Application Performance Management for Cloud Applications

CMG Canada

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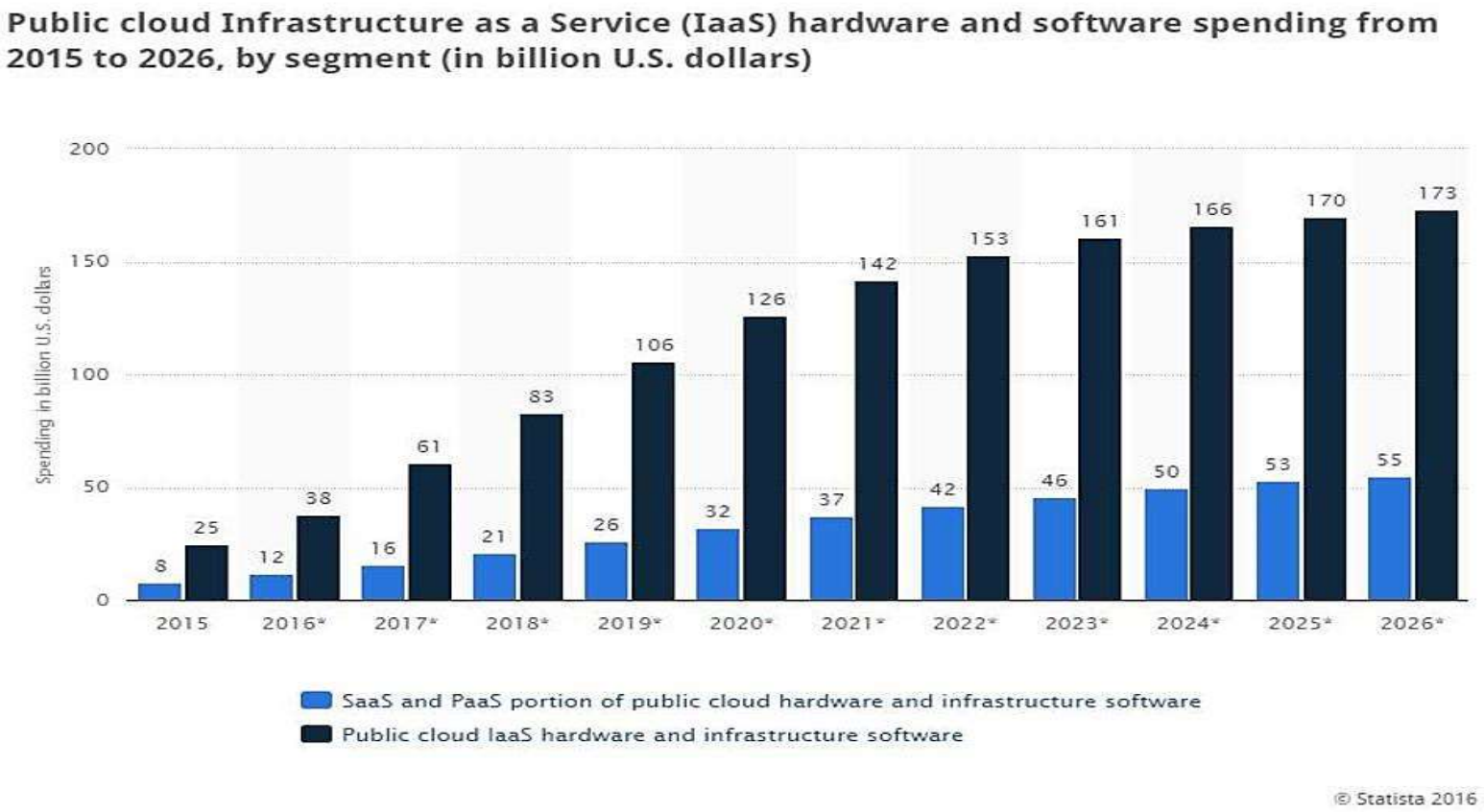
Cloud Adoption Predictions



- **Spending on public cloud Infrastructure as a Service hardware and software is forecast to reach $173B in 2026**
- **SaaS and PaaS portion of cloud hardware and infrastructure software spending are projected to reach $55B in 2026**

Agenda

- Understanding Cloud
  - What is Cloud Computing
  - Cloud Deployment Models
    - Public vs Private, Hybrid?
  - Cloud Service Models
    - IaaS/PaaS/SaaS
- Problem Statement
  - Obscurity of Cloud
- Solution
  - Understanding APM
  - Considerations for Cloud Applications
- Making the right APM choice
  - APM for XaaS
  - Synthetic Vs Real User Monitoring
  - Magic Quadrant and Market Solutions
  - Evaluating APM Solutions
- Examples

Understanding Cloud

What is cloud computing?

Traditional IT

- Cost of Ownership and Maintenance
- Cost of Operation
- Total Control

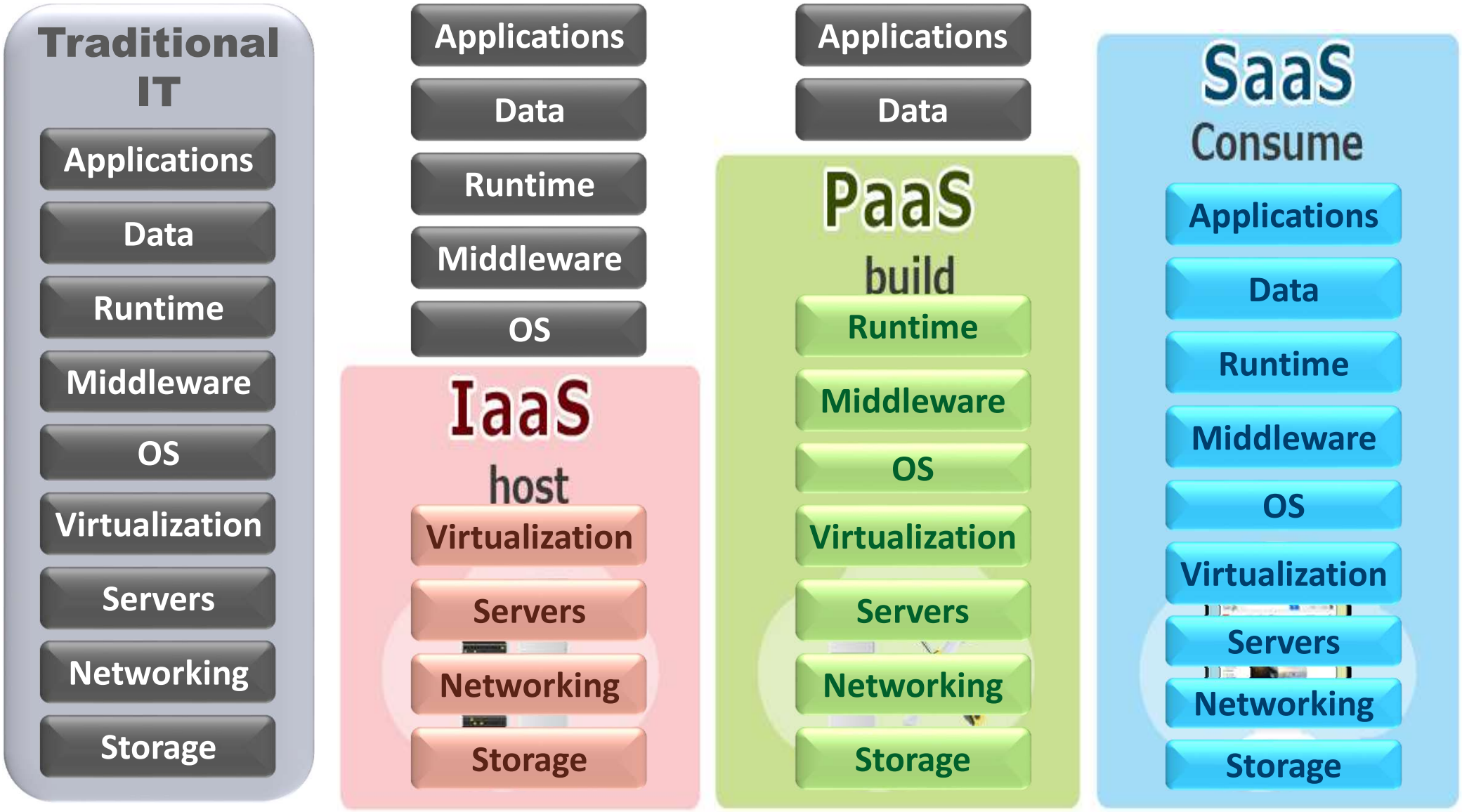
Cloud Computing

- Flexible availability
- Cost effective, Pay per use
- Unlimited Scalability
- Fit for Purpose

Cloud Deployment Models

- **Private Cloud**
  - Privately shared virtualized resources
  - Systems and Services operated and delivered exclusively for an organization
- **Public cloud**
  - Enterprise taps into a public set of resources delivering standardized, highly automated offerings
  - Compute resources, storage and networking capabilities, are owned by a service provider and offered on demand with limited SLAs regarding tenancy, isolation, and performance.
  - Shifts CapEx to OpEx – Pay as you go
- **Hybrid cloud**
  - Implementation of "Hybrid" includes a mix of internal (on-premises, often virtualized) and external (cloud-hosted) solutions, with applications switching between resources as needed
  - Allows manipulation of CapEx and OpEx

Cloud Service Models



Problem Statement

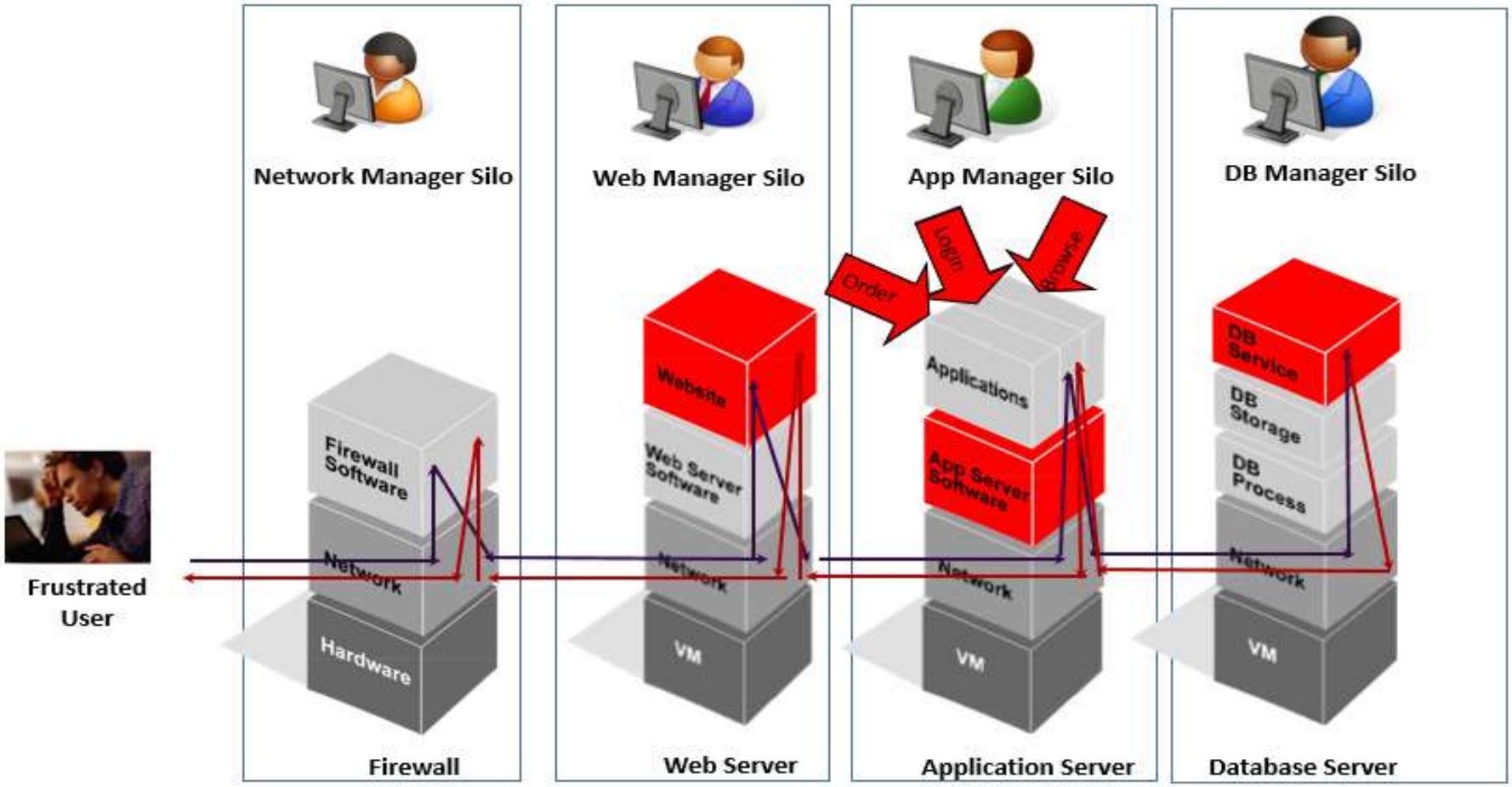
Obscurity of Cloud

Cloud Challenges

- Security and Privacy
  - Compliance
- Obscurity
  - Lack of Visibility
  - Loss of Control
- Availability, Reliability, Service Quality
  - Performance Unpredictability
- Lack of Skills, Expertise
- Integration with Existing Infrastructure

Traditional Management Paradigm

- Traditional data center management and monitoring protocols focus on technology elements in silos
- Lack of visibility and control puts organization at the mercy of cloud vendor
  - Vendor's commitment and capability to meet SLAs



Solution - CAPM

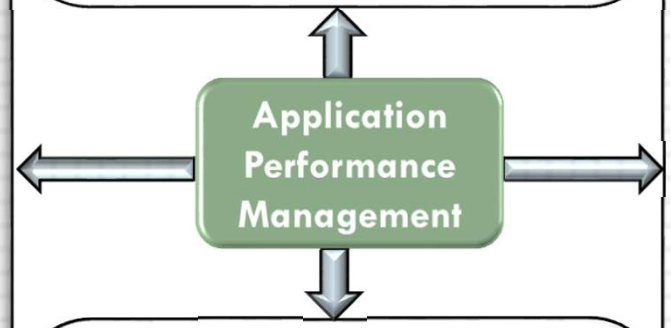
Application Performance Measurement/Monitoring/Management?

Code Optimization

- Method level code profiling - root cause identification and optimization
- Thread synchronization and deadlock analysis
- Heap Object analysis and optimization
- Response Time tier breakdown

UEM and Reporting

- Real-time end user experience monitoring
- **SLA Reporting**
  - Performance and Availability of Critical Business Functions
- **Business Analytics**
  - Business Transaction Volumes
  - Trend Reports
  - Geographic Location distribution



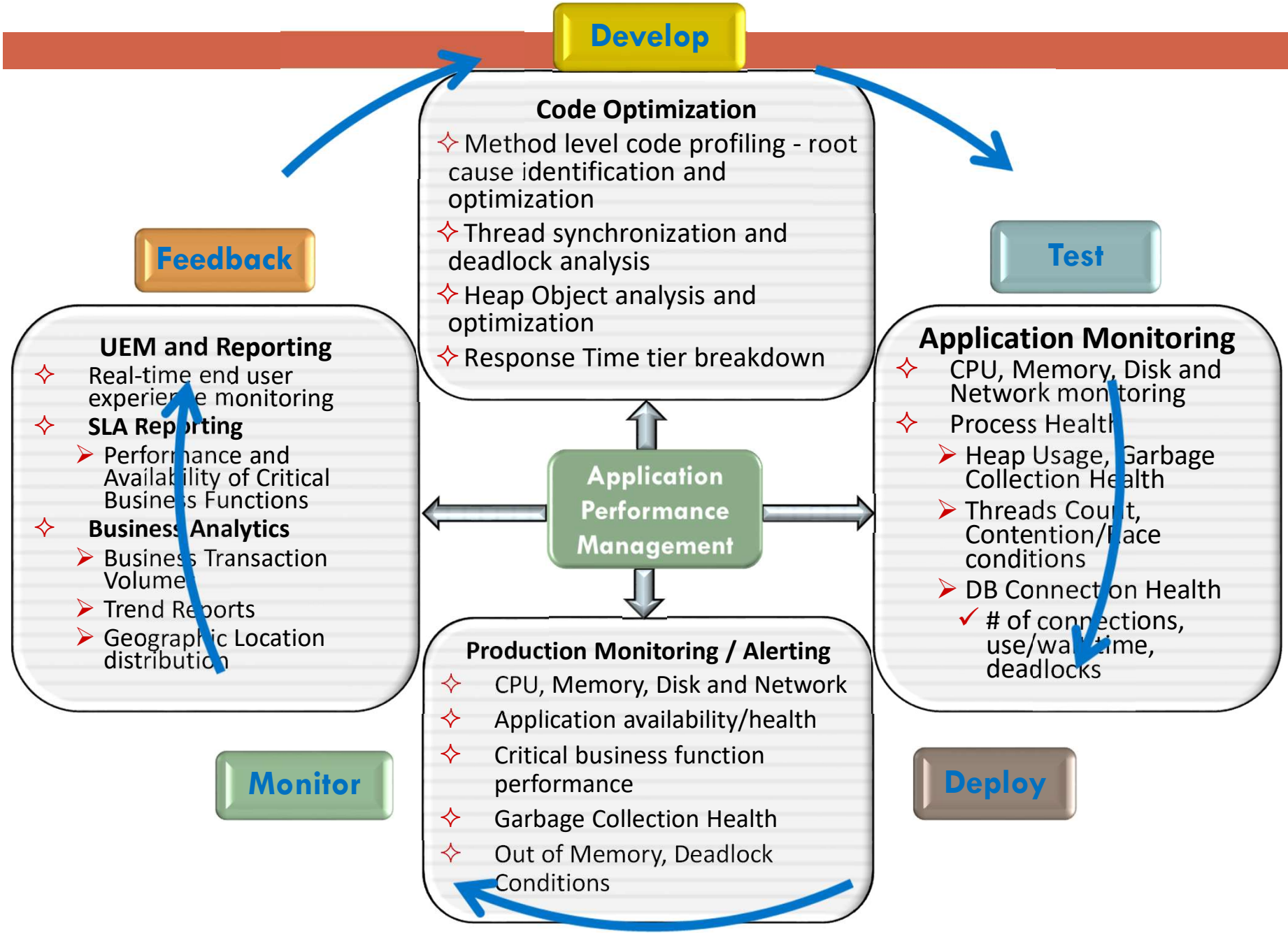
Application Monitoring

- CPU, Memory, Disk and Network monitoring
- Process Health
  - Heap Usage, Garbage Collection Health
  - Threads Count, Contention/Race conditions
  - DB Connection Health
    - ✓ # of connections, use/wait time, deadlocks

Production Monitoring / Alerting

- CPU, Memory, Disk and Network
- Application availability/health
- Critical business function performance
- Garbage Collection Health
- Out of Memory, Deadlock Conditions

Application Performance Measurement/Monitoring/Management?

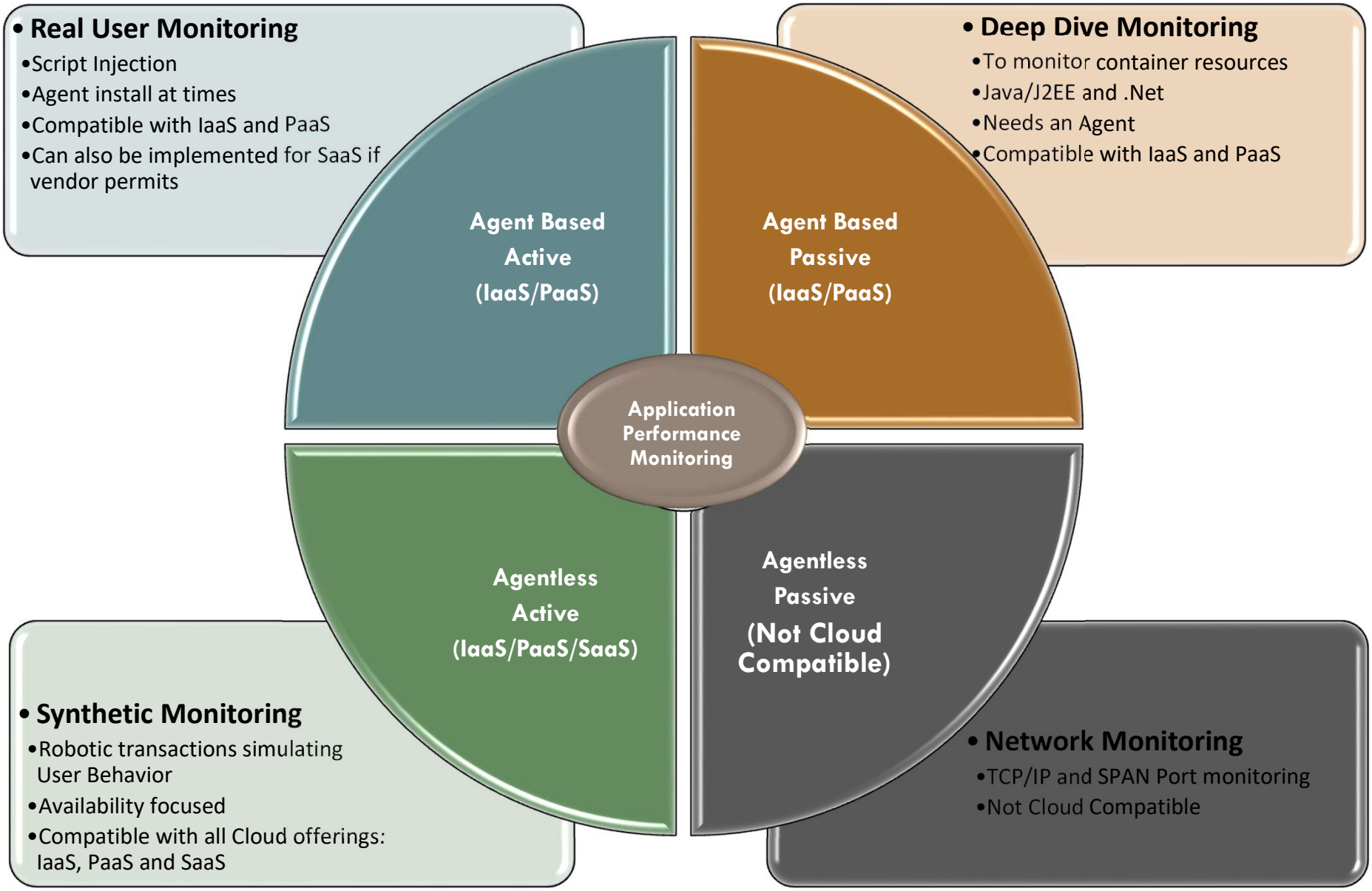


APM & Cloud: Why is it Important?

- Ensuring excellent end-user experience
- 'Right Sizing', validation and forecasting future growth, smart scaling
- Mitigating Risk of Unpredictable Performance
- Regaining Visibility and Control
- SLA Verification

CAPM – Making the right choice

APM for XaaS


• Real User Monitoring
•Script Injection
•Agent install at times
•Compatible with IaaS and PaaS
•Can also be implemented for SaaS if vendor permits
• Deep Dive Monitoring
•To monitor container resources
•Java/J2EE and .Net
•Needs an Agent
•Compatible with IaaS and PaaS
Agent Based Active (IaaS/PaaS)
Agent Based Passive (IaaS/PaaS)
Application Performance Monitoring
Agentless Active (IaaS/PaaS/SaaS)
Agentless Passive (Not Cloud Compatible)
• Synthetic Monitoring
•Robotic transactions simulating User Behavior
•Availability focused
•Compatible with all Cloud offerings: IaaS, PaaS and SaaS
• Network Monitoring
•TCP/IP and SPAN Port monitoring
•Not Cloud Compatible

Synthetic Vs RUM

- Synthetic
  - Active Monitoring, special focus on Availability
  - Based on 'Scripted' User Interactions
  - Gauges possible user experience
  - Executed from any location across the globe
  - Is Agentless
- RUM
  - Based on 'Real' User Interactions
  - A more definitive indicator of User Experience
  - Also provides a global perspective
  - Can be Agentless(JavaScript, Network tap) or Agent based

Some things to consider..

- Focus on
  - Business Transactions
  - Tiers
  - Baselines
  - End User Experience
- Unified View across Hybrid Environments
- APM Approach
  - Agent Vs Agentless
  - Synthetic Vs Real User Monitoring (RUM)
- Development and Optimization considerations

Gartner's Magic Quadrant for APM Suites

Dimensions of APM Suites

End-user experience monitoring (EUEM)

- The capture of data about how end-to end latency, execution correctness and quality appear to the real user of the application
- A secondary focus on application availability may be accomplished by synthetic transactions emulating the end user

Application topology discovery and visualization

- The discovery of the software and hardware infrastructure components involved in application execution, and the array of possible paths across which these components communicate to deliver the application

User-defined transaction profiling

- The tracing of user-grouped events, which comprise a transaction as they occur within the application as they interact with components discovered in the second dimension; this is generated in response to a user's request to the application.

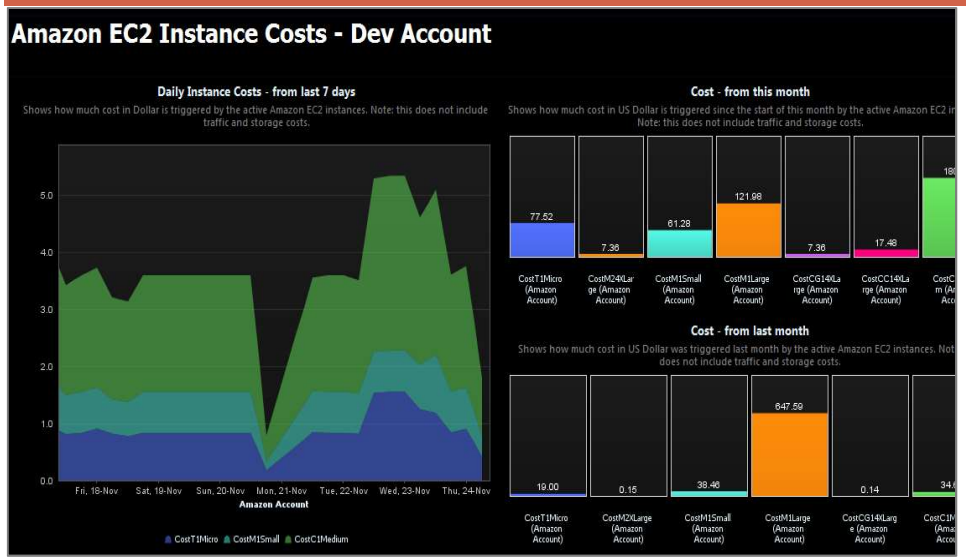
Application component deep dive

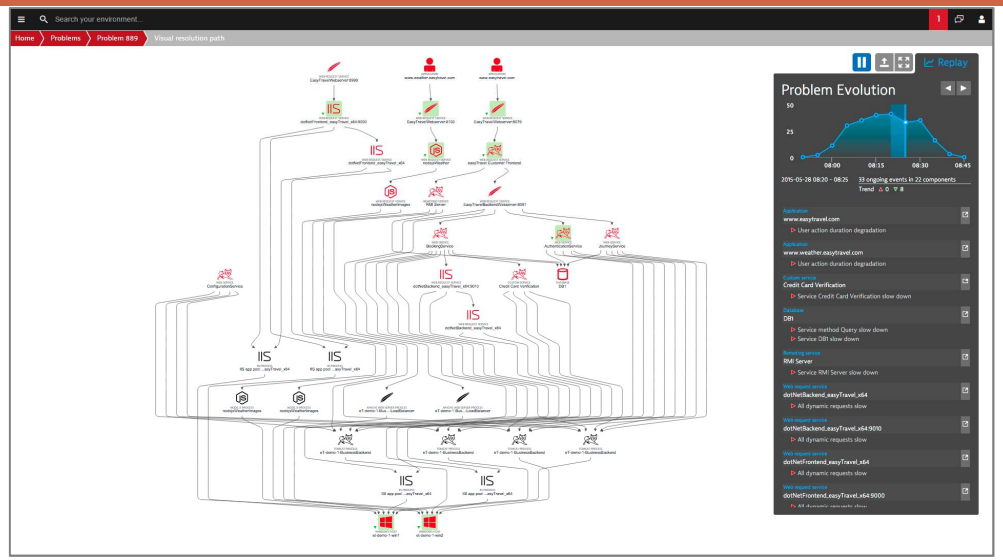
- The fine-grained monitoring of resources consumed and events occurring within the components discovered in the application topology discovery and visualization dimension
- This includes the server-side components of software being executed.

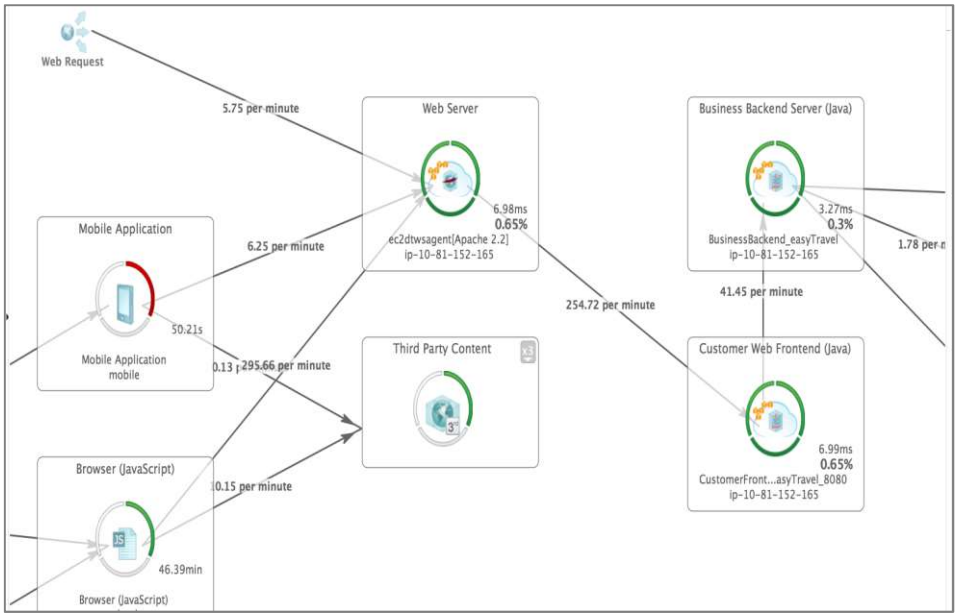
IT operations analytics (ITOA)

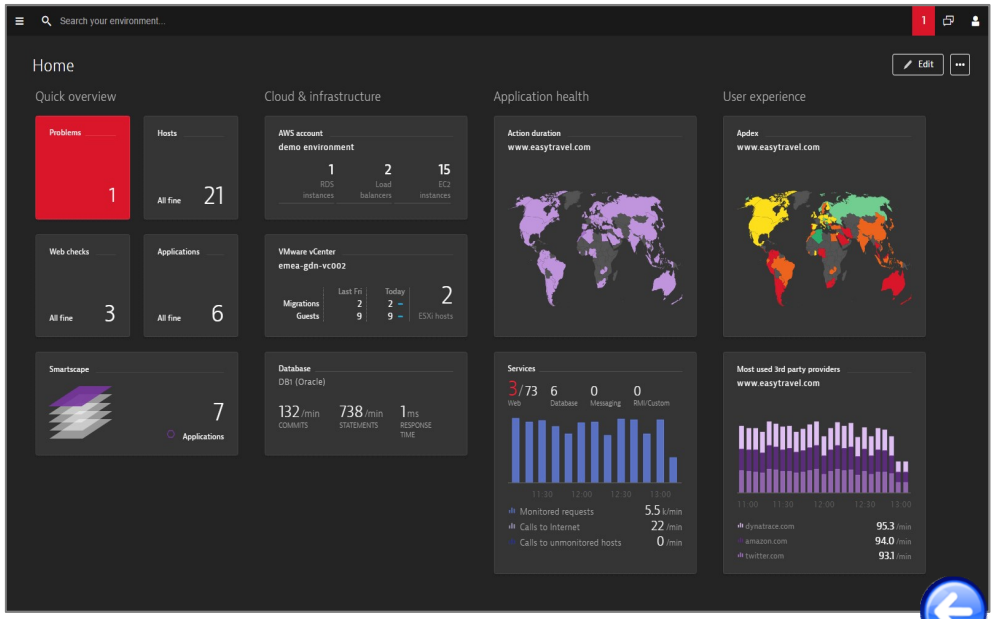
- The combination or usage of the following techniques: complex operations event processing, statistical pattern discovery and recognition, unstructured text indexing, search and inference, topological analysis, and multidimensional database search and analysis.

Dynatrace

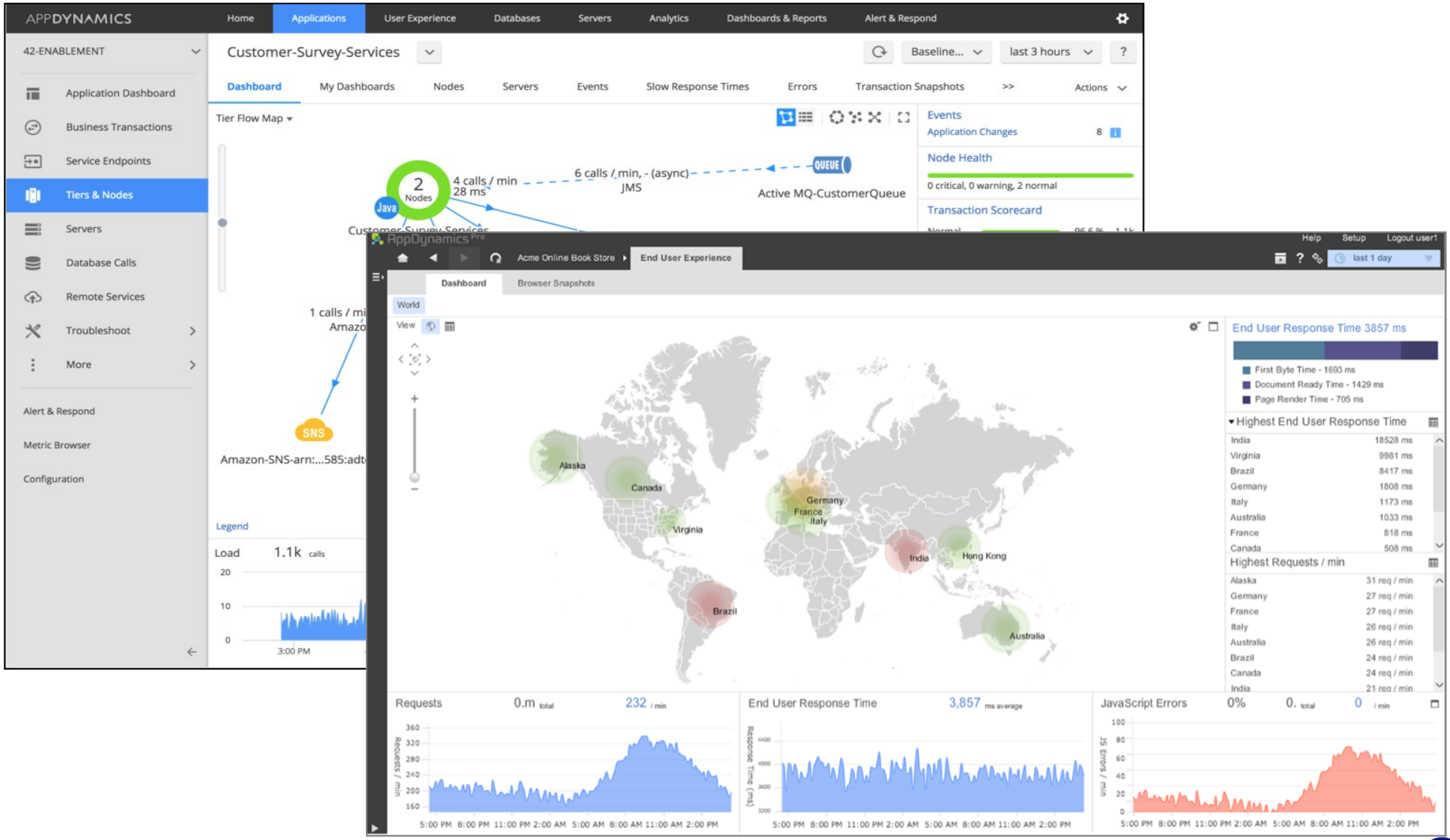

Amazon EC2 Instance Costs - Dev Account
Daily Instance Costs - from last 7 days
Shows how much cost in Dollar is triggered by the active Amazon EC2 instances. Note: this does not include traffic and storage costs.
Fri, 18-Nov
Sat, 19-Nov
Sun, 20-Nov
Mon, 21-Nov
Tue, 22-Nov
Wed, 23-Nov
Thu, 24-Nov
Amazon Account
CostT1Micro
CostM1Small
CostC1Medium
Cost - from this month
Shows how much cost in US Dollar is triggered since the start of this month by the active Amazon EC2 in
Note: this does not include traffic and storage costs.
77.52
7.36
61.28
121.98
7.36
17.48
Cost - from last month
Shows how much cost in US Dollar was triggered last month by the active Amazon EC2 instances. Not
does not include traffic and storage costs.
19.00
0.15
38.46
647.59
0.14


Search your environment...
Home
Problems
Problem 889
Visual resolution path
Replay
Problem Evolution

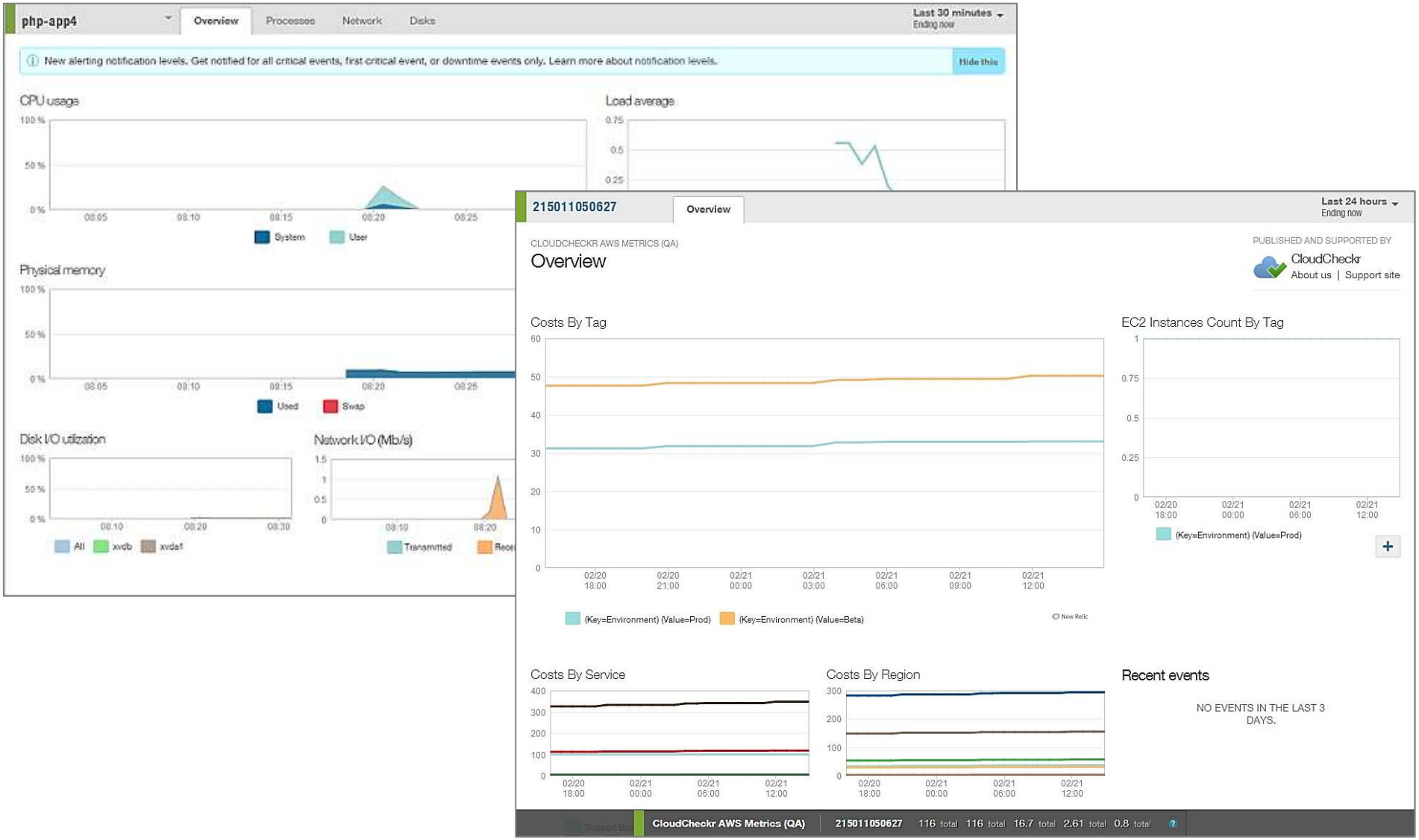

Web Request
5.75 per minute
Web Server
6.98ms
0.65%
ec2dtwsagent[Apache 2.2]
ip-10-81-152-165
Business Backend Server (Java)
3.27ms
0.3%
BusinessBackend_easyTravel
ip-10-81-152-165
Mobile Application
6.25 per minute
50.21s
Mobile Application
mobile
254.72 per minute
41.45 per minute
Third Party Content
295.66 per minute
Customer Web Frontend (Java)
6.99ms
0.65%
CustomerFront...asyTravel_8080
ip-10-81-152-165
Browser (JavaScript)
0.15 per minute
46.39min
Browser (JavaScript)


Search your environment...
Home
Edit
Quick overview
Cloud & infrastructure
Application health
User experience
Problems
1
Hosts
All fine
21
AWS account
demo environment
1
RDS instances
2
Load balancers
15
EC2 instances
Action duration
www.easytravel.com
Apdex
www.easytravel.com
Web checks
All fine
3
Applications
All fine
6
VMware vCenter
emea-gdn-vc002
Migrations
Guests
Last Fri
Today
2
ESXi hosts
Smartscape
7
Applications
Database
DB1 (Oracle)
132 /min
COMMITS
738 /min
STATEMENTS
1 ms
RESPONSE TIME
Services
3/73
Web
6
Database
0
Messaging
0
RMI/Custom
Monitored requests
5.5 k/min
Calls to Internet
22 /min
Calls to unmonitored hosts
0 /min
Most used 3rd party providers
www.easytravel.com
dynatrace.com
95.3 /min
amazon.com
94.0 /min
twitter.com
93.1 /min

AppDynamics

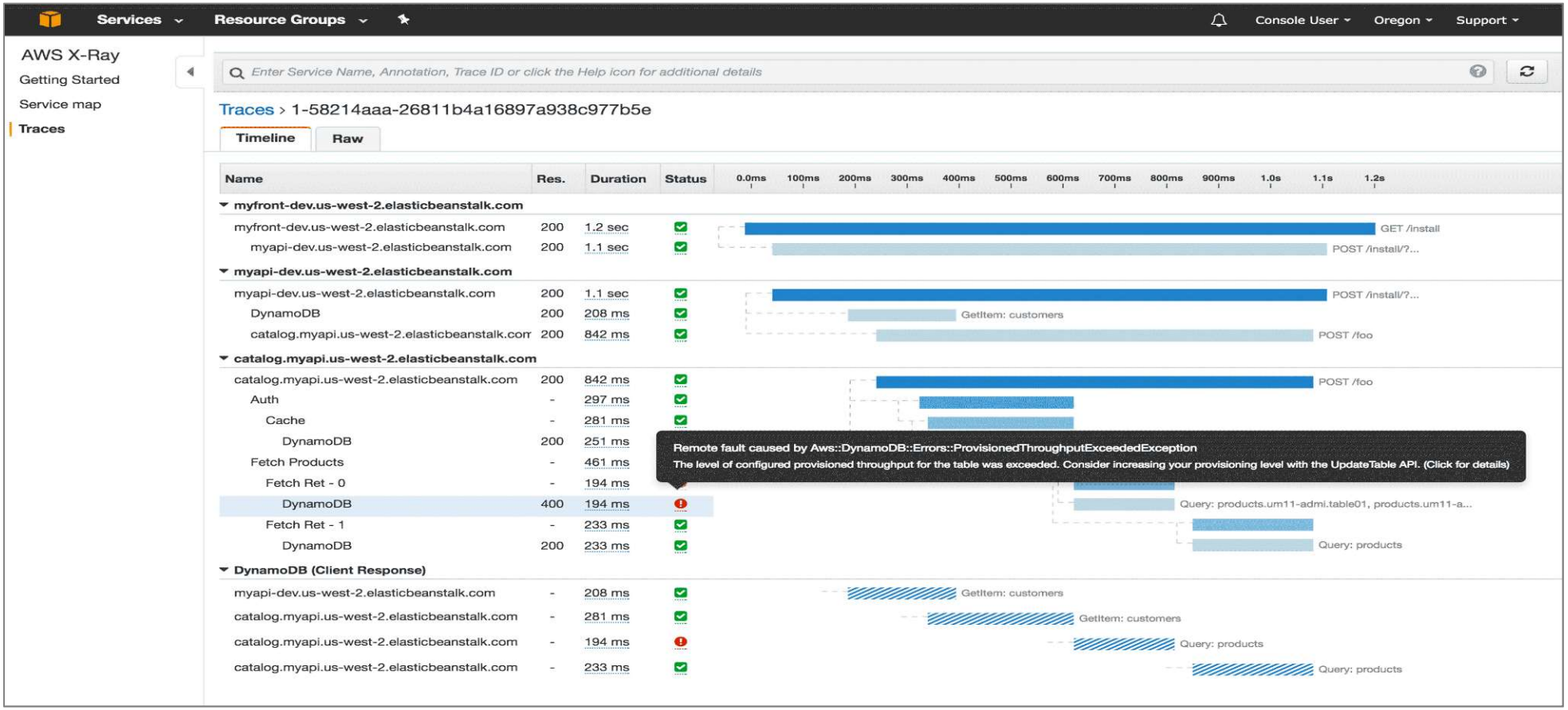


New Relic


php-app4
Overview
Processes
Network
Disks
Last 30 minutes
Ending now
New alerting notification levels. Get notified for all critical events, first critical event, or downtime events only. Learn more about notification levels.
Hide this
CPU usage
Load average
System
User
Physical memory
Used
Swap
Disk I/O utilization
Network I/O (Mb/s)
All
xvdb
xvdaf
Transmitted
215011050627
Overview
Last 24 hours
Ending now
CLOUDCHECKR AWS METRICS (QA)
Overview
PUBLISHED AND SUPPORTED BY
CloudCheckr
About us | Support site
Costs By Tag
EC2 Instances Count By Tag
(Key=Environment) (Value=Prod)
(Key=Environment) (Value=Beta)
New Relic
Costs By Service
Costs By Region
Recent events
NO EVENTS IN THE LAST 3 DAYS.
CloudCheckr AWS Metrics (QA)
215011050627
116 total
116 total
16.7 total
2.61 total
0.8 total

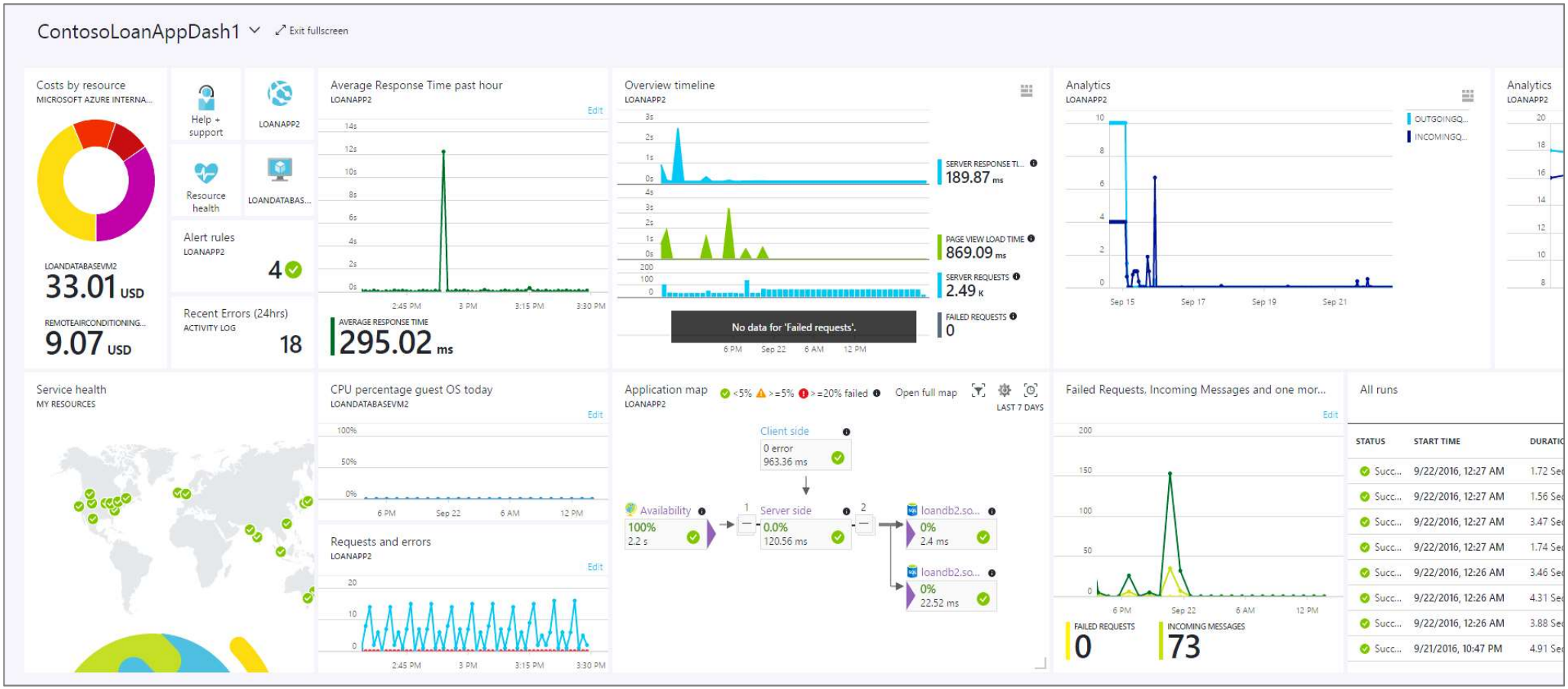
Monitoring Capabilities of Cloud Providers

- AWS- Amazon Cloud Watch and now X-Ray
  - Chargeback/Cost Metrics, Status and Availability Monitoring
  - Log Monitoring, Transaction Tracing, Service Mapping
  - For AWS only



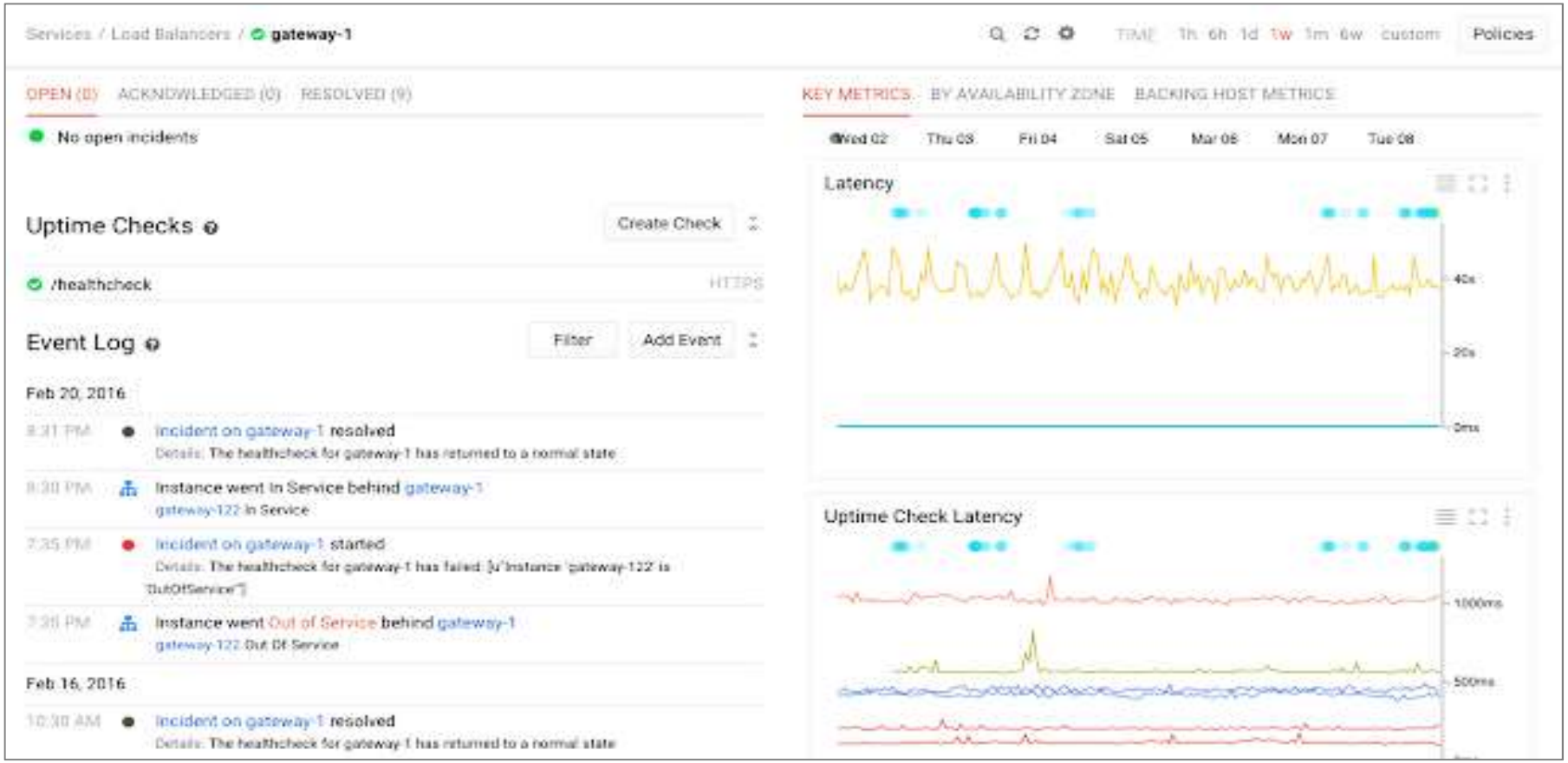
Monitoring Capabilities of Cloud Providers

- Azure - Azure Monitor
  - Activity and Diagnostic Logs, Alerts and Automated actions
  - Metrics – Resources, Application Performance, Storage, Service Bus etc
  - For Azure only



Monitoring Capabilities of Cloud Providers

- Google - StackDriver
  - Logging, event monitoring, diagnostics,
  - Visibility into performance, uptime, and overall health of cloud applications
  - For Google Cloud and AWS



Evaluating APM Solutions

Defining APM Requirements

Real End User Monitoring Solution

- Must Have
  - **Real-time capture and reporting on User Activity,** Response Times and Errors
  - **Page Rendering** and object level details
  - Business Transaction and **SLA monitoring**
  - Business Analytics and User Session Insights
  - Omni-channel visibility across Browsers and Mobile platforms
  - **Geographic perspective**
  - User defined transaction profiling for critical business applications
    - Integration with Runtime application performance
      - 'User-Complaint' to 'Code-Level' root cause for faster triage of Production issues
- Good to Have
  - User defined transaction profiling for non critical applications

Defining APM Requirements

Synthetic Monitoring Solution for Active Availability coverage

- Must Have
  - Page rendering and **object level details for Root Cause** analysis for critical business applications
  - **Last Mile response** time from across the geography
  - Multi Browser support for playback
- Good to Have
  - Third part content analytics for critical business applications
  - Competitive Benchmarking
  - **Integration with UEM, Runtime Application Performance**

Defining APM Requirements

Runtime Application Performance Monitoring Solution

- Must Have
  - Process health, **Container resource and event monitoring** (Heap, Thread, Connection pools, Servlets, EJBs)
  - Auto discovery of **transaction topology** for service dependency mapping
  - Transaction tracking/**stitching** for response time tier breakdown
  - Code level '**deep-dive**'
  - DB Performance (**SQL Captures**, Pool usage, Deadlocks, Hotspots)
  - WebService, Messaging and Remote calls Performance
  - Support for Java/J2EE, .Net, Microservices and other runtimes
  - Monitoring of **on premises and cloud hosted** applications – seamless integration and presentation
  - Real time **high granularity collection** and reporting
  - No impact to application performance with minimal resource overhead
- Good to Have
  - Transaction/Method level resource cost evaluation for code optimization
  - Runtime Thread Dump and Heap Dump capabilities
  - Application Events- Errors, Exceptions, logs and Stack Trace
  - Integration with DevOps, support development/test lifecycle for agility
    - Integration with Load Generation tools (HP Performance Center) for monitoring of Performance tests
    - Integration with IDEs and CI/CD solutions for code optimization

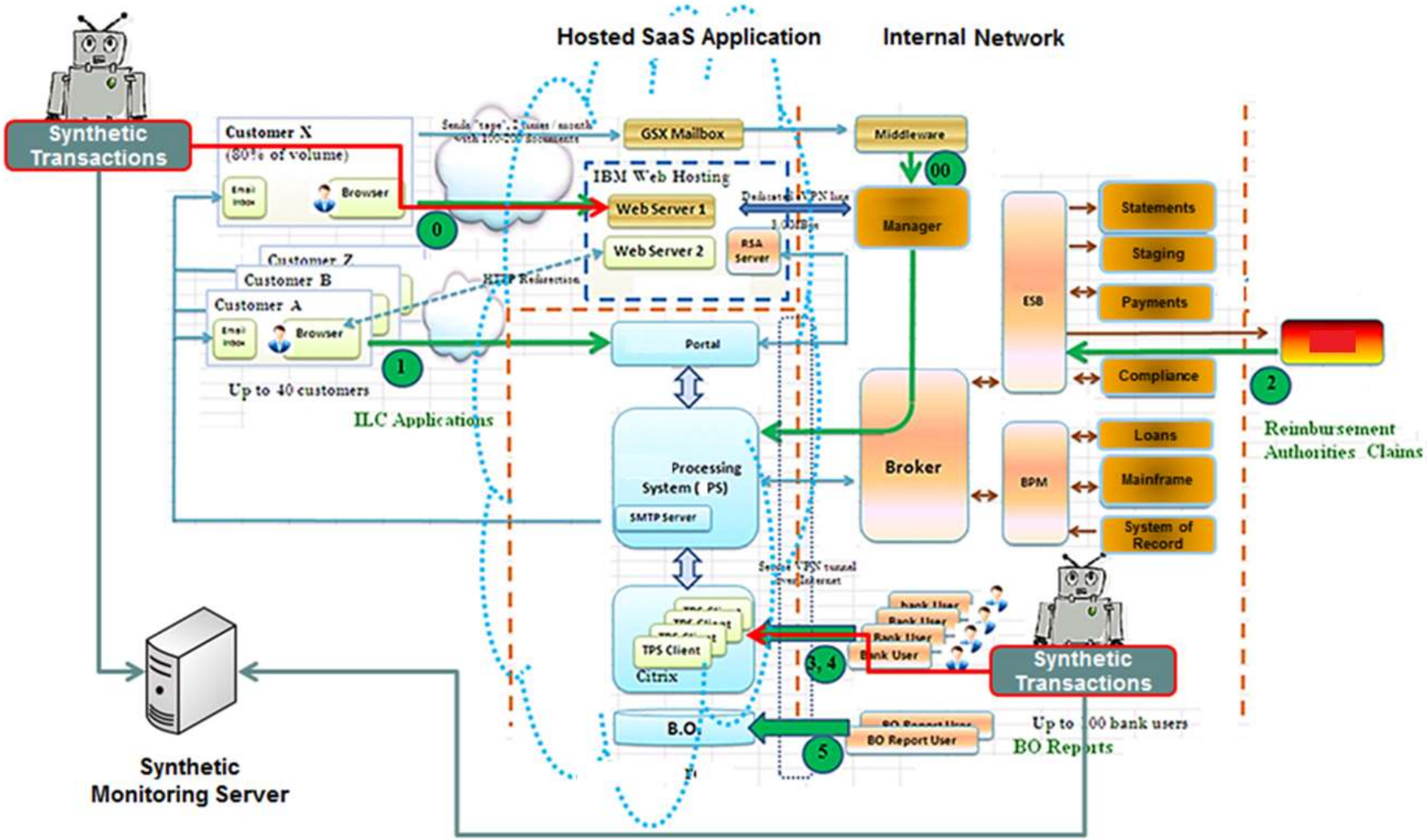
Defining APM Requirements

Other Considerations

- Data analysis, **presentation and reporting capabilities**
- **Integration with MoM** solutions
- Ease of deployment and Use
- Architecture of solution (**Aggregation vs Gapless design**), Data model, Agent design (**application resource reliant vs independent**)
- Converged platforms providing one consolidated view – Single pane of glass
- One **unified solution** for multi purpose APM
  - On-premises and Cloud (IaaS/PaaS/SaaS) applications
  - Monitoring capability for Containers and Microservices
- APM-aaS availability
- Vendor Evaluation
  - Roadmap and technology/trend adoption towards Digital Performance Management
  - **Licensing Model**
  - Current Market Share
  - Customer Service and Product Support
  - **Gartner's Evaluation**
- **Cost of Deployment, Maintainability and Scalability**

Examples

Synthetic Monitoring



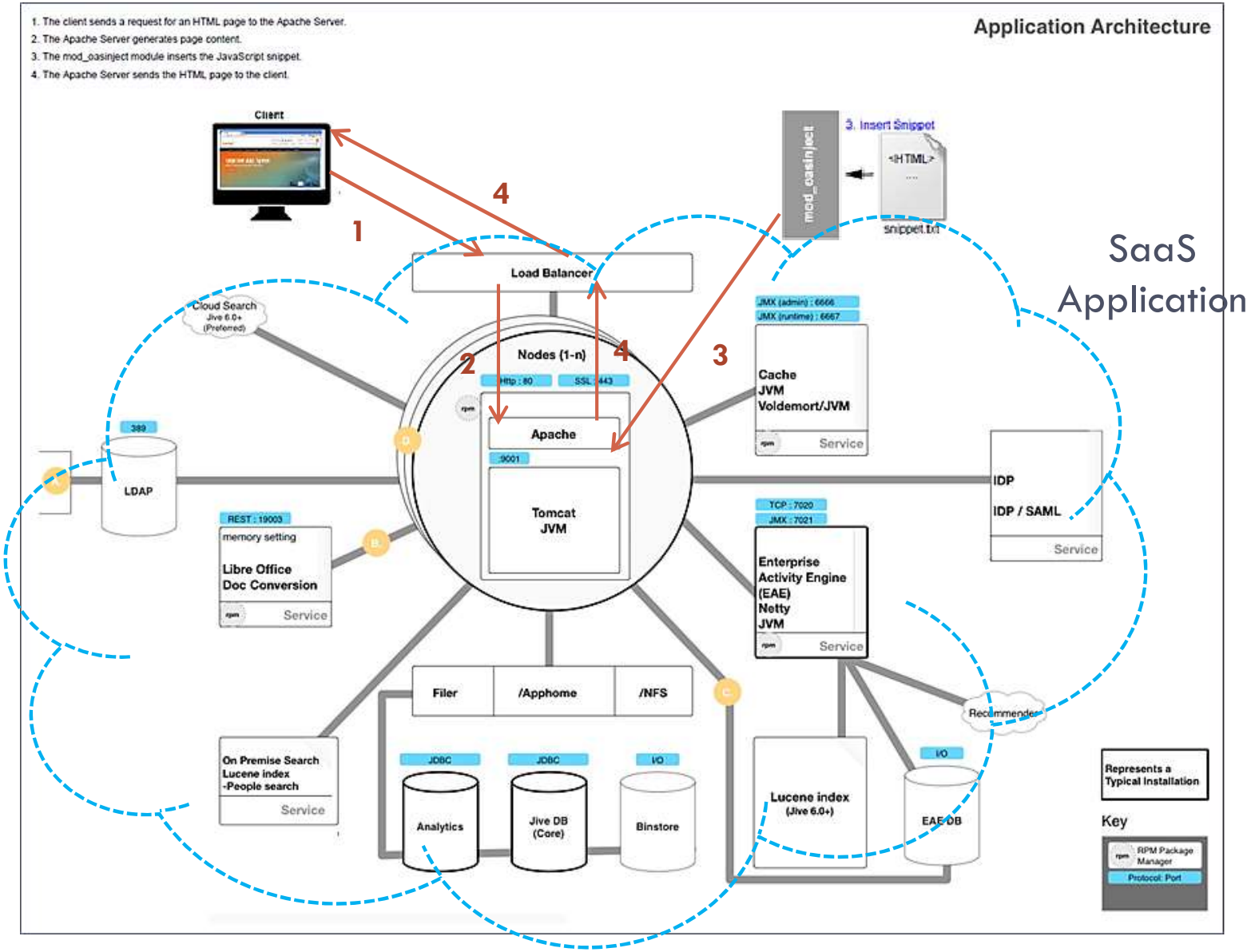
Synthetic Monitoring - Reports

Portal

Transaction	Availability (%)	Response Time (sec)	
		Average	95-percentile
Portal Home Page	99.92	4.25	9.45

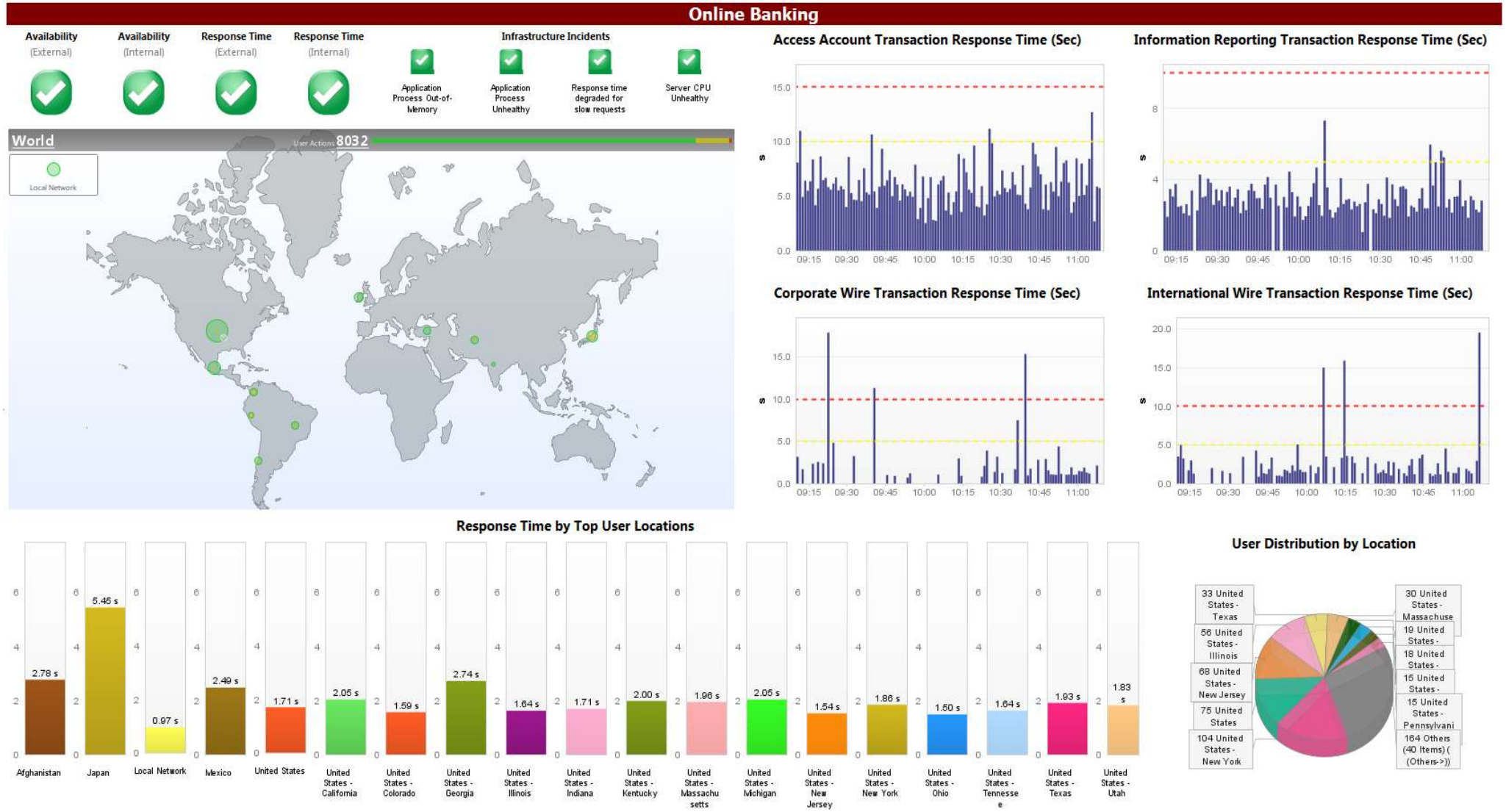
BT Name	Availability (%)	8/1	8/2	8/3	8/4	8/5	8/6	8/7	8/8	8/9	8/10	8/11	8/12	8/13	8/14	8/15	8/16	8/17	8/18	8/19
Portal_Prod_01_OpenURL	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.00	100.00	100.00
Portal_Prod_02_Continue	99.88	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	98.33	100.00	100.00	100.00	100.00	100.00	100.0	100.00	100.00	100.00
Portal_Prod_03_Login1	99.94	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.00	100.00	100.00
Portal_Prod_04_Login2	99.82	100.00	100.00	100.00	100.00	100.0	100.0	98.36	100.0	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.00	100.00	100.00
Portal_Prod_05_Logoff	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.00	100.00	100.00

Real User Monitoring (JavaScript Injection)



RUM Reports

- Capability to track ‘critical’ transactions, visibility into top customer locations, branches and associated user experiences



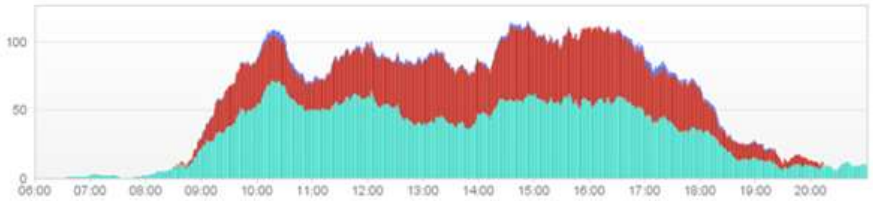
RUM Reports

User Experience Overview

User Experience

Green- Response Time < 4 Sec Yellow- Response Time 4 - 8 Sec Red- Response Time > 8 Sec

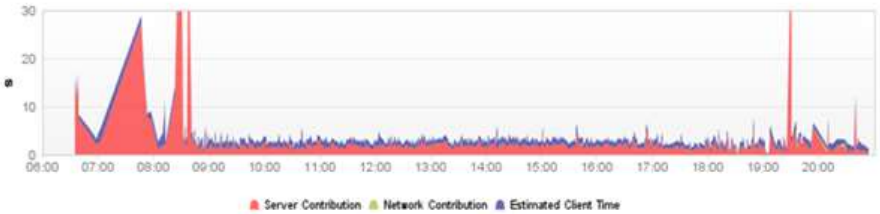
Concurrent Sessions



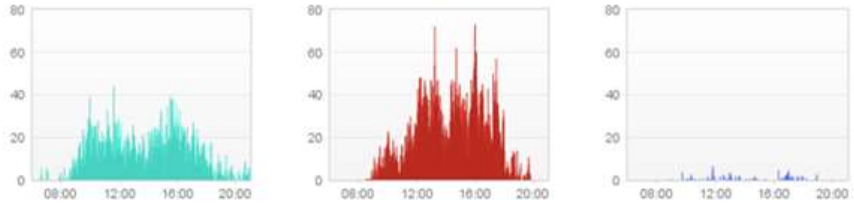
Session Length (min)

Response Time Breakdown

Breakdown of user action time into client, network and server time.



User Actions per min

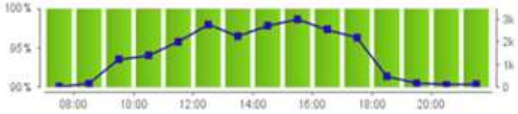


User Actions Health

Compare 'Today' against 'Yesterday'

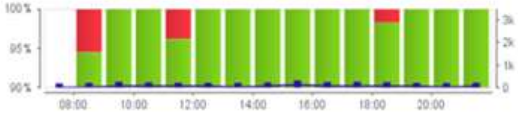
From last Mon 07:00 to last Mon 22:00

10
Failed User Actions
0.05 %



From May-30 07:00 to May-30 22:00

3
Failed User Actions
0.49 %



Error Hotspots by Application (Custor

9
1

Error Hotspots (Custom)

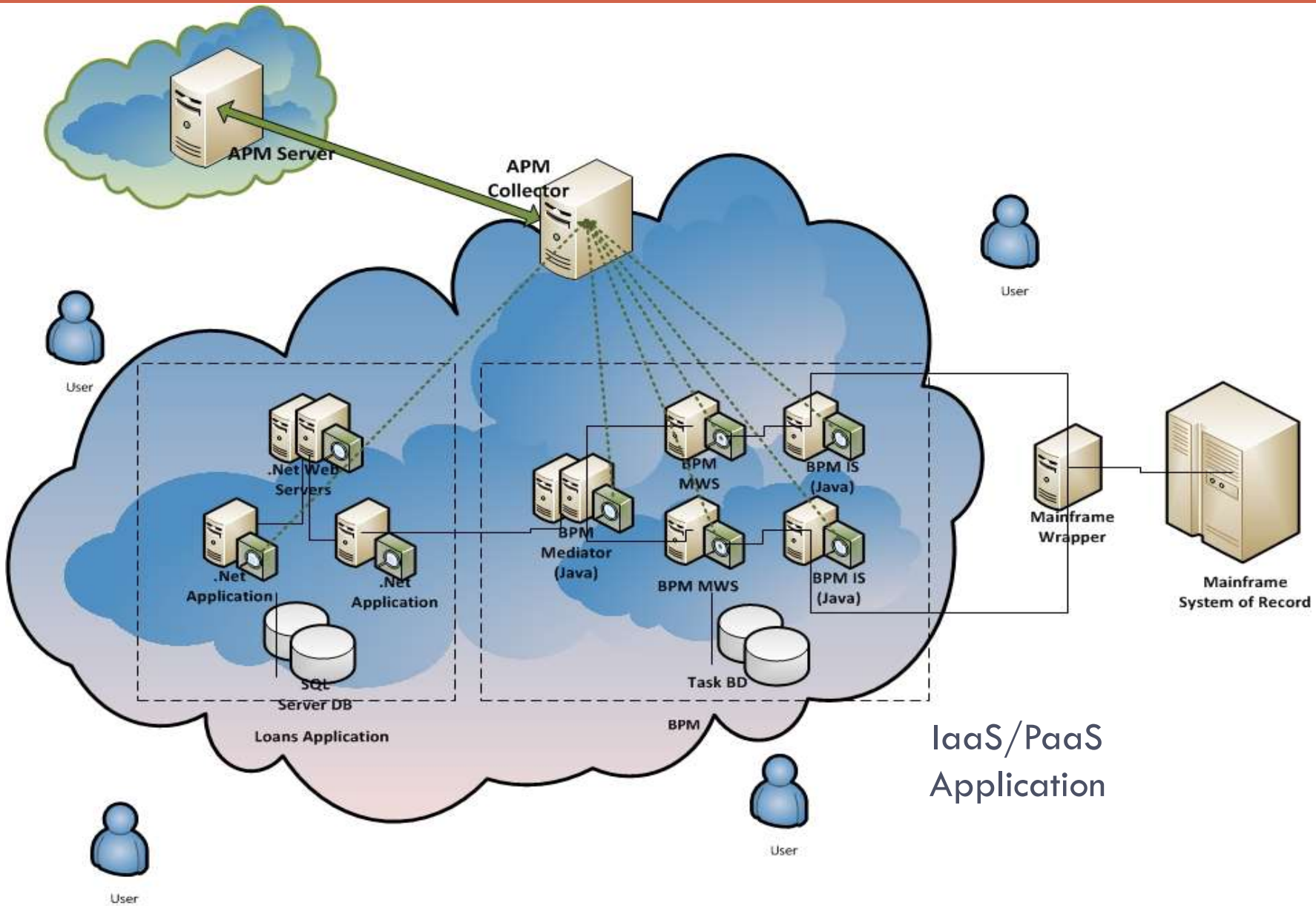
Top Slowest User Actions

Name	Response Time [s]	Count
/Web/	56.38	2
keypress <BACKSPACE> on "Page: Inde	29.64	1
/Web/FX/	27.03	1
click on	26.03	4
/Web/MM/	23.09	6
/Web/FX/	21.06	1
/Web/MM	20.89	1
click or	18.94	2
click on "Cancel	16.10	1
click on "ui-button-icon-primary ui-ico	15.73	1
click on	15.32	1
click on "Reject"	13.97	28
click on	13.81	1
/Web/MM	13.50	4
click on	13.00	2
click on "iicon-copy	11.40	18
click on	11.38	1
click on	11.04	1
click on "Pending	10.66	1

Most Frequent User Actions

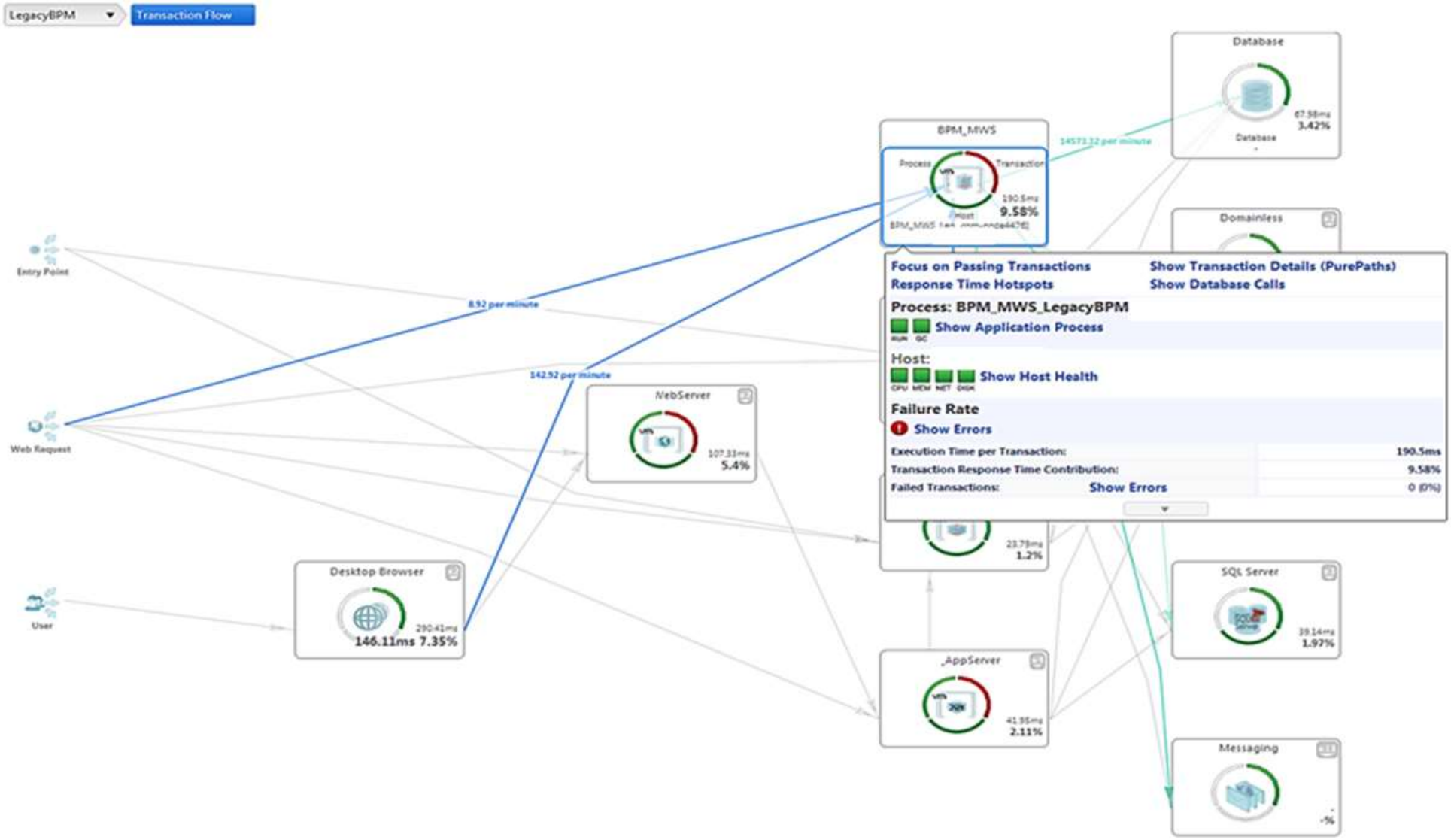
Name	Count	Response Time [s]
click on "Search"	2950	1.97
click on "Submit"	1298	3.22
click on "Ok"	1126	4.67
/Web/	1085	3.84
click on iew"	1052	2.52
click on "Incoming	821	0.41
click on "ui-button-icon-primary ui-ic	607	4.50
click on "javascript:Home();"	599	3.92
click on "iicon	513	2.38
/	513	4.43
click on	482	0.51
click on "Home"	462	4.40
	405	0.62
click on "ui-button-icon-primary ui-ic	339	7.10
click on "Yes"	279	5.24
click on "icon-edit"	269	5.13
click on "Dashboard"	221	5.70
click on "Approve"	192	5.47
click on	188	2.94

Agent Based Monitoring



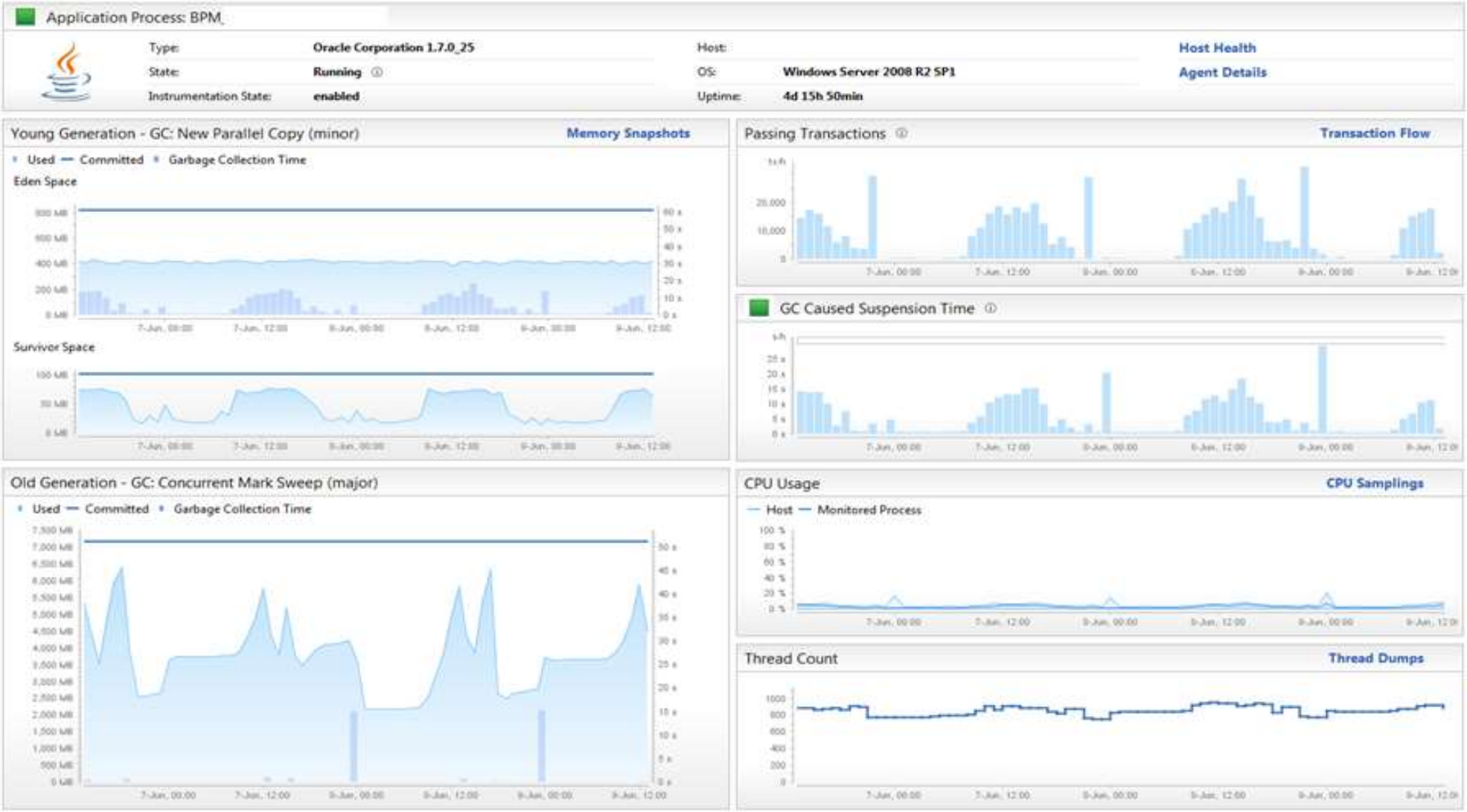
IaaS/PaaS Application

Agent Based Monitoring - Reports



Agent Based Monitoring - Reports

- Garbage Collection health, Suspension time, Process throughput, Thread Count

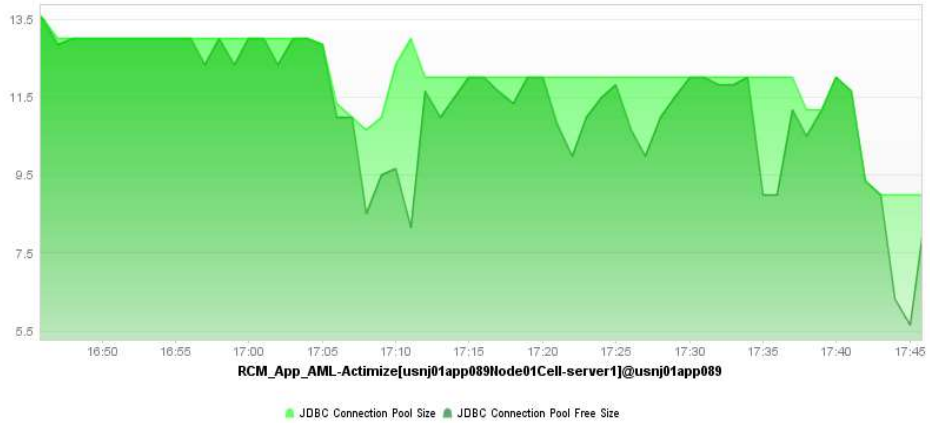


Agent Based Monitoring - Reports

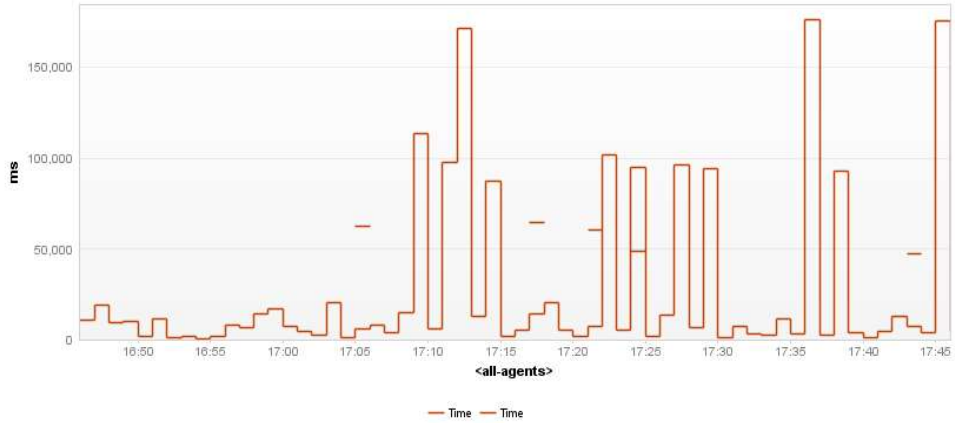
WebSphere Server Health

This Dashboard shows a few important WebSphere health metrics.
Use it via an agent Drill down or by setting the Dashboard filter to your WebSphere agent.

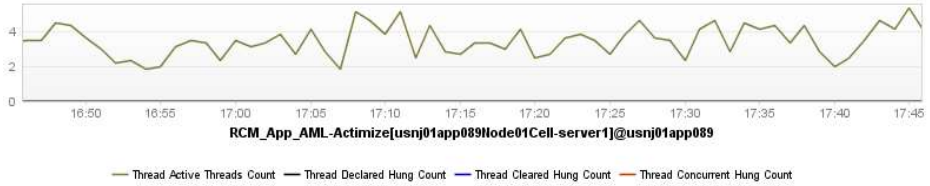
Managed Connections Pool Sizes



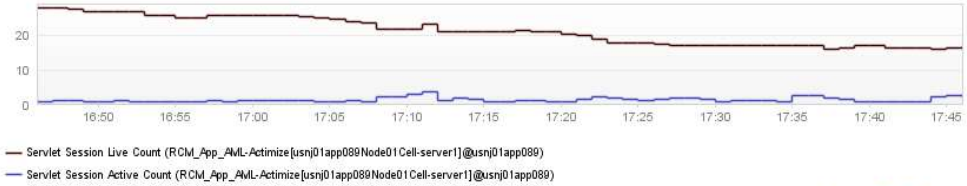
Servlet Response Times



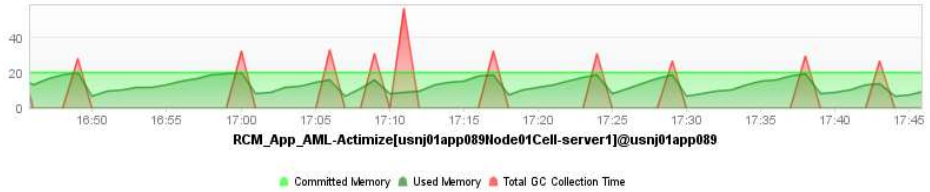
Thread Info



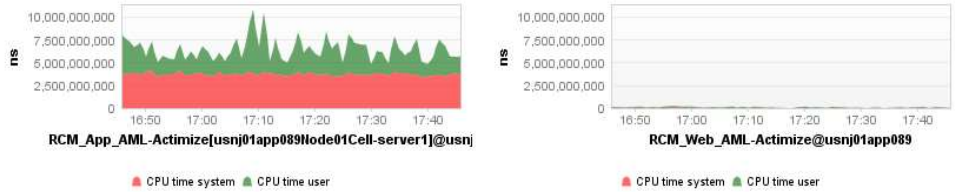
Servlet Session Counts



Memory



CPU Usage



Agent Based Monitoring - Reports

- Giving the Developers capability to drill in all the way to the source of the problem
  - Deep dive into the code, identifying root cause at the method level
    - Long running methods contributing to latency; Also identifying resource intensive methods

User Actions | Errors | PurePaths | BPM_IntegrationServer_CBR | PurePaths | User Action PurePaths | PurePaths

PurePath	Response Time [ms]	Breakdown	Size	Agent	Application	Start Time
/Web/Loan/Advance	3541.25	cpu io (79.0%)	32	Loan _WebServer_...		2016-06-07 13:08:07.482
/Web/Loan/Fee	2059.23	io (100.0%)	7	Loan _WebServer_...		2016-06-07 13:08:07.497
/Web/Loan/CreateNewLoan	1747.22	cpu sync io (49.0%)	190	Loan _WebServer_...		2016-06-07 13:08:01.897
/Web/Loan/CashFlow	1622.42	io (95.0%)	7	Loan _WebServer_...		2016-06-07 13:08:07.497
/Web/Loan/LoanInputSheet	1138.81	cpu (41.0%) io (57.0%)	73	Loan _WebServer_...		2016-06-07 13:08:03.644
/Web/Loan/Comments	1060.81	io (97.0%)	7	Loan WebServer ...		2016-06-07 13:08:07.497

PurePaths | Contributors | Errors

PurePath Hotspots

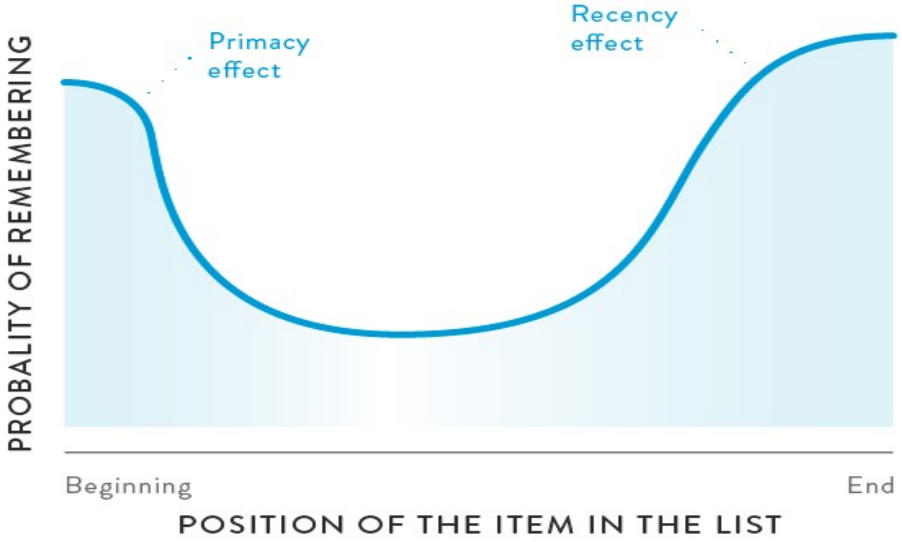
Exec [ms]

PurePath Tree (showing only relevant nodes) — Show all nodes

Method	Argument	Exec Total [ms]	Breakdown	Class	API	Agent
run()		0.03	cpu (91.0%) io	DCProcessor	Softwareag	BPM_MED_CBR@...
submit(Runnable)		0.07	cpu (98.0%)	AbstractExecutorS...	Threading	BPM_MED_CBR@...
Asynchronous Invocation		-				BPM_MED_CBR@...
Asynchronous Path (Threa		-				BPM_MED_CBR@...
run()		0.61	cpu (95.0%) io	DCProcessor	Softwareag	BPM_MED_CBR@...
Synchronous Path (HTTP)		-				BPM_IntegrationS...
process(ProtocolState state)	ws/BPMCBRLoan...	2519.22	io (99.0%)	HTTPRootWebSer...	Servlet	BPM_IntegrationS...
process(ProtocolState state)		2519.07	io (99.0%)	HTTPTransportLis...	Servlet	BPM_IntegrationS...
doService(HTTPRequest, HTTPResponse, HTTPState, Message		*2517.49*	io (99.0%)	*HTTPTransportList...*	*Wm*	*BPM_IntegrationS...*
service(AxisHttpRequest, AxisHttpResponse, MessageCont		*2517.49*	io (99.0%)	*HTTPWorker*	*Java Web ...*	*BPM_IntegrationS...*
receive(MessageContext msgContext)		2517.49	io (99.0%)	AxisEngine	Java Web ...	BPM_IntegrationS...
receive(MessageContext)		*2499.17*	io (100.0%)	*ISDynamicMessag...*	*Wm*	*BPM_IntegrationS...*
receive(MessageContext)		*2499.17*	io (100.0%)	*AbstractMessageR...*	*Java Web ...*	*BPM_IntegrationS...*
invokeBusinessLogic(MessageContext)		*2499.17*	io (100.0%)	*ISDynamicMessag...*	*Wm*	*BPM_IntegrationS...*
invokeBusinessLogic(MessageContext)		*2499.17*	io (100.0%)	*AbstractInOutMes...*	*Java Web ...*	*BPM_IntegrationS...*
invokeBusinessLogic(MessageContext, M		*2499.17*	io (100.0%)	*ISDynamicMessag...*	*Wm*	*BPM_IntegrationS...*
baseInvoke(IData pipe)		2499.17	io (100.0%)	FlowSvcImpl	Java Web ...	BPM_IntegrationS...
Database Summary		11.20		-	-	BPM_IntegrationS...
1 × Connection Acquisition @		8.59		-	Connectio...	BPM_IntegrationS...
1 × select replace([key],'CBRL		1.40			JDBC	BPM_IntegrationS...
1 × select user		1.17		-	JDBC	BPM_IntegrationS...
1 × Create Statement @ usnj01		0.05		-	JDBC	BPM_IntegrationS...
FlowException: [ISC.0049.9028] In	[ISC.0049.9028] In...	-		FlowException	Exception	BPM_IntegrationS...
FlowException: [ISC.0049.9028] In	[ISC.0049.9028] In...	-		FlowException	Exception	BPM_IntegrationS...
send(MessageContext msgContext)		1.39	cpu (99.0%)	AxisEngine	Java Web ...	BPM_IntegrationS...
ObjectDisposedException: Cannot access a disposed object. Object name: 'S	Cannot access a d...	-		ObjectDisposedEx...	Exception	Loan _AppServ...
SleepInternal(int)		*4889.66*	sync (92.0%)	*Thread*	*Btmu*	*Loan _AppServ...*
get_Channel()		*152.80*	io (92.0%)	*ClientBase`1*	*.NET WCF*	*Loan _AppServ...*
ImportMembersMapping(String, String, XmlReflectionMember[], boolean, boolean,		*152.80*	io (92.0%)	*XmlReflectionImpo...*	*XML Proce...*	*Loan _AppServ...*
GetCustomAttributes(RuntimeType, RuntimeType, boolean)		*152.80*	io (92.0%)	*CustomAttribute*	*Reflection*	*Loan _AppServ...*

And that's a wrap!

- We talked about
  - Cloud
    - Cloud deployment models
    - Service offerings
  - Cloud Challenges
  - APM Solutions
  - Considerations for APM solutions



- Irrespective of
  - What cloud solution you adopt
  - Which applications you migrate to it
  - What monitoring methodologies you choose
  - What APM solutions you deploy

….as an IT organization, you have to move from traditional monitoring/management paradigms to business service and end user focused, holistic solutions to survive this new age of Cloud

Questions?

References

Gartner's Magic Quadrant for Application Performance Monitoring Suites

Things to Know About APM in the Cloud

Managing Performance of Cloud Based Applications

APM for Cloud Computing

Anatomy of APM

Cloud Predictions

Obscurity of Cloud

Duality of APM

Azure Monitor

AWS X-Ray

Google Stackdriver

Dynatrace

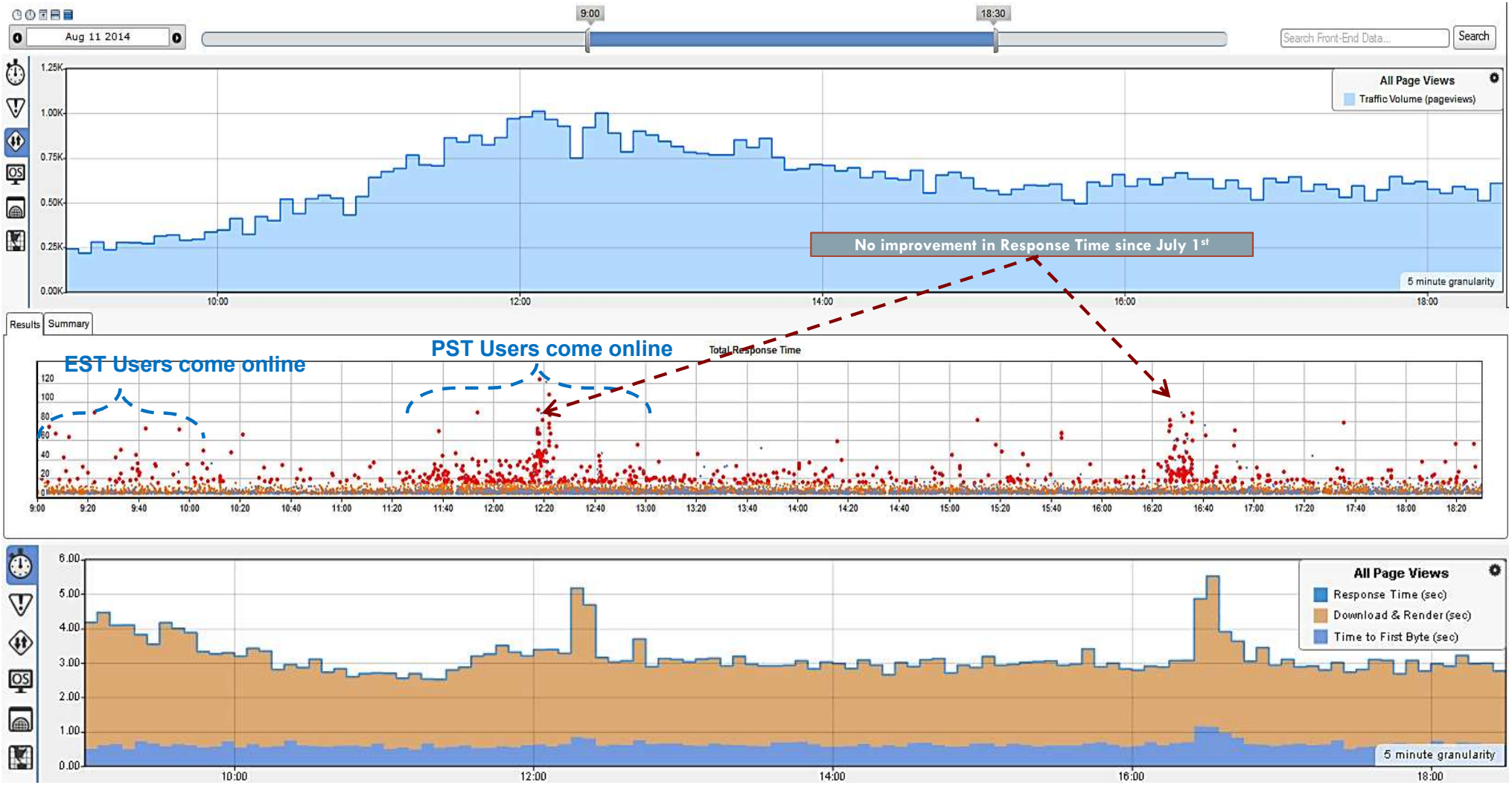
AppDynamics

New Relic

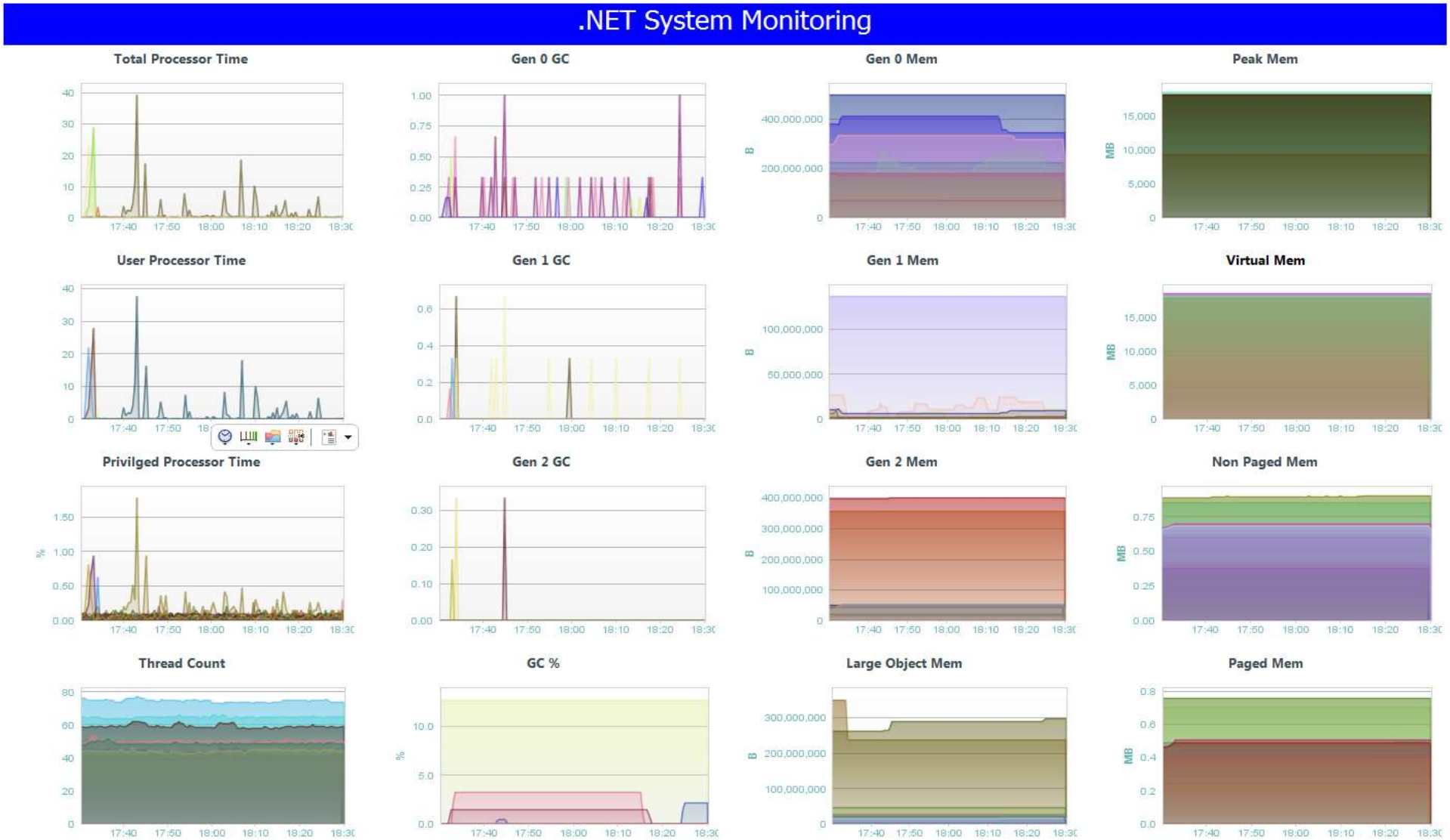
APPENDIX

RUM Reports (JavaScript Injection)

- Reporting on Average Application throughput during typical and peak times
- Average response times for users with anomalies
- Response Time Breakdown between Server, Network and Rendering time

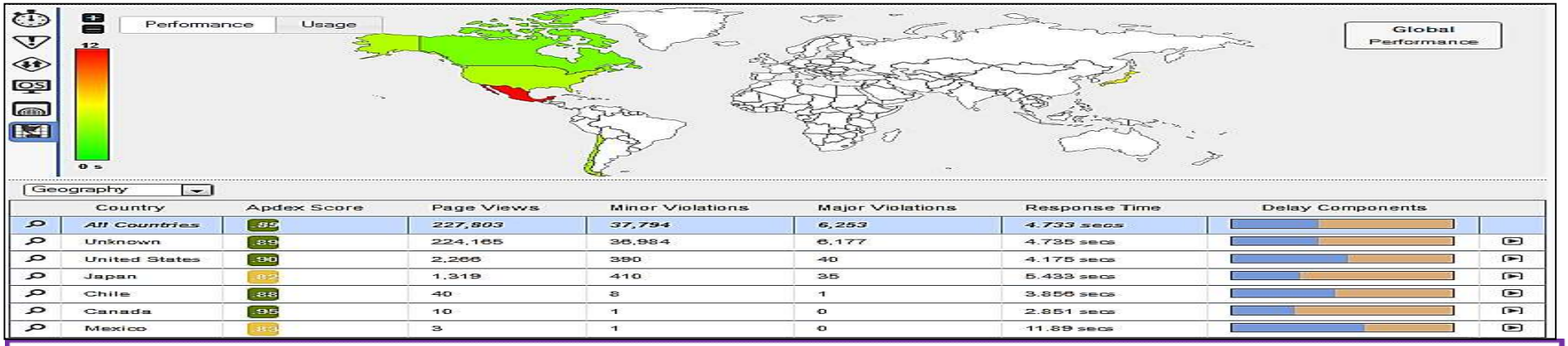


Agent Based Monitoring - Reports

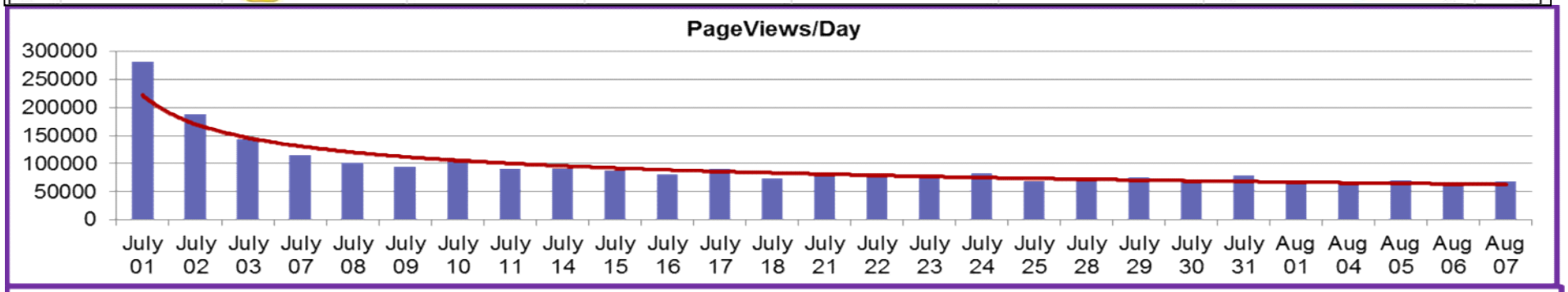


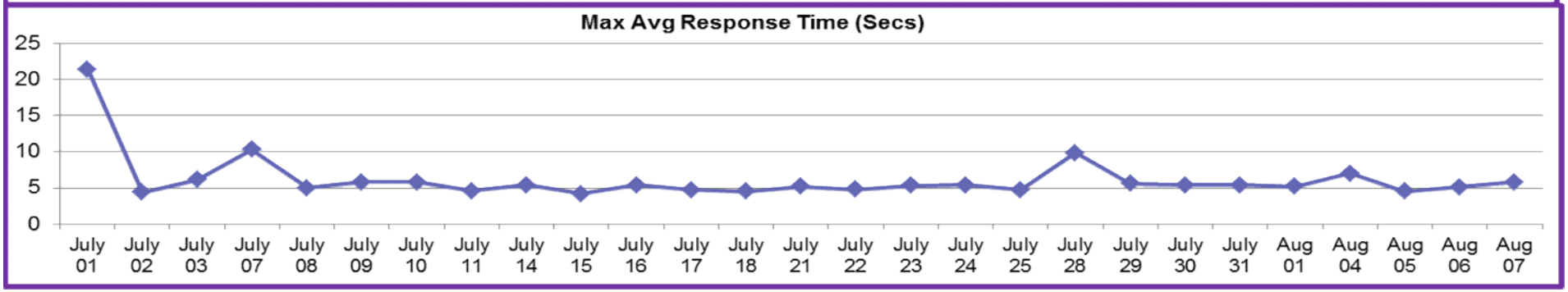
RUM Reports (JavaScript Injection)

- Understanding User Experience across the globe
- Application Workload Trending for forecasting growth



Country	Apdex Score	Page Views	Minor Violations	Major Violations	Response Time	Delay Components
All Countries	89	227,803	37,794	6,253	4.733 secs	
Unknown	89	224,165	36,984	6,177	4.735 secs	
United States	90	2,266	390	40	4.175 secs	
Japan	82	1,319	410	35	5.433 secs	
Chile	88	40	8	1	3.856 secs	
Canada	95	10	1	0	2.851 secs	
Mexico	83	3	1	0	11.89 secs	





RUM Reports (Agent Based)

Application Process: IIS 7.5

Type:	Microsoft II!	Host:		Total Requests:	3,006	Host Health
State:	Running	OS:	Windows Server 200!	Total Traffic:	11.22	Agent Details
		Uptime:	1d 8h 6min			

Threads

busy — idle

8 6 4 2 0

16:00 16:05 16:10 16:15 16:20 16:25

Transfer Rate

kB/req

10 5 0

16:00 16:05 16:10 16:15 16:20 16:25

Requests

requests/sec — MB/sec

4 3 2 1 0

1 MB/s 0.75 MB/s 0.5 MB/s 0.25 MB/s 0 MB/s

16:00 16:05 16:10 16:15 16:20 16:25

CPU Usage

Host

100 % 80 % 60 % 40 % 20 % 0 %

16:00 16:05 16:10 16:15 16:20 16:25

SLA/SLM and Reporting

- Monitoring/Reporting Service levels for overall application as well as at 'component level'
- Combining 'Active' and 'Passive' monitoring for complete visibility
- Proactive alerting
- Trending Transaction Volumes and End User Experience
- Understanding 'cost per transaction'
  - Correlating business throughput to system resource for 'right-sizing'

Optimization for Cloud Applications

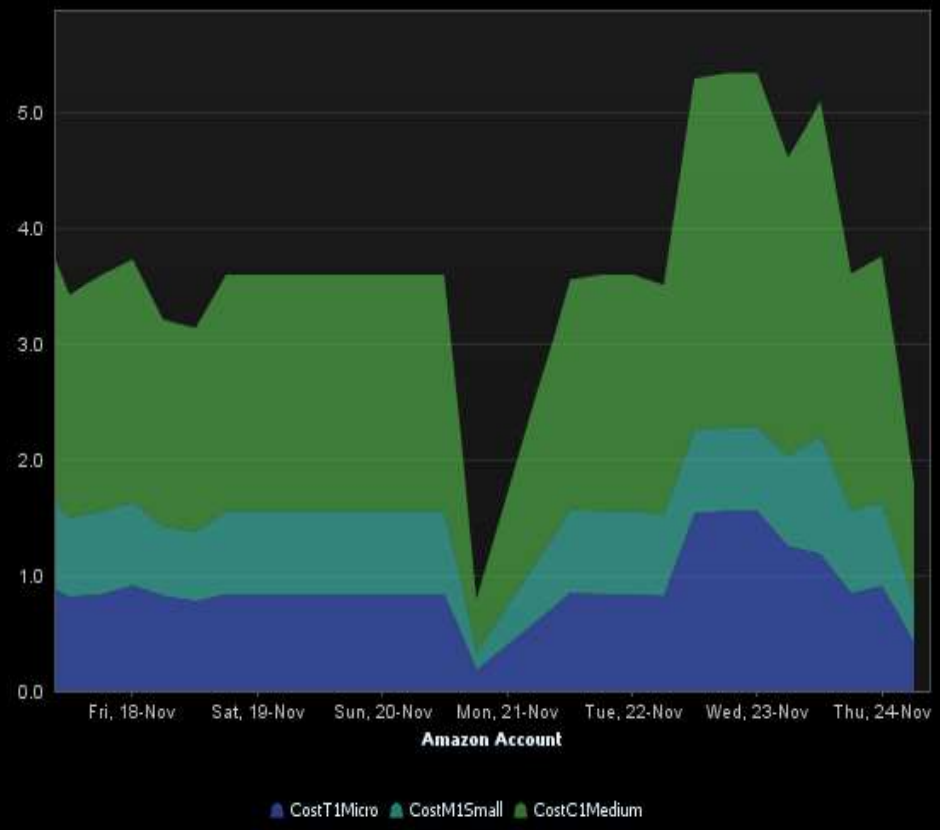
- Content Caching
- Compression algorithms – data is expensive in the cloud
- Optimized page rendering
  - Parallel rendering of content
- WAN Quality of Service
- Chatty Applications
  - Reducing acknowledgements to reduce WAN Latency

Dynatrace – Instance Cost

Amazon EC2 Instance Costs - Dev Account

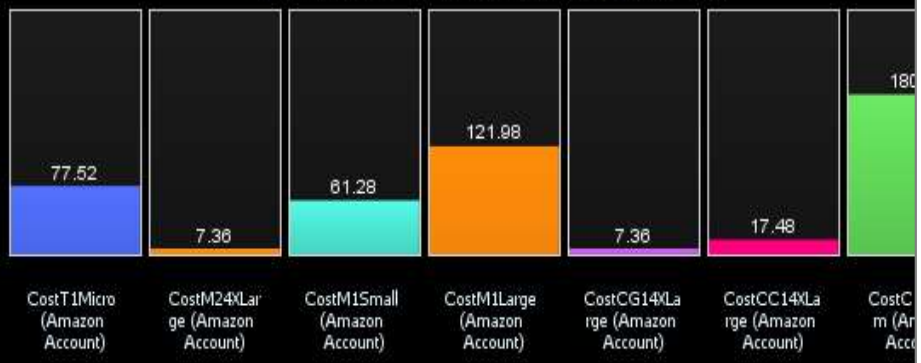
Daily Instance Costs - from last 7 days

Shows how much cost in Dollar is triggered by the active Amazon EC2 instances. Note: this does not include traffic and storage costs.



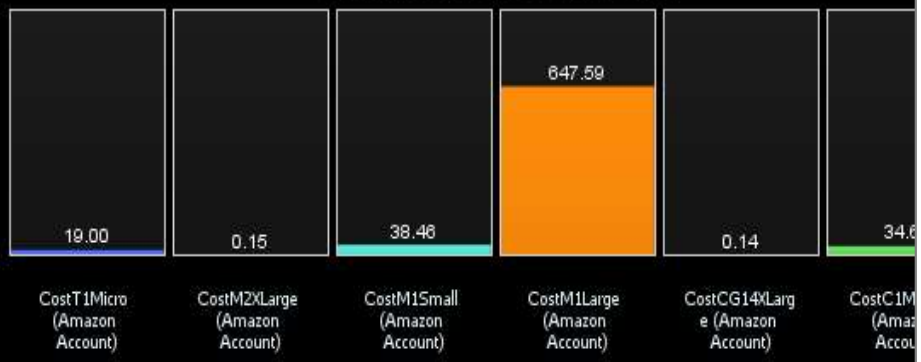
Cost - from this month

Shows how much cost in US Dollar is triggered since the start of this month by the active Amazon EC2 in
Note: this does not include traffic and storage costs.



Cost - from last month

Shows how much cost in US Dollar was triggered last month by the active Amazon EC2 instances. Not
does not include traffic and storage costs.



Dynatrace – Problem Evolution

Search your environment...

Home > Problems > Problem 889 > Visual resolution path

Replay

Problem Evolution

50
25
0
08:00 08:15 08:30 08:45

2015-05-28 08:20 - 08:25 33 ongoing events in 22 components
Trend △ 0 ▽ 8

Application
www.easytravel.com
▷ User action duration degradation

Application
www.weather.easytravel.com
▷ User action duration degradation

Custom service
Credit Card Verification
▷ Service Credit Card Verification slow down

Database
DB1
▷ Service method Query slow down
▷ Service DB1 slow down

Remoting service
RMI Server
▷ Service RMI Server slow down

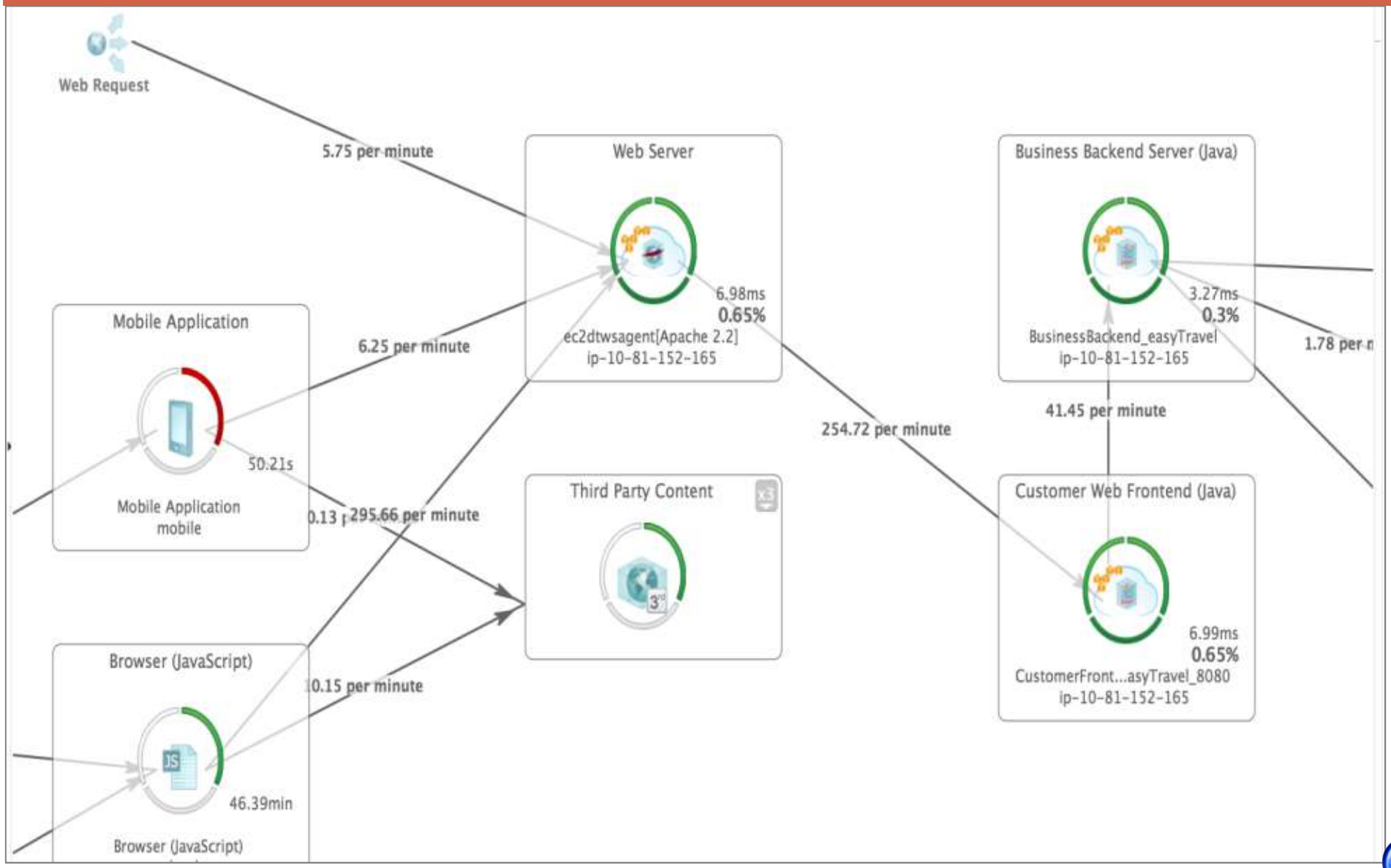
Web request service
dotNetBackend_easyTravel_x64
▷ All dynamic requests slow

Web request service
dotNetBackend_easyTravel_x64:9010
▷ All dynamic requests slow

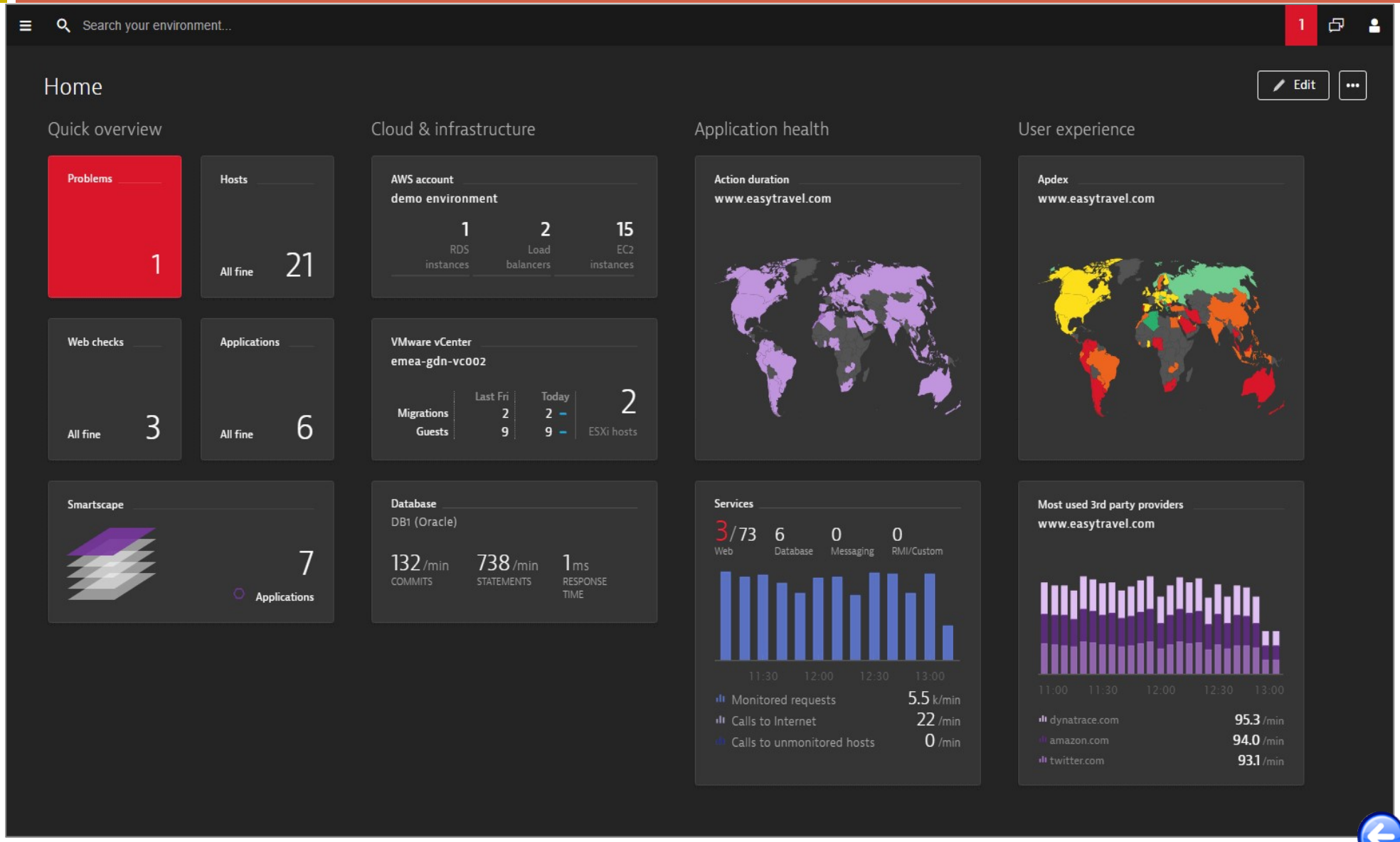
Web request service
dotNetFrontend_easyTravel_x64
▷ All dynamic requests slow

Web request service
dotNetFrontend_easyTravel_x64:9000

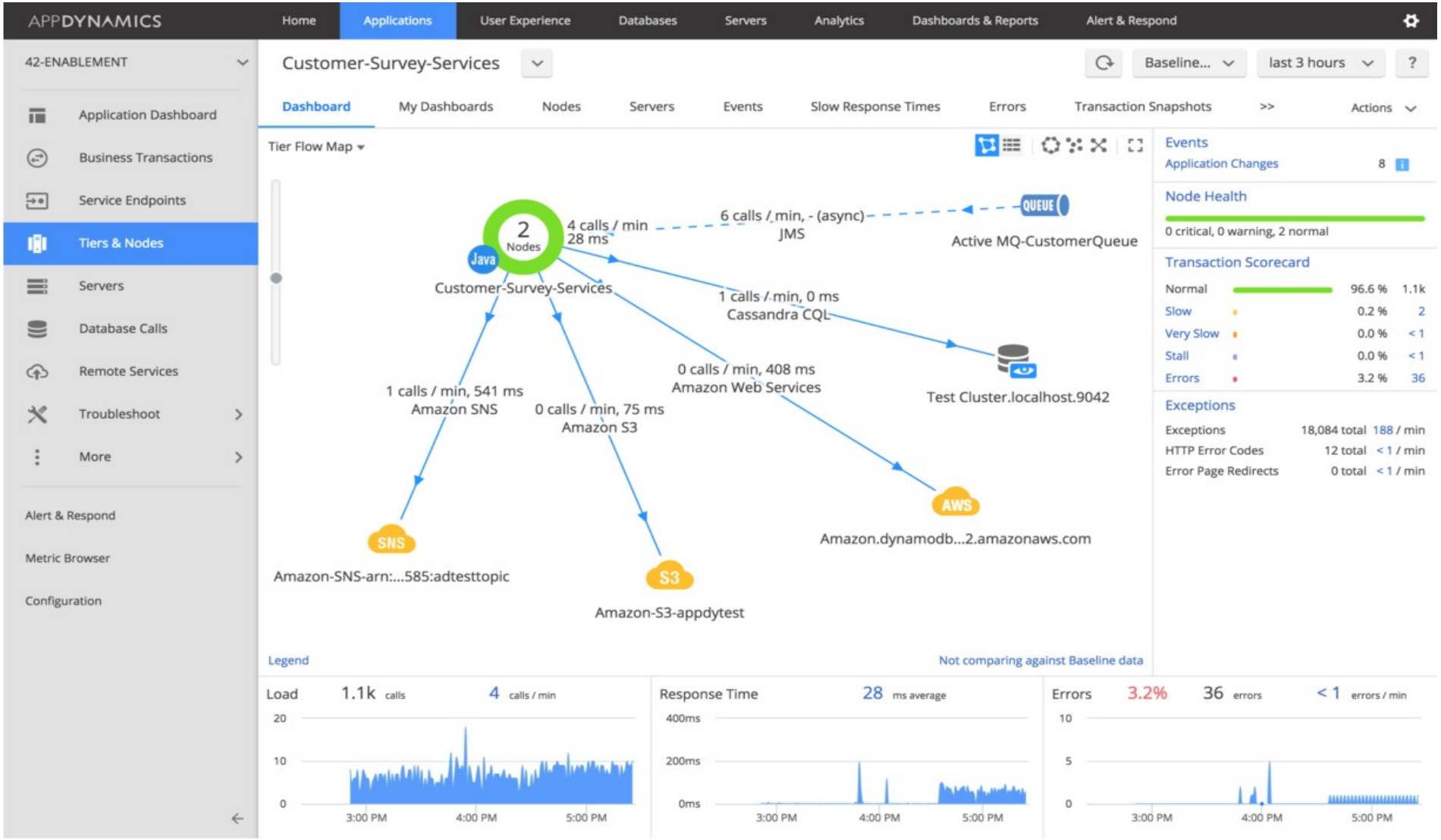
Dynatrace – Topology Visualization



Dynatrace – Overview Dashboards



AppDynamics – Topology Visualization



AppDynamics – User Experience

AppDynamics Pro

Help Setup Logout user1

Acme Online Book Store ▸ End User Experience

last 1 day

Dashboard Browser Snapshots

World

View

Alaska
Canada
Virginia
Germany
France
Italy
India
Hong Kong
Brazil
Australia

End User Response Time 3857 ms

- First Byte Time - 1693 ms
- Document Ready Time - 1429 ms
- Page Render Time - 705 ms

Highest End User Response Time

India	18528 ms
Virginia	9981 ms
Brazil	8417 ms
Germany	1808 ms
Italy	1173 ms
Australia	1033 ms
France	818 ms
Canada	508 ms

Highest Requests / min

Alaska	31 req / min
Germany	27 req / min
France	27 req / min
Italy	26 req / min
Australia	26 req / min
Brazil	24 req / min
Canada	24 req / min
India	21 req / min

Requests 0.m total 232 / min

Requests / min: 360, 320, 280, 240, 200, 160

5:00 PM 8:00 PM 11:00 PM 2:00 AM 5:00 AM 8:00 AM 11:00 AM 2:00 PM

End User Response Time 3,857 ms average

Response Time (ms): 4400, 4000, 3600, 3200

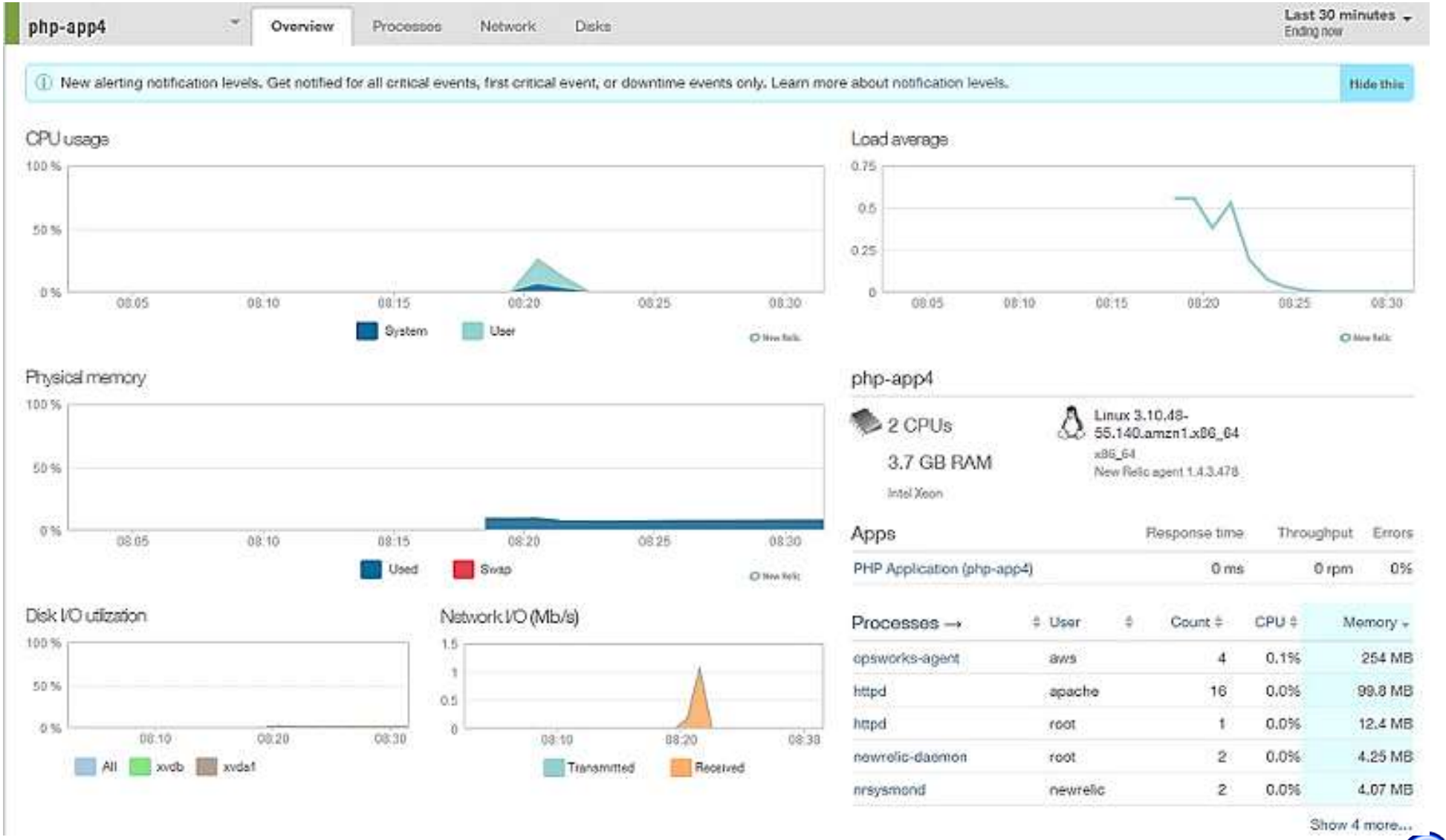
5:00 PM 8:00 PM 11:00 PM 2:00 AM 5:00 AM 8:00 AM 11:00 AM 2:00 PM

JavaScript Errors 0% 0. total 0 / min

JS Errors / min: 100, 80, 60, 40, 20, 0

5:00 PM 8:00 PM 11:00 PM 2:00 AM 5:00 AM 8:00 AM 11:00 AM 2:00 PM

New Relic – Infrastructure Overview



New Relic – Instance Cost Monitoring