page Time [s] 🛊
✓ + http://192.70.0.4/shopping_car	rt.php	Nov 28, 2016 10:12:50 AM	192.70.161.179	192.70.0.4	200	0.129	4.746
http://192.70.0.4/shopping_ca	rt.php	Nov 28, 2016 10:12:50 AM	192.70.161.179	192.70.0.4	200	1.011	1.021
http://192.70.0.4/includeons	s/button_quick_find.gif	Nov 28, 2016 10:12:52 AM	192.70.161.179	192.70.0.4	200	0.009	0.009
http://192.70.0.4/includes/e	nglish/images/icon.gif	Nov 28, 2016 10:12:51 AM	192.70.161.179	192.70.0.4	200	0.007	0.007
http://192.70.0.4/includees/	german/images/icon.gif	Nov 28, 2016 10:12:52 AM	192.70.161.179	192.70.0.4	200	0.006	0.006
http://192.70.0.4/includetto	ns/button_continue.gif	Nov 28, 2016 10:12:55 AM	192.70.161.179	192.70.0.4	200	0.005	0.006
http://192.70.0.4/includees/	german/images/icon.gif	Nov 28, 2016 10:12:51 AM	192.70.161.179	192.70.0.4	200	0.005	0.005
http://192.70.0.4/includes/e	spanol/images/icon.gif	Nov 28, 2016 10:12:52 AM	192.70.161.179	192.70.0.4	200	0.004	0.004
http://192.70.0.4/includes/e	spanol/images/icon.gif	Nov 28, 2016 10:12:51 AM	192.70.161.179	192.70.0.4	200	0.004	0.004
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Vaterfall Chart Mttp://192.78.0.4/shopping_cart.ph http://192.78.0.4/shopping_cart.ph http://192.78.0.4/includes/egianani/inages/icon.g http://192.78.0.4/includes/germani/inages/icon.g p//192.78.0.4/includes/germani/inages/icon.g http://192.78.0.4/includes/germani/inages/icon.g			ng_cart.php Nov 28, 20	Request Dat	a Transfer Time Server Bu	isy Time Response D	
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Summary



One common packet capture tool that delivers application insight to network operations and network insight to app ops

Streamlines workflows and analysis for fast time to answers

Improves collaboration and communication across IT teams







SteelCentral AppResponse 11 Appliances & Software

Appliance Description	Form Factor	Total Packet Storage
AppResponse 2170	1U	8 TB
AppResponse 4170	2U	32 TB
AppResponse 6170*	2U	576TB
AppResponse Storage Unit 48TB	2U	48 TB
AppResponse Storage Unit 72TB	2U	72 TB

Virtual Software Description	Secondary Storage
AppResponse Virtual-100	Up to 100 GB
AppResponse Virtual-500	Up to 2 TB
AppResponse Virtual-2000	Up to 8 TB
AppResponse Virtual-FLOW	Up to 100 GB

AppResponse 6170



Storage Unit 6170

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Benefits for NetShark Users

- NetShark users gain:
 - IPv6 compliant
 - HTML5 web UI for admin
 - Updated Web UI for Packet Analyzer Plus
 - Ability to create capture jobs in Packet Analyzer Plus
 - Simplified searching for Views using Tags
- Optional (ASA & WTA modules)
 - Pre-defined Insights, Navigator expert analysis
 - Historical data analysis & retention
 - Response time composition chart
 - End-user experience monitoring
 - Web app analysis



Benefits for AppResponse 9 Users

- AppResponse 9 users gain:
 - One-click access to packets from anywhere
 - Better DPI engine with 1300+ apps
 - Multi-capture jobs with filtering
 - Better granularity (microsecond)
 - Network layer and address management protocol support
 - New HTML5-based web UI
 - Insights: Pre-defined workflows with easy access to relevant data
 - Navigator: Expert analysis with pivot and drill down from any metric



SteelCentral AppResponse 11Architecture Network Forensics / Application Analysis / End-User Experience

