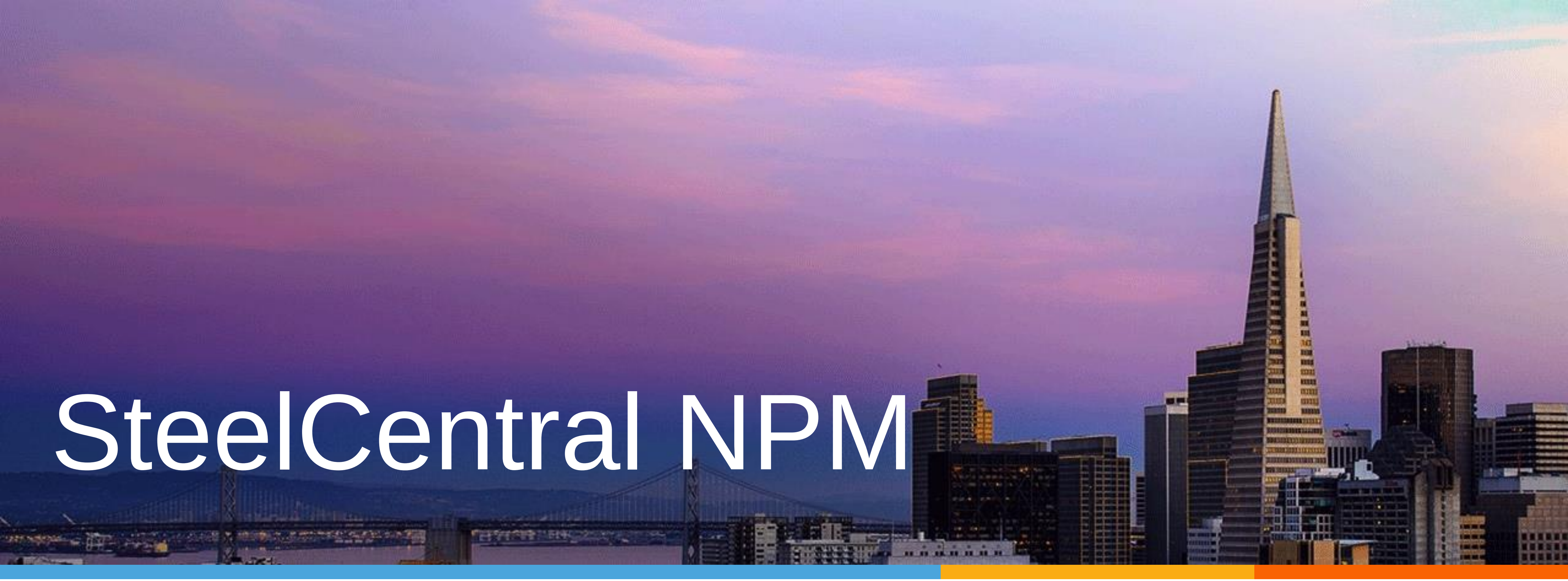
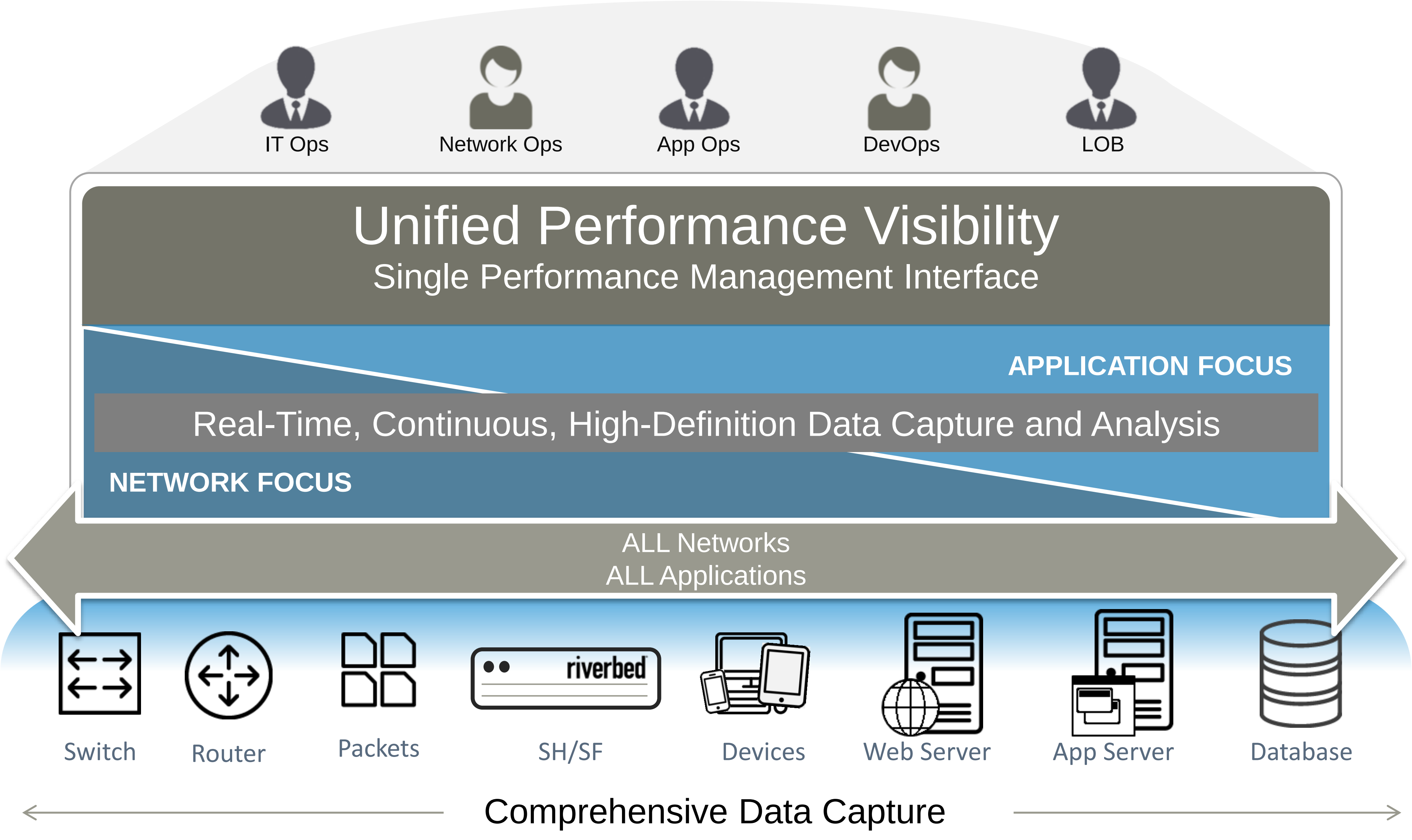


SteelCentral NPM

NetProfiler, NetShark, Flow Gateway & Packet Analyzer

riverbed®



IT Ops

Network Ops

App Ops

DevOps

LOB

Unified Performance Visibility

Single Performance Management Interface

APPLICATION FOCUS

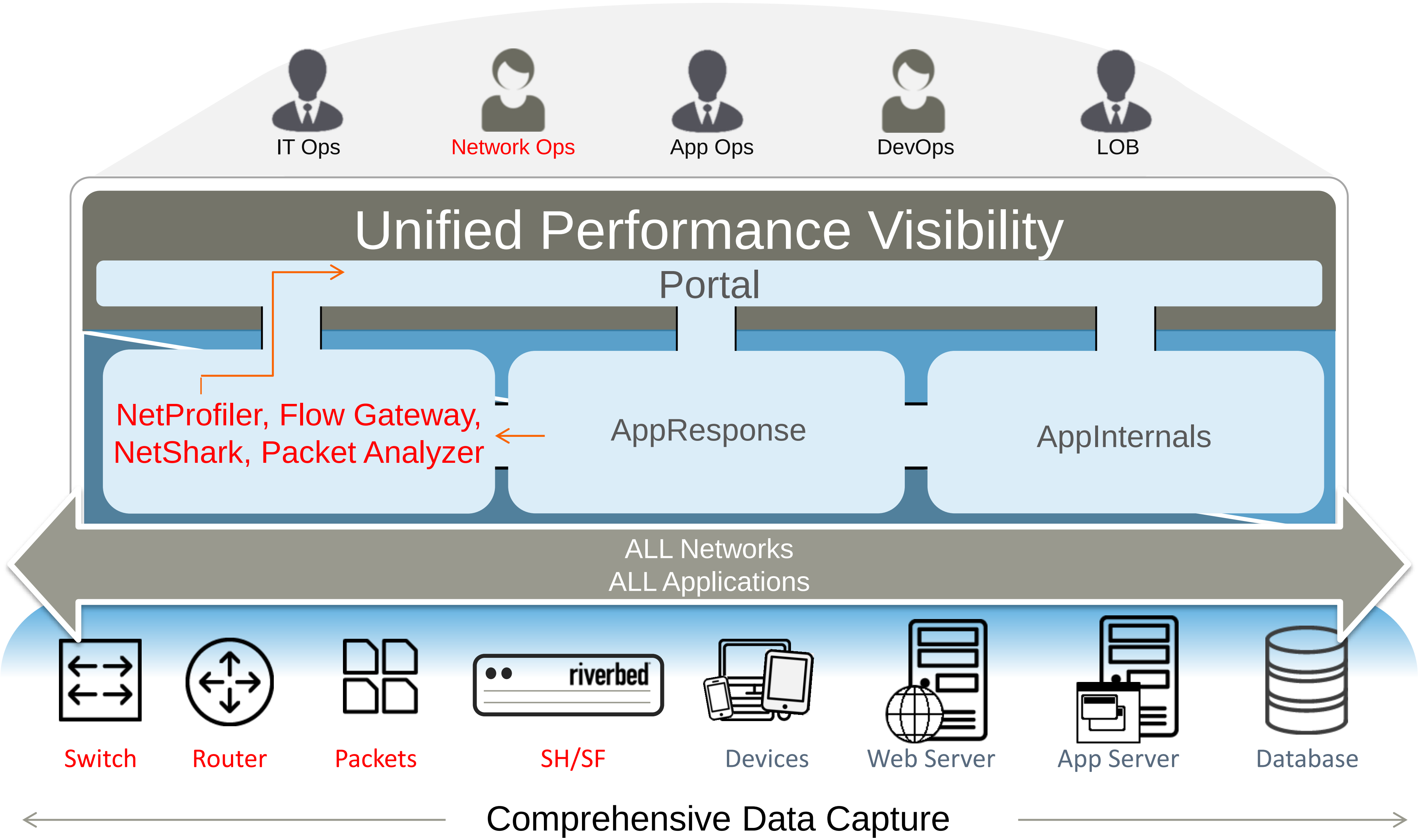
Real-Time, Continuous, High-Definition Data Capture and Analysis

NETWORK FOCUS

ALL Networks
ALL Applications

Comprehensive Data Capture

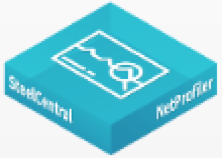
SteelCentral: Your Command Center for Application Performance



SteelCentral: Your Command Center for Application Performance

SteelCentral NPM

Application-Aware Network Performance Management



SteelCentral NetProfiler
Centralized reporting & analysis

SteelCentral Flow Gateway
Traditional flow collector

SteelCentral NetShark & AppResponse
Packet capture, storage & analysis

Transaction Analyzer

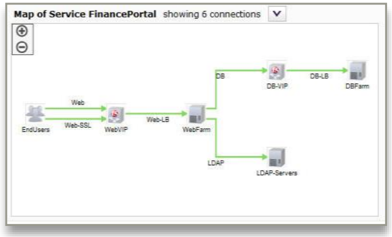
WIRESHARK

SteelCentral Packet Analysis

See The Total Performance Picture

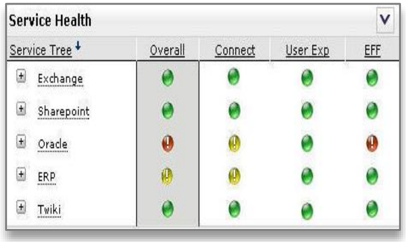
- Avoid business-impacting performance issues
- Minimize downtime
- Improve IT collaboration

Discover



Identify what's important

Monitor & Report

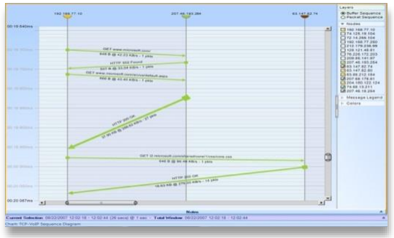


Service Health

Service Tree	Overall	Connect	User Exp	EFF
Exchange	🟢	🟢	🟢	🟢
Sharepoint	🟢	🟢	🟢	🟢
Oracle	🔴	🟡	🟢	🔴
ERP	🟡	🟡	🟢	🟢
Twiki	🟢	🟢	🟢	🟢

See the whole picture

Troubleshoot



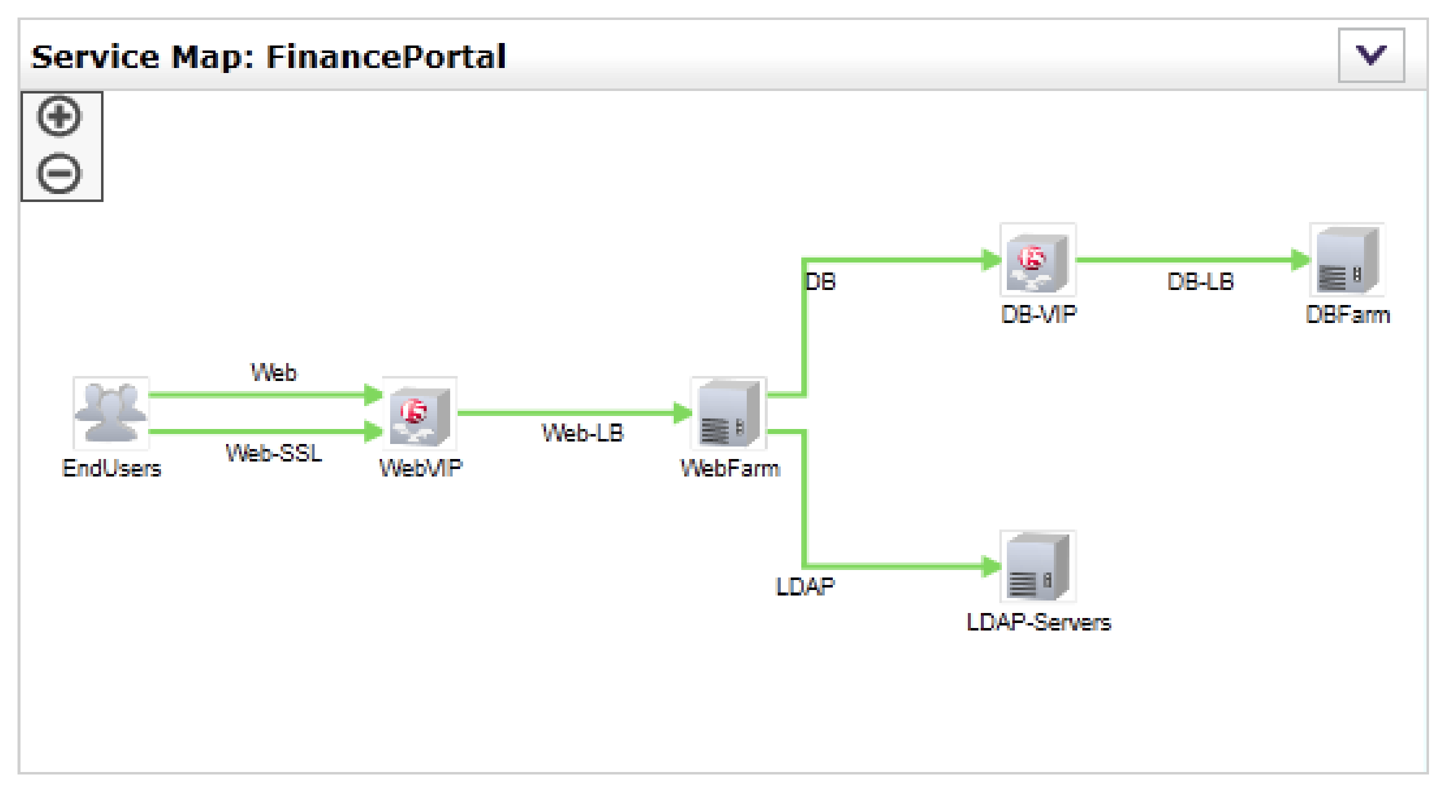
Accelerated triage

With SteelCentral NetProfiler, You Can…

Dependency Mapping

See the Whole Picture

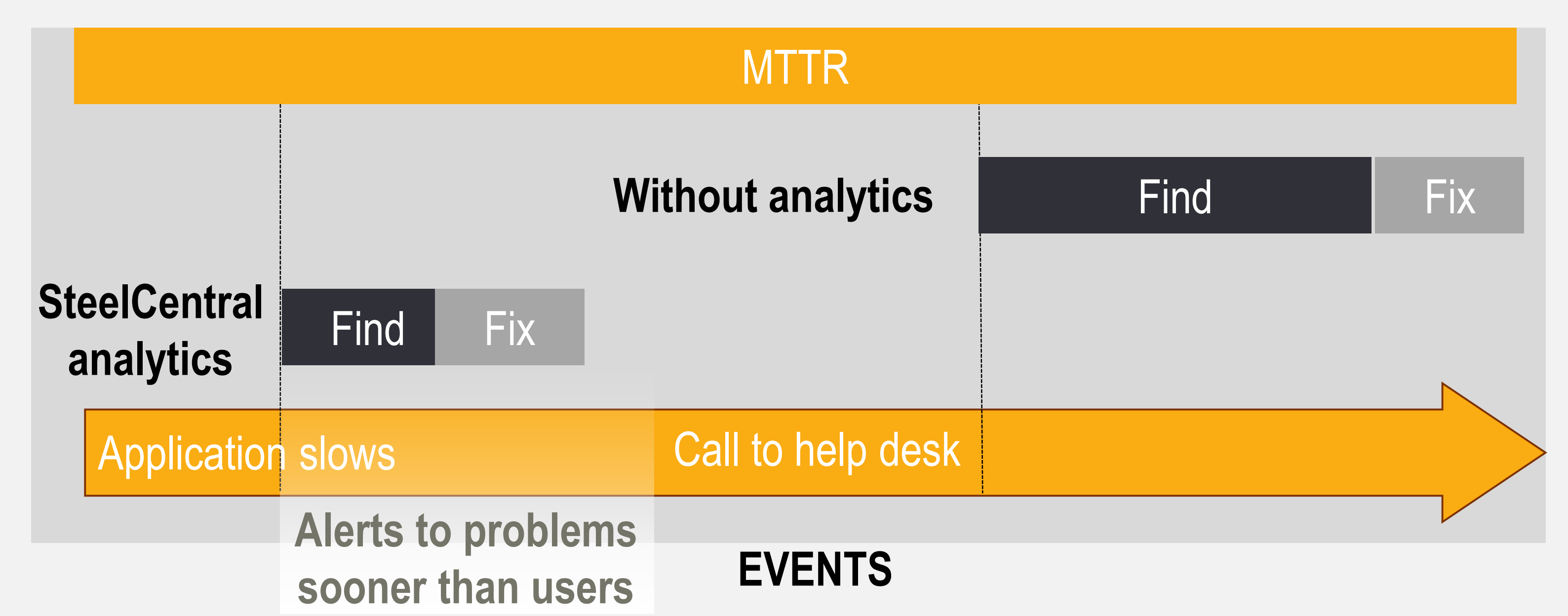
- Understand all components involved in application delivery
- Discover across all tiers of a multi-tier app, including load balancers
- Assist in data center transformations, security and compliance monitoring



With SteelCentral NetProfiler, You Can…

Proactively Identify Problems

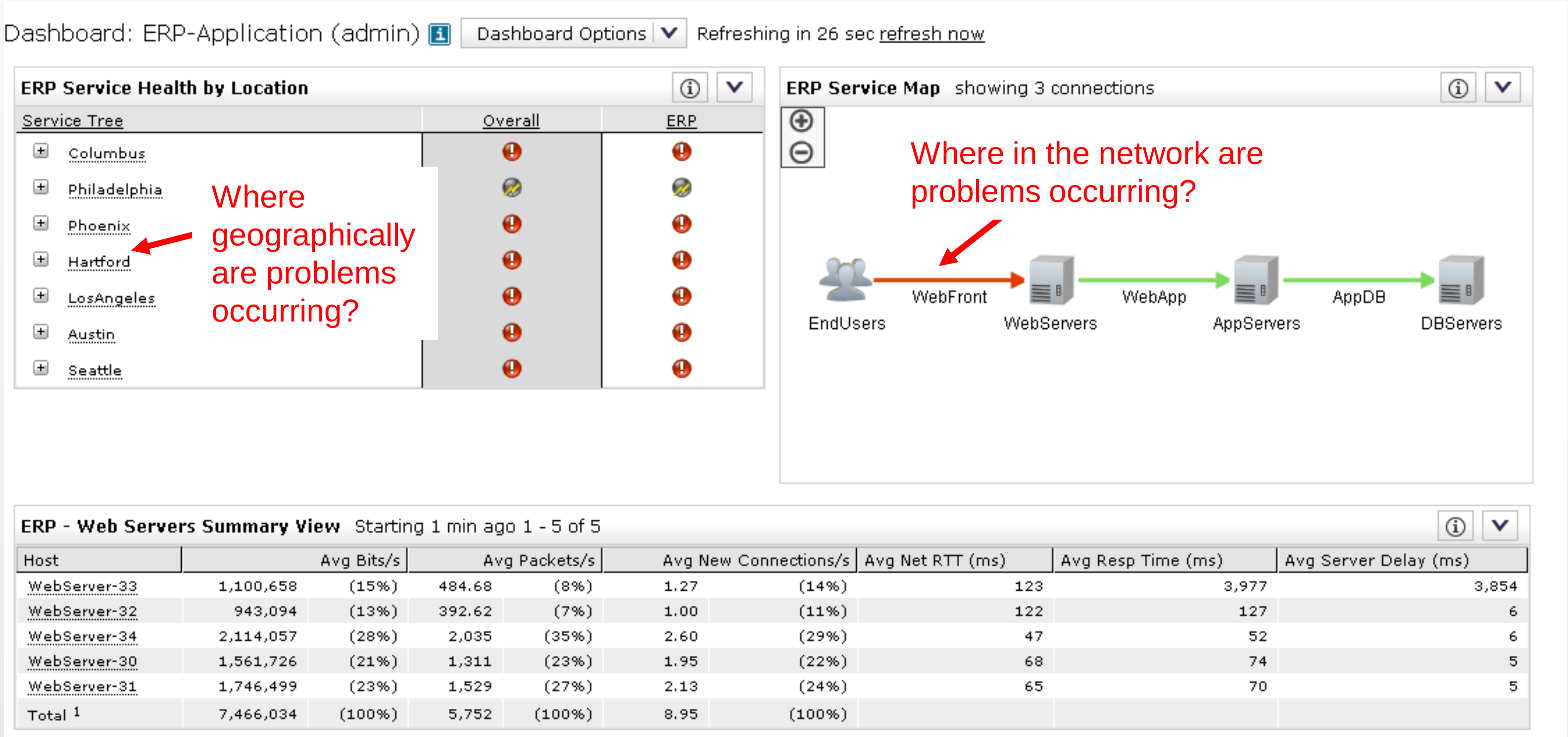
- Automate analysis of performance changes
- Proactively identify issues before users notice



With SteelCentral NetProfiler, You Can…

Identify What's Important

- Quickly understand service elements
- Graphically monitor end-to-end health of critical business apps from the network viewpoint
- Speed problem diagnosis



Dashboard: ERP-Application (admin) Dashboard Options Refreshing in 26 sec refresh now

ERP Service Health by Location

Service Tree	Overall	ERP
Columbus	❗	❗
Philadelphia	⊘	⊘
Phoenix	❗	❗
Hartford	❗	❗
LosAngeles	❗	❗
Austin	❗	❗
Seattle	❗	❗

Where geographically are problems occurring?

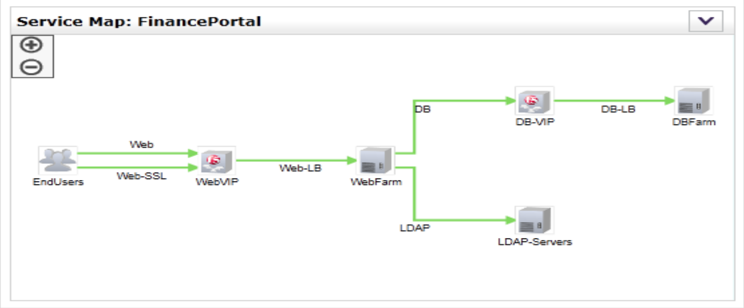
ERP Service Map showing 3 connections

Where in the network are problems occurring?

ERP - Web Servers Summary View Starting 1 min ago 1 - 5 of 5

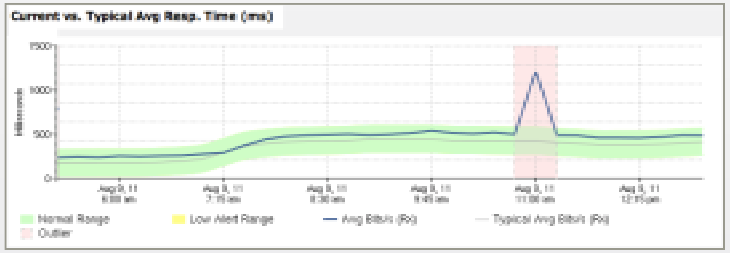
Host	Avg Bits/s		Avg Packets/s		Avg New Connections/s		Avg Net RTT (ms)	Avg Resp Time (ms)	Avg Server Delay (ms)
WebServer-33	1,100,658	(15%)	484.68	(8%)	1.27	(14%)	123	3,977	3,854
WebServer-32	943,094	(13%)	392.62	(7%)	1.00	(11%)	122	127	6
WebServer-34	2,114,057	(28%)	2,035	(35%)	2.60	(29%)	47	52	6
WebServer-30	1,561,726	(21%)	1,311	(23%)	1.95	(22%)	68	74	5
WebServer-31	1,746,499	(23%)	1,529	(27%)	2.13	(24%)	65	70	5
Total [1]	7,466,034	(100%)	5,752	(100%)	8.95	(100%)			

Putting it altogether for a competitive advantage

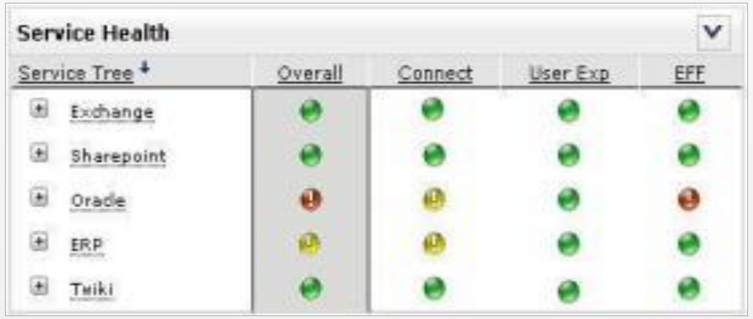


Discover: Quickly identify all components involved in delivering an application service to end users

Wizard automates dashboard creation



Analyze: Automates analysis of performance changes to provide early warning of problems



Service Health

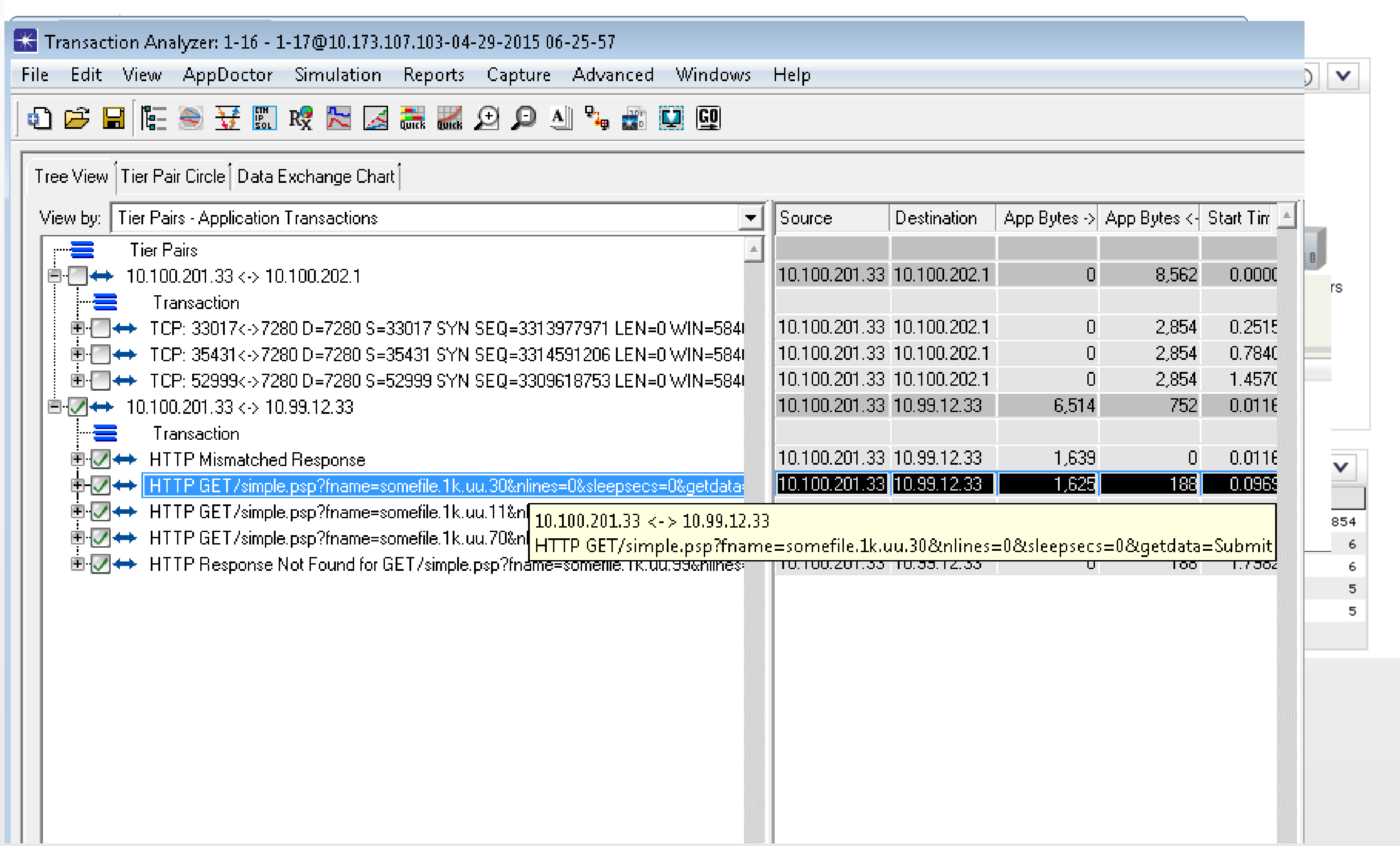
Service Tree	Overall	Connect	User Exp	EFF
⊞ Exchange	🟢	🟢	🟢	🟢
⊞ Sharepoint	🟢	🟢	🟢	🟢
⊞ Oracle	🔴	🟡	🟢	🔴
⊞ ERP	🟡	🟡	🟢	🟢
⊞ Twiki	🟢	🟢	🟢	🟢

Dashboards: At-a-glance view into end-to-end application health

With SteelCentral NetProfiler, You Can…

Find the Problem Faster

- Business intelligence, not data
- Contextual evidence streamlines diagnosis
- Consistent views, metrics & workflows



Transaction Analyzer: 1-16 - 1-17@10.173.107.103-04-29-2015 06-25-57

View by: Tier Pairs - Application Transactions

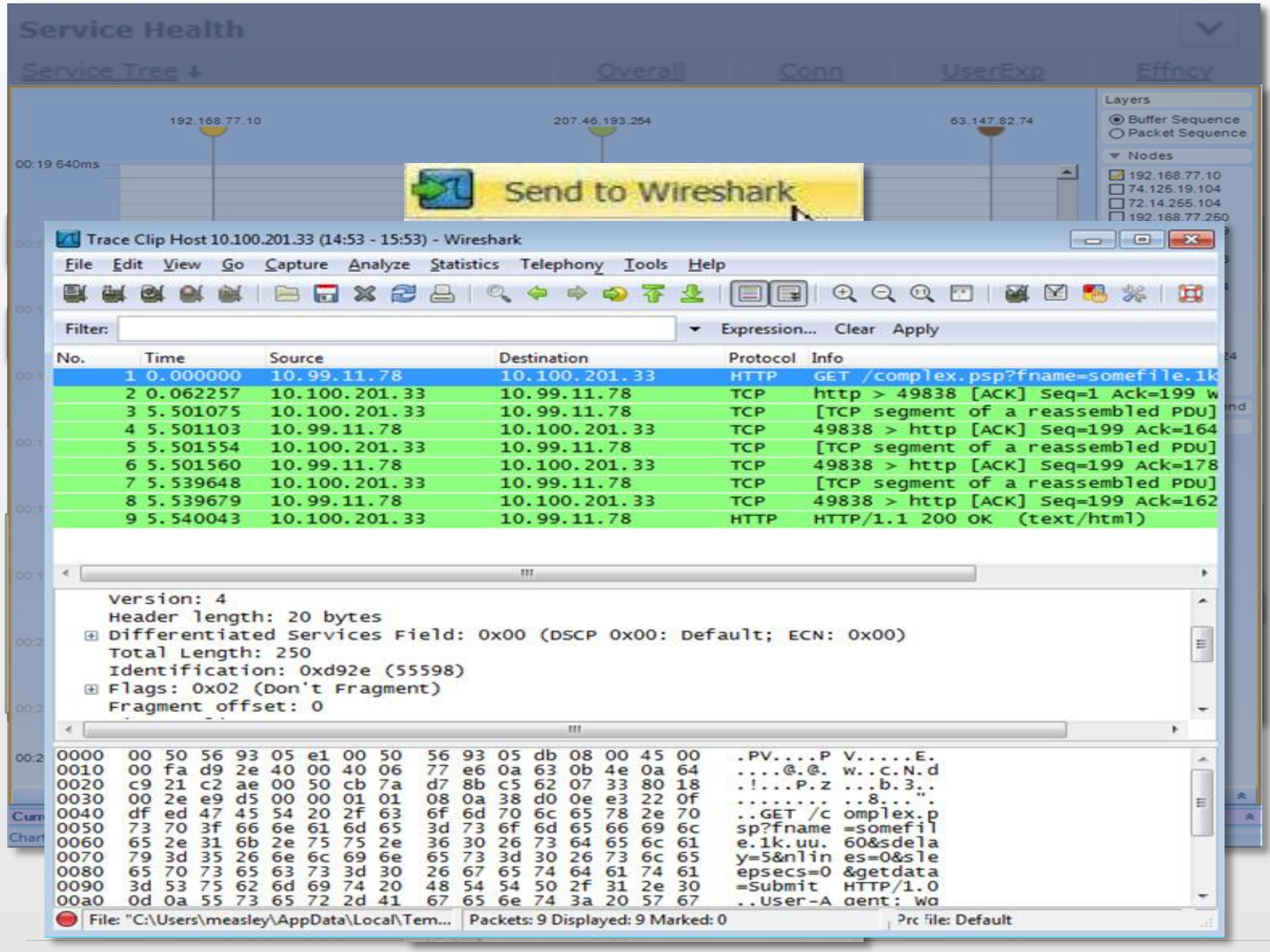
```
Tier Pairs
⊟ □ ↔ 10.100.201.33 <-> 10.100.202.1
      Transaction
   ⊞ □ ↔ TCP: 33017<->7280 D=7280 S=33017 SYN SEQ=3313977971 LEN=0 WIN=584
   ⊞ □ ↔ TCP: 35431<->7280 D=7280 S=35431 SYN SEQ=3314591206 LEN=0 WIN=584
   ⊞ □ ↔ TCP: 52999<->7280 D=7280 S=52999 SYN SEQ=3309618753 LEN=0 WIN=584
⊟ ☑ ↔ 10.100.201.33 <-> 10.99.12.33
      Transaction
   ⊞ ☑ ↔ HTTP Mismatched Response
   ⊞ ☑ ↔ HTTP GET/simple.psp?fname=somefile.1k.uu.30&nlines=0&sleepsecs=0&getdata=
   ⊞ ☑ ↔ HTTP GET/simple.psp?fname=somefile.1k.uu.11&nl
   ⊞ ☑ ↔ HTTP GET/simple.psp?fname=somefile.1k.uu.70&nl
   ⊞ ☑ ↔ HTTP Response Not Found for GET/simple.psp?fname=somefile.1k.uu.99&nlines=
```

Source	Destination	App Bytes ->	App Bytes <-	Start Tim
10.100.201.33	10.100.202.1	0	8,562	0.0000
10.100.201.33	10.100.202.1	0	2,854	0.2515
10.100.201.33	10.100.202.1	0	2,854	0.7840
10.100.201.33	10.100.202.1	0	2,854	1.4570
10.100.201.33	10.99.12.33	6,514	752	0.0116
10.100.201.33	10.99.12.33	1,639	0	0.0116
10.100.201.33	10.99.12.33	1,625	188	0.0969
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10.100.201.33	10.99.12.33	0	188	1.756

10.100.201.33 <-> 10.99.12.33
HTTP GET/simple.psp?fname=somefile.1k.uu.30&nlines=0&sleepsecs=0&getdata=Submit

Streamlined Troubleshooting

Seamless drill-down to details



```
No.     Time        Source           Destination      Protocol  Info
      1 0.000000    10.99.11.78      10.100.201.33    HTTP      GET /complex.psp?fname=somefile.1k
      2 0.062257    10.100.201.33    10.99.11.78      TCP       http > 49838 [ACK] Seq=1 Ack=199 W
      3 5.501075    10.100.201.33    10.99.11.78      TCP       [TCP segment of a reassembled PDU]
      4 5.501103    10.99.11.78      10.100.201.33    TCP       49838 > http [ACK] Seq=199 Ack=164
      5 5.501554    10.100.201.33    10.99.11.78      TCP       [TCP segment of a reassembled PDU]
      6 5.501560    10.99.11.78      10.100.201.33    TCP       49838 > http [ACK] Seq=199 Ack=178
      7 5.539648    10.100.201.33    10.99.11.78      TCP       [TCP segment of a reassembled PDU]
      8 5.539679    10.99.11.78      10.100.201.33    TCP       49838 > http [ACK] Seq=199 Ack=162
      9 5.540043    10.100.201.33    10.99.11.78      HTTP      HTTP/1.1 200 OK  (text/html)
```

```
    Version: 4
    Header length: 20 bytes
 ⊞ Differentiated Services Field: 0x00 (DSCP 0x00: Default; ECN: 0x00)
    Total Length: 250
    Identification: 0xd92e (55598)
 ⊞ Flags: 0x02 (Don't Fragment)
    Fragment offset: 0
```

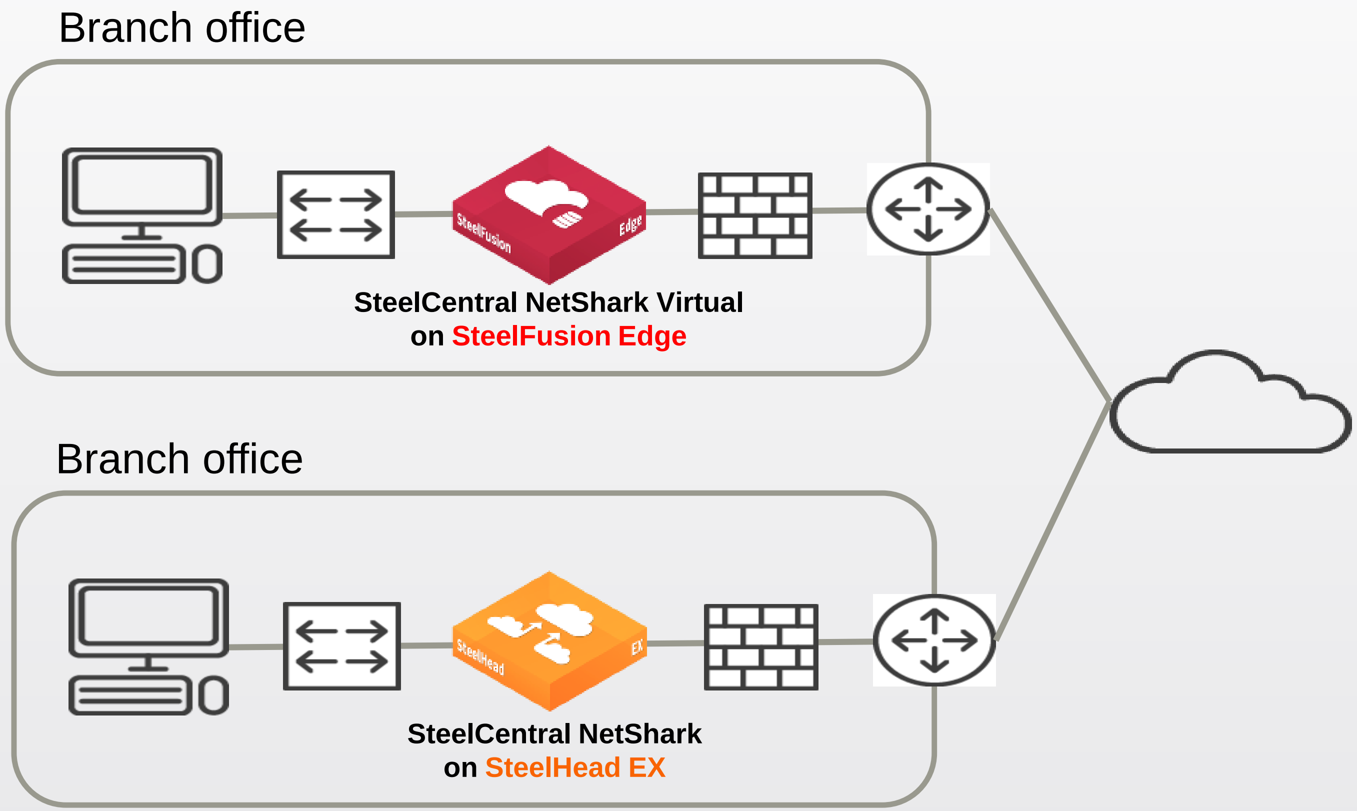
```
0000  00 50 56 93 05 e1 00 50  56 93 05 db 08 00 45 00   .PV....P V.....E.
0010  00 fa d9 2e 40 00 40 06  77 e6 0a 63 0b 4e 0a 64   ....@.@. w..c.N.d
0020  c9 21 c2 ae 00 50 cb 7a  d7 8b c5 62 07 33 80 18   .!...P.z ...b.3..
0030  00 2e e9 d5 00 00 01 01  08 0a 38 d0 0e e3 22 0f   ........ ..8...".
0040  df ed 47 45 54 20 2f 63  6f 6d 70 6c 65 78 2e 70   ..GET /c omplex.p
0050  73 70 3f 66 6e 61 6d 65  3d 73 6f 6d 65 66 69 6c   sp?fname =somefil
0060  65 2e 31 6b 2e 75 75 2e  36 30 26 73 64 65 6c 61   e.1k.uu. 60&sdela
0070  79 3d 35 26 6e 6c 69 6e  65 73 3d 30 26 73 6c 65   y=5&nlin es=0&sle
0080  65 70 73 65 63 73 3d 30  26 67 65 74 64 61 74 61   epsecs=0 &getdata
0090  3d 53 75 62 6d 69 74 20  48 54 54 50 2f 31 2e 30   =Submit  HTTP/1.0
00a0  0d 0a 55 73 65 72 2d 41  67 65 6e 74 3a 20 57 67   ..User-A gent: Wg
```

File: "C:\Users\measley\AppData\Local\Tem... Packets: 9 Displayed: 9 Marked: 0 Prc file: Default

- Service-level dashboard shows issue with ERP
- Incident is localized to Web FrontEnd, across all locations
- Fast, flexible drill down to incident report
- Automated analytics
- Seamlessly drill-down into packets
- Packet-level / transaction analysis in SteelCentral Packet Analyzer
- Integrated with Wireshark

Integration with SteelHead / SteelFusion

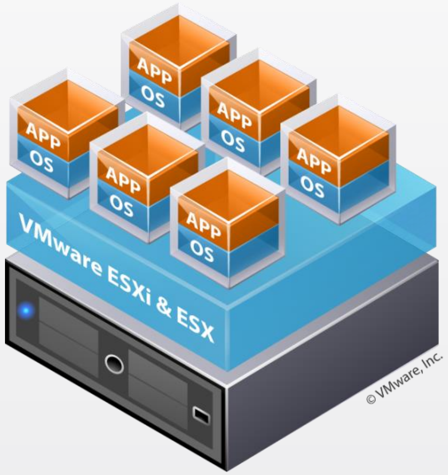
Accelerate Branch Troubleshooting



- Works with SteelHead EX or SteelFusion Edge
  - Real-time app intelligence
  - WAN opt analysis & reporting
  - Guarantee QoS / monitor path selection
  - Response time analysis
- Cost-effectively monitor & troubleshoot branch issues
  - No dedicated monitoring appliances
  - See site-to-site & cloud/SaaS traffic that bypasses datacenter
  - Continuously capture traffic for real-time and historical troubleshooting

Virtualization Monitoring

Only vendor to support all forms of virtualization monitoring



Server Virtualization

- VMware ESXi
- Microsoft Hyper-V

Desktop/App Virtualization

- VMware View
- Citrix XenApp

Network Virtualization

- VMware NSX

SteelCentral customers achieve tremendous benefit

519%

ROI[1]

67%

Reduction in Downtime[1]

48%

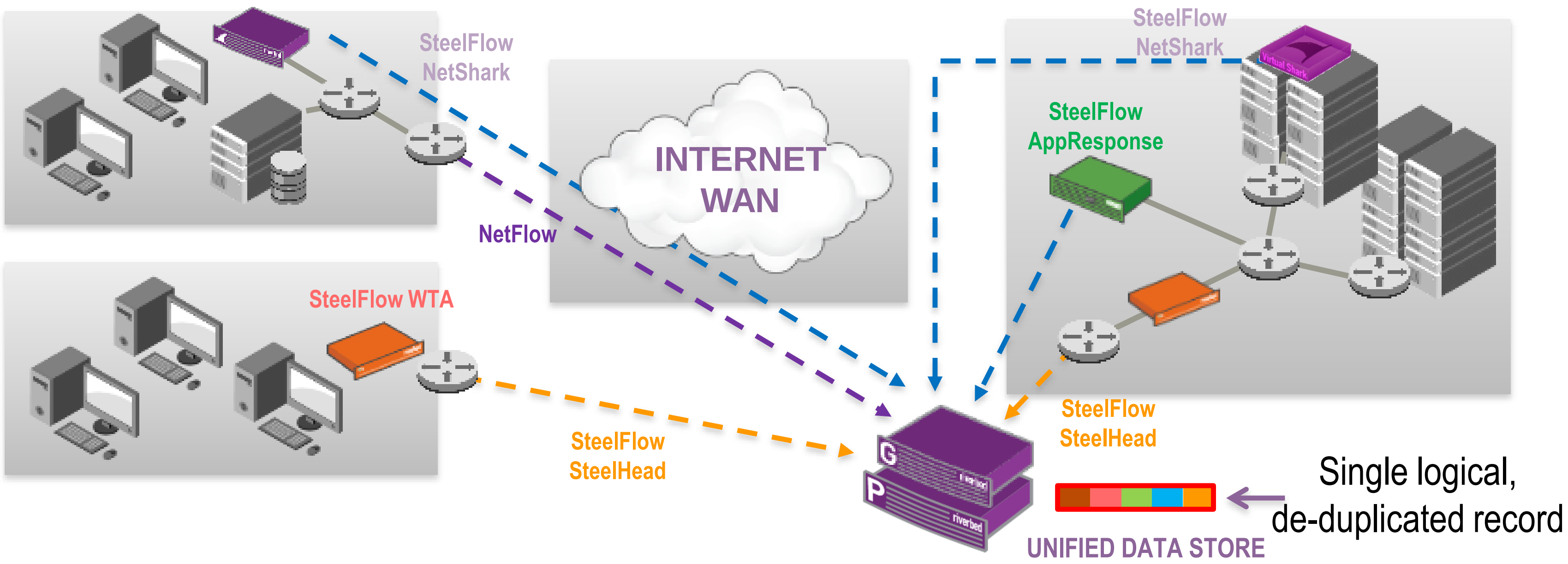
5x or Faster Mean Time to Resolution[2]

[1] IDC, Realizing Business Value and ROI with Application-Aware Network Performance Management, July 2012

[2] http://www.techvalidate.com/tvid/571-6CE-4F3

Basic Architecture

Comprehensive, Unified Visibility



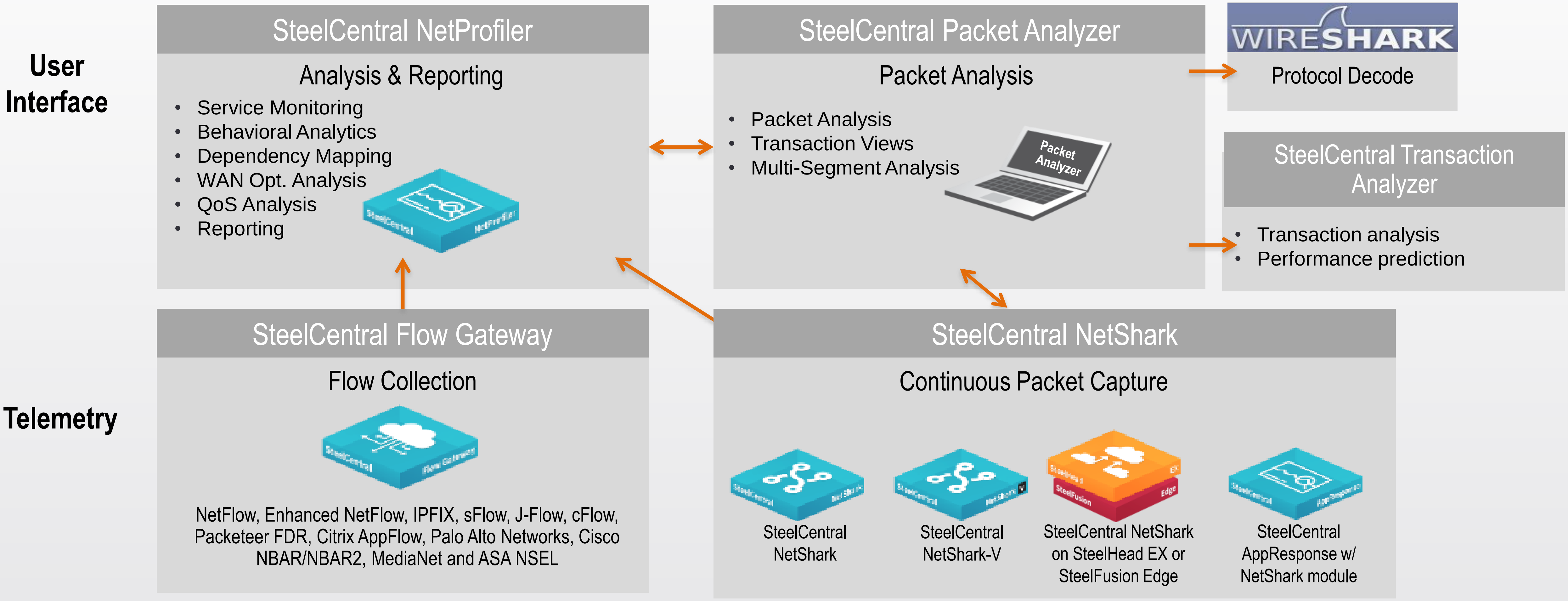
Unified Data Store combines the same flow across multiple interfaces in single logical, de-duplicated record on the NetProfiler

- **NetFlow** - cost-effective end-to-end visibility (NetFlow, IPFIX, Palo Alto, ASA NSEL, Citrix AppFlow, sFlow, etc.)
- **SteelFlow Net (SteelHead)** - SteelHeads add application mapping, bandwidth reduction, optimized traffic network delay & retransmission metrics
- **MNMP (NetShark)** - NetShark adds application mapping, network delay, server delay, retransmission, and VoIP metrics, access to packets
- **SteelFlow Net (AppResponse)** – AppResponse adds network delay, server delay, retransmission, and VoIP metrics, access to packets

Accurate End-User-Experience for Optimized Web & SaaS Applications

- **SteelFlow WTA** - Remote SteelHeads provide AppResponse web transaction analytics for optimized web & SaaS applications; available in AppResponse web interface

SteelCentral NPM – How Everything Works Together



User Interface

Telemetry

SteelCentral NetProfiler

Analysis & Reporting

- Service Monitoring
- Behavioral Analytics
- Dependency Mapping
- WAN Opt. Analysis
- QoS Analysis
- Reporting

SteelCentral Packet Analyzer

Packet Analysis

- Packet Analysis
- Transaction Views
- Multi-Segment Analysis

WIRESHARK

Protocol Decode

SteelCentral Transaction Analyzer

- Transaction analysis
- Performance prediction

SteelCentral Flow Gateway

Flow Collection

NetFlow, Enhanced NetFlow, IPFIX, sFlow, J-Flow, cFlow, Packeteer FDR, Citrix AppFlow, Palo Alto Networks, Cisco NBAR/NBAR2, MediaNet and ASA NSEL

SteelCentral NetShark

Continuous Packet Capture

SteelCentral NetShark

SteelCentral NetShark-V

SteelCentral NetShark on SteelHead EX or SteelFusion Edge

SteelCentral AppResponse w/ NetShark module

SteelCentral NetShark

SteelCentral NetShark

Continuous High-Speed Packet Capture

- Continuous packet capture and storage for retrospective analysis of network, security and app issues
- Smart packet indexing for high query performance and low network overhead
- Mix 1GbE & 10GbE interfaces on same appliance
- Unique multiple concurrent capture jobs
- DPI – distinguish between business & recreational apps (1300+ apps)
- Available as appliance or virtual software
  - Integrated into SteelHead and SteelFusion

Types of NetShark

SteelCentral NetShark appliance

SteelCentral NetShark Virtual Edition

SteelCentral NetShark for SteelHead EX

SteelCentral NetShark Virtual for SteelFusion

NetShark Appliances

High-speed packet capture & storage appliances

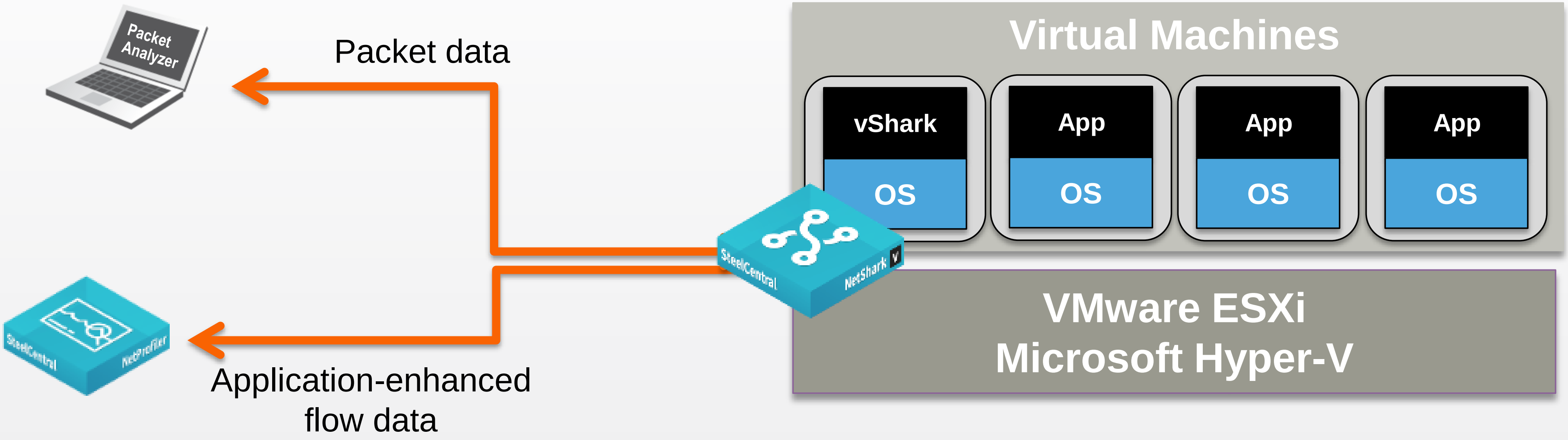
Description	Form Factor	Total Packet Storage
NetShark 2170	1U	8 TB
NetShark 4170	2U	32 TB
NetShark 6170*	2U	576TB
NetShark Storage Unit 48TB	2U	48 TB
NetShark Storage Unit 72TB	2U	72 TB

NetShark 6170

Storage Unit 6170

* Storage Unit required with NetShark 6170. Up to 8 Storage Units can be used.

NetShark-V: Visibility into Virtual Environments



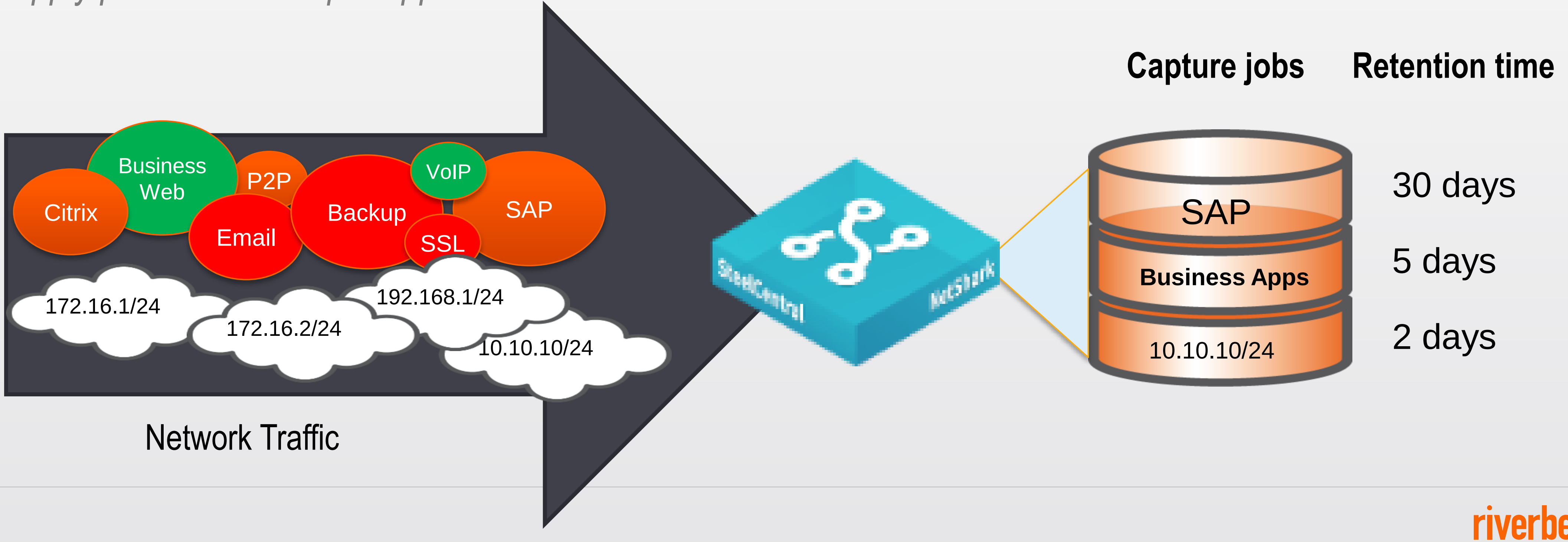
- Real-time visibility into virtualized and cloud environments
  - Software version of NetShark continuous packet capture appliance
  - Monitors all inter-VM traffic crossing VMware vSphere or Microsoft Hyper-V virtual switch
- Simultaneous packet capture and flow export
  - Continuous packet capture for back-in-time analysis via Packet Analyzer
  - Store packets locally or on SAN
  - Works with NetProfiler to provide unified visibility across physical & virtual network
- Available in 3 models: 50GB, 1TB or 2TB

SteelCentral NetShark

Multiple concurrent capture jobs

Run multiple concurrent capture jobs

- *Configure different data retention and wrap policies per capture job*
- *Apply different filters (standard Wireshark capture filters) or packet slicing per job*
- *Apply per interface or per appliance*

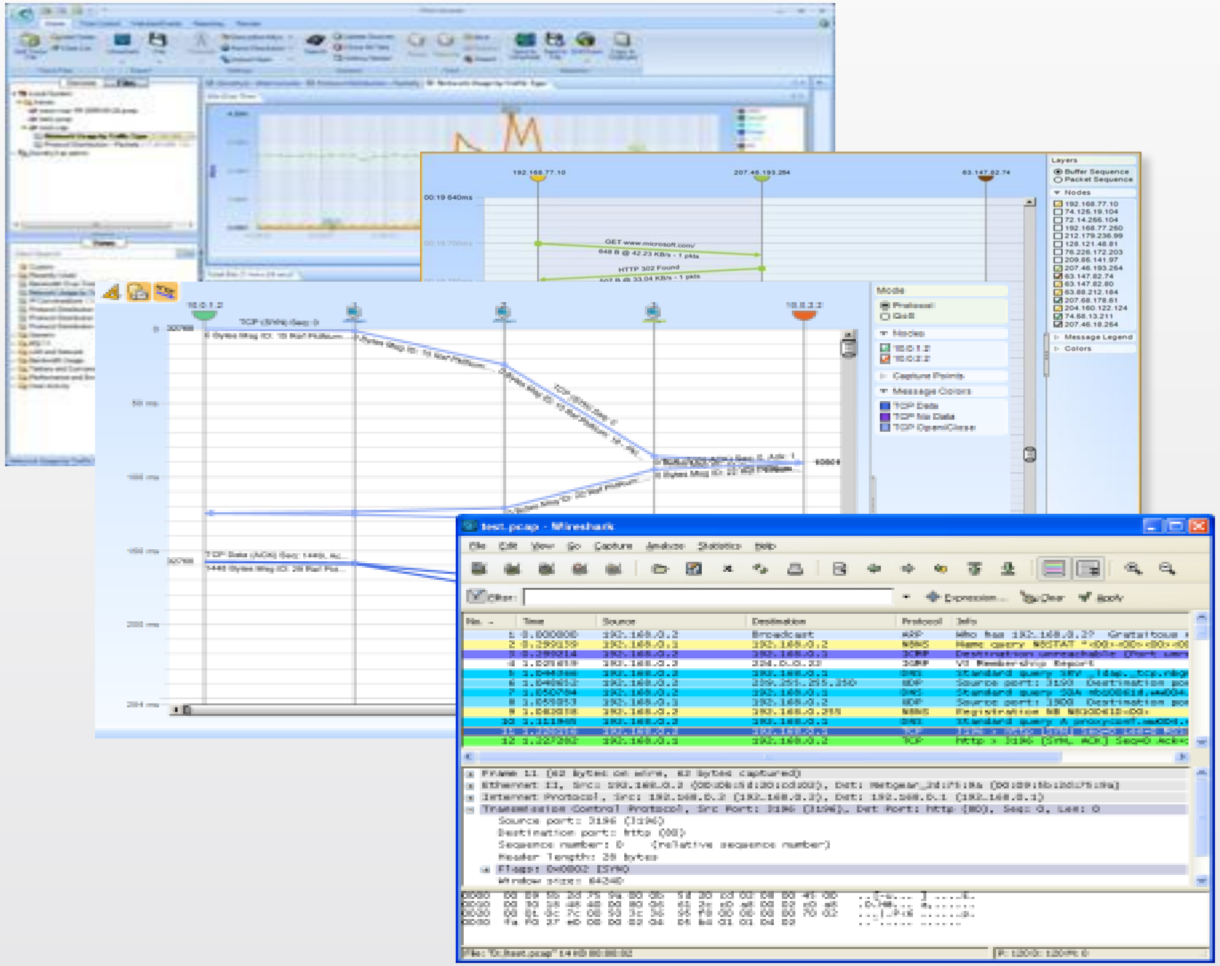


Packet Analyzer

SteelCentral Packet Analyzer

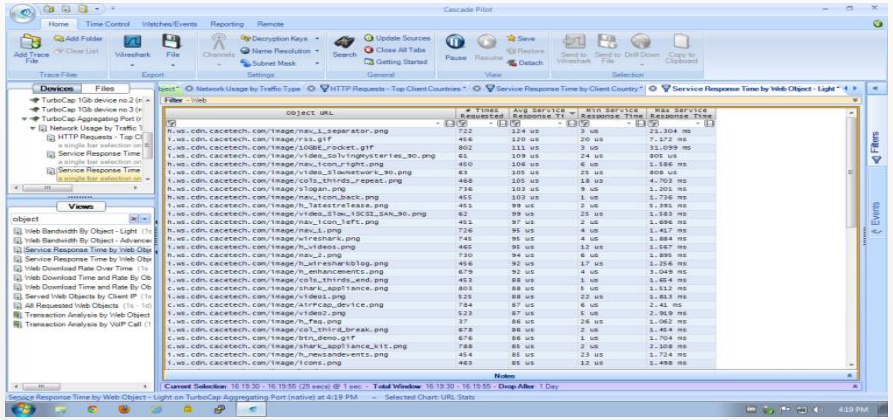
Powerful, visually rich packet analysis software for NetShark

- Intuitive, visual interface with broad selection of interactive Views
- Packet, transaction and multi-segment analysis in a single solution
- *Quickly* open and analyze multi-terabyte trace files
- Seamlessly integrates with Wireshark – world's most popular protocol analyzer
- Integrates with Transaction Analyzer for transaction analysis and "what if" predictions



Broad Selection of Interactive 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

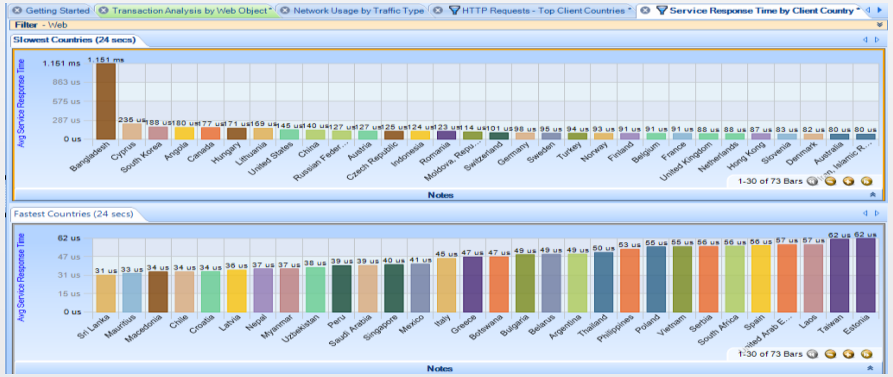


Filter - Web

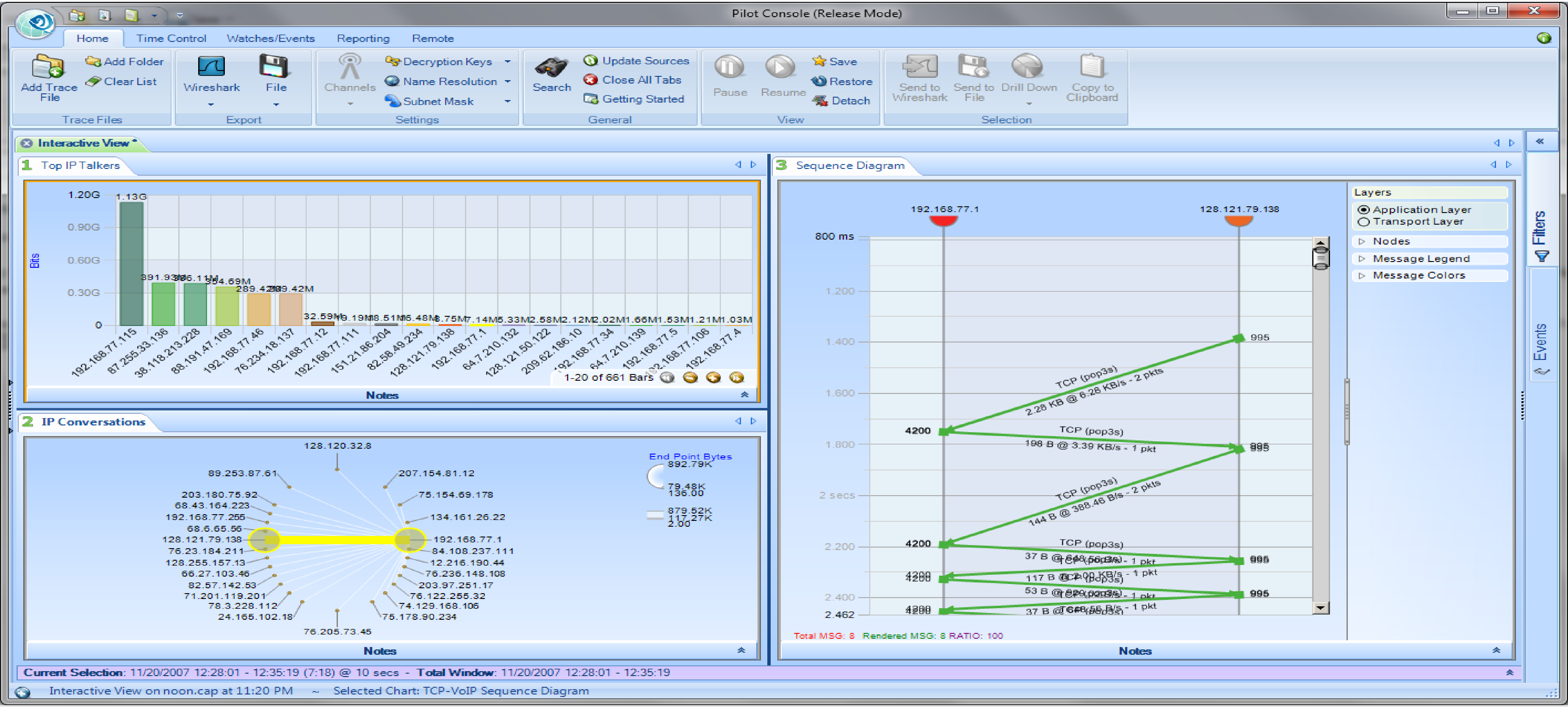
Object URL	# Times Requested	Avg Service Response Ti	Min Service Response Time	Max Service Response Time
h.ws.cdn.cacetech.com/image/nav_1_separator.png	722	124 us	3 us	21.304 ms
i.ws.cdn.cacetech.com/image/rss.gif	456	120 us	20 us	7.172 ms
c.ws.cdn.cacetech.com/image/10GbE_rocket.gif	802	111 us	3 us	31.099 ms
i.ws.cdn.cacetech.com/image/video_SolvingMysteries_90.png	61	109 us	24 us	805 us
h.ws.cdn.cacetech.com/image/nav_icon_right.png	450	106 us	6 us	1.586 ms
i.ws.cdn.cacetech.com/image/video_SlowNetwork_90.png	63	105 us	25 us	808 us
i.ws.cdn.cacetech.com/image/cols_thirds_repeat.png	468	105 us	18 us	4.703 ms
h.ws.cdn.cacetech.com/image/slogan.png	736	103 us	9 us	1.201 ms
h.ws.cdn.cacetech.com/image/nav_icon_back.png	455	103 us	1 us	1.736 ms
i.ws.cdn.cacetech.com/image/h_latestrelease.png	451	99 us	2 us	5.391 ms
i.ws.cdn.cacetech.com/image/video_Slow_iSCSI_SAN_90.png	62	99 us	25 us	1.583 ms
h.ws.cdn.cacetech.com/image/nav_icon_left.png	451	97 us	2 us	1.696 ms
h.ws.cdn.cacetech.com/image/nav_1.png	726	95 us	4 us	1.417 ms
h.ws.cdn.cacetech.com/image/wireshark.png	745	95 us	4 us	1.884 ms
i.ws.cdn.cacetech.com/image/h_videos.png	465	95 us	12 us	1.567 ms
h.ws.cdn.cacetech.com/image/nav_2.png	730	94 us	6 us	1.895 ms
i.ws.cdn.cacetech.com/image/h_wiresharkblog.png	456	92 us	17 us	1.256 ms
i.ws.cdn.cacetech.com/image/h_enhancements.png	679	92 us	4 us	3.049 ms
i.ws.cdn.cacetech.com/image/cols_thirds_end.png	453	88 us	1 us	1.654 ms
c.ws.cdn.cacetech.com/image/shark_appliance.png	803	88 us	5 us	1.512 ms
i.ws.cdn.cacetech.com/image/video1.png	525	88 us	22 us	1.813 ms
c.ws.cdn.cacetech.com/image/AirPcap_device.png	784	87 us	6 us	2.41 ms
i.ws.cdn.cacetech.com/image/video2.png	523	87 us	5 us	2.919 ms
i.ws.cdn.cacetech.com/image/h_faq.png	37	86 us	26 us	1.062 ms
i.ws.cdn.cacetech.com/image/col_third_break.png	678	86 us	2 us	1.464 ms
c.ws.cdn.cacetech.com/image/btn_demo.gif	676	86 us	1 us	1.704 ms
c.ws.cdn.cacetech.com/image/shark_appliance_kit.png	788	85 us	2 us	2.108 ms
i.ws.cdn.cacetech.com/image/h_newsandevents.png	454	85 us	23 us	1.724 ms
i.ws.cdn.cacetech.com/image/icons.png	463	85 us	12 us	1.498 ms

Current Selection: 16:19:30 - 16:19:55 (25 secs) @ 1 sec - Total Window: 16:19:30 - 16:19:55 - Drop After: 1 Day

Service Response Time by Web Object - Light on TurboCap Aggregating Port (native) at 4:19 PM - Selected Chart: URL Stats



Interactive Views of Trace Files



Current Selection: 11/20/2007 12:28:01 - 12:35:19 (7:18) @ 10 secs - **Total Window**: 11/20/2007 12:28:01 - 12:35:19

Interactive View on noon.cap at 11:20 PM ~ Selected Chart: TCP-VoIP Sequence Diagram

riverbed

For More Information

- Content Pack
- ROI Calculator
- Case Studies
  - Veolia Water Technologies
  - Tiburon Associates
- Analyst Papers
  - ESG The ‘Application Deluge and Visibility Imperative’

Thank You