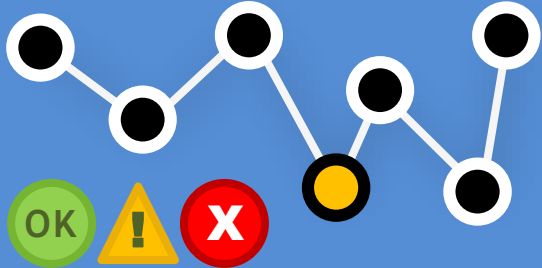


Using Machine Learning and Analytics to Understand How MQ Impacts Your Business

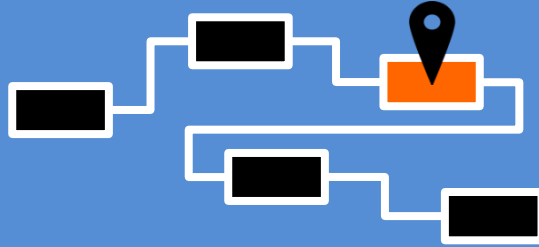


Nastel Technologies - What We Do

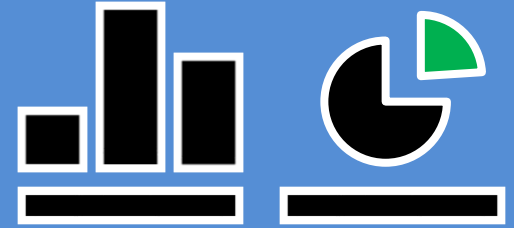
Monitoring



Tracking



Analytics



BUSINESS APPLICATIONS



Banking
Finance



Transport
Logistics



Claims
Processing



Order
Handling



Payments
Processing

The Nastel Difference: Making the Complex Simple

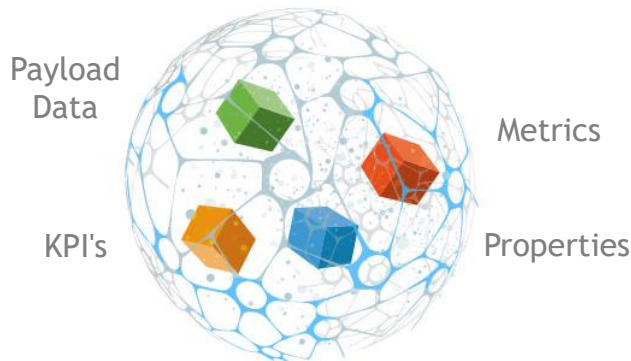
1

Logs, Metrics &
Transactions
From Multiple
Sources

Chaotic Complexity
Low-value Data

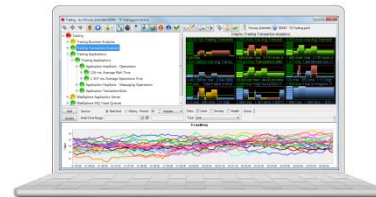
2

Event/Transaction Synthesis
with Alerts and Notifications



3

Intuitive, Actionable
Business Insights

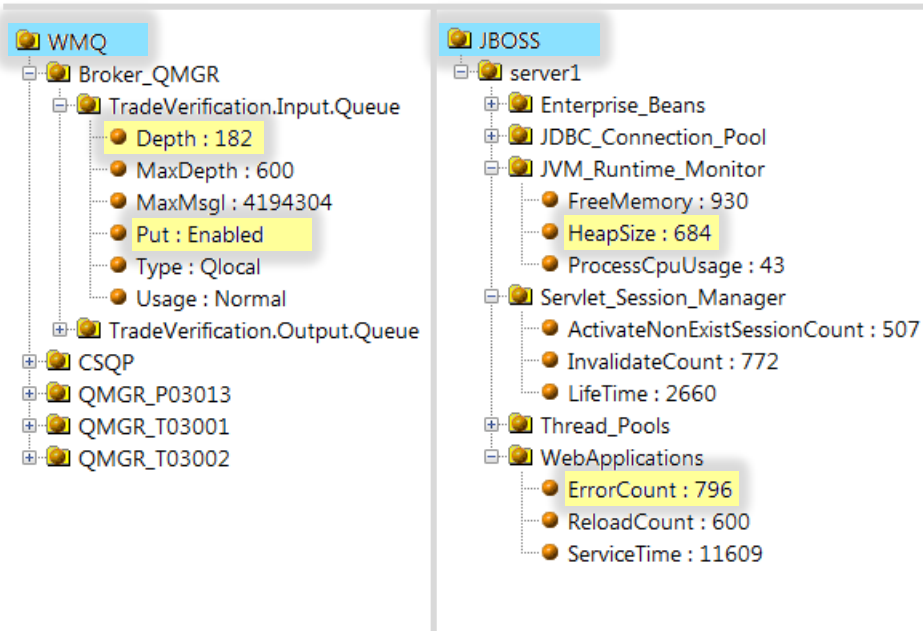


Data Enrichment &
Business Milestones

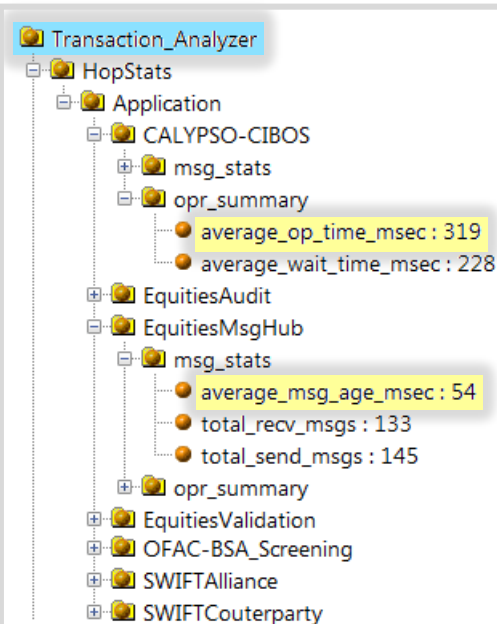
Simplicity
High-value Data

Metrics and Events from Multiple Sources

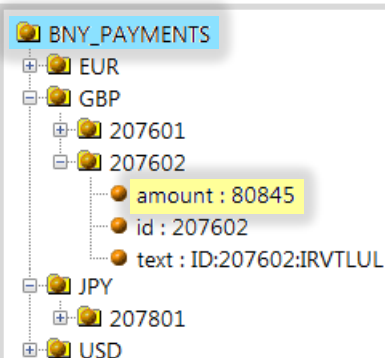
Application Infrastructure Metrics & Events (Messaging Middleware, ESB, Java, ...)



Transaction Metrics & Events



Application Metrics & Events



Nastel's AutoPilot®

Automatic Transaction
Tracking & Auditing

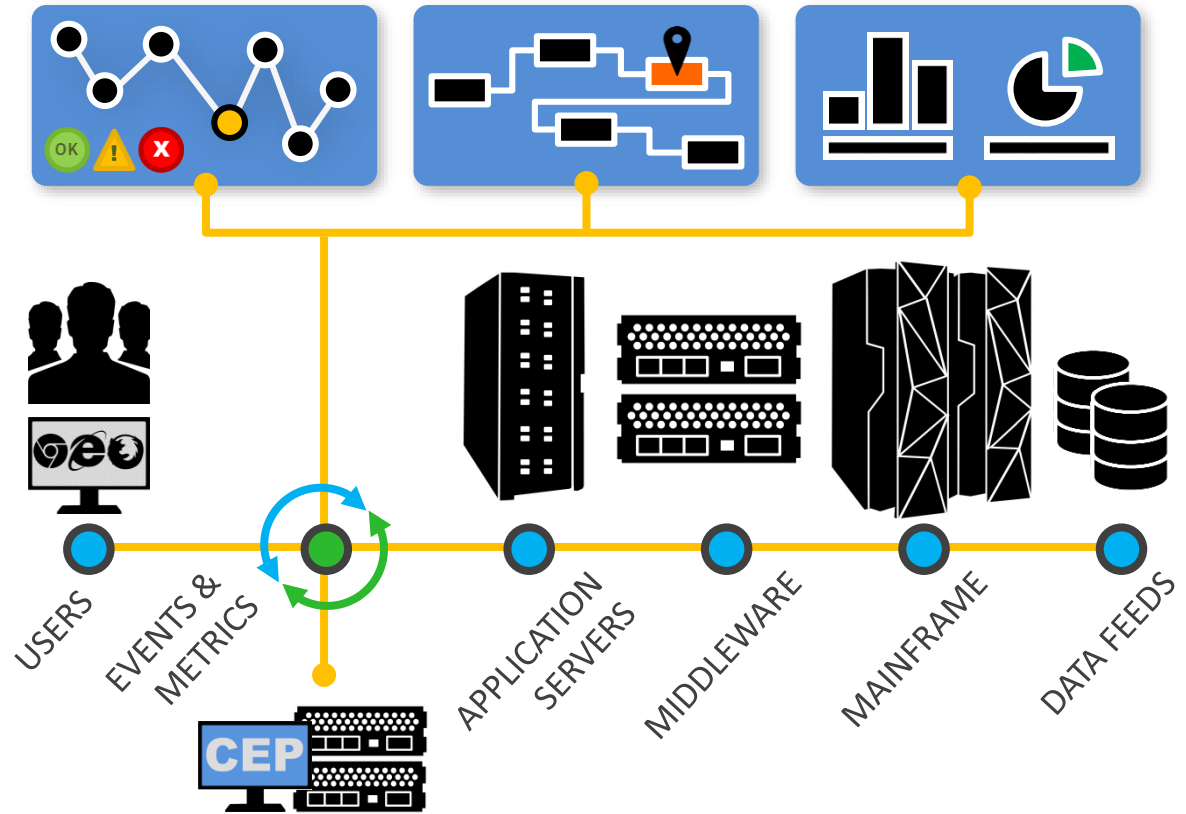
Complex Event Processing
(CEP: Situational Awareness)

Unified Application Analytics
and Log Analytics

End-User Monitoring,
Performance Analytics

Middleware Management
and Monitoring

Built on a Big-Data Platform
for Extreme Scalability



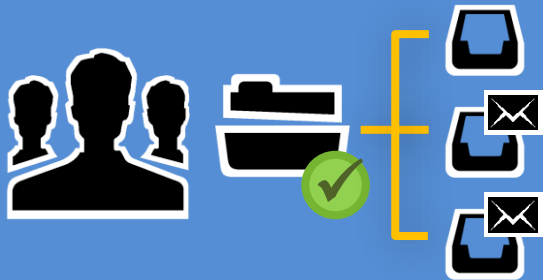


AutoPilot® for IBM MQ Overview:

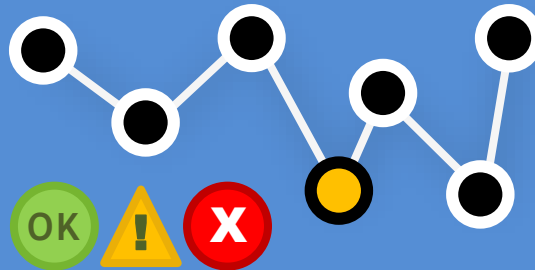
- Management
- Monitoring
- Message Tracking
- Log Analytics

Nastel's AutoPilot® for IBM MQ

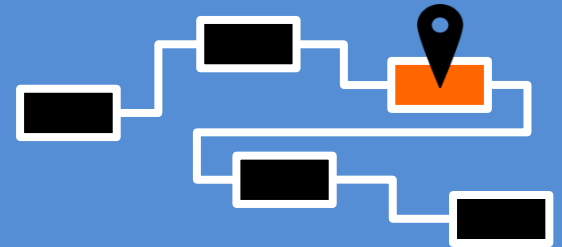
Management



Monitoring



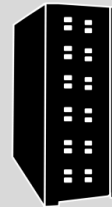
Message Tracking



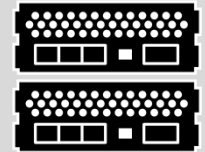
AutoPilot® for IBM MQ



- IBM z/OS
- IBM iSeries
- IBM AIX

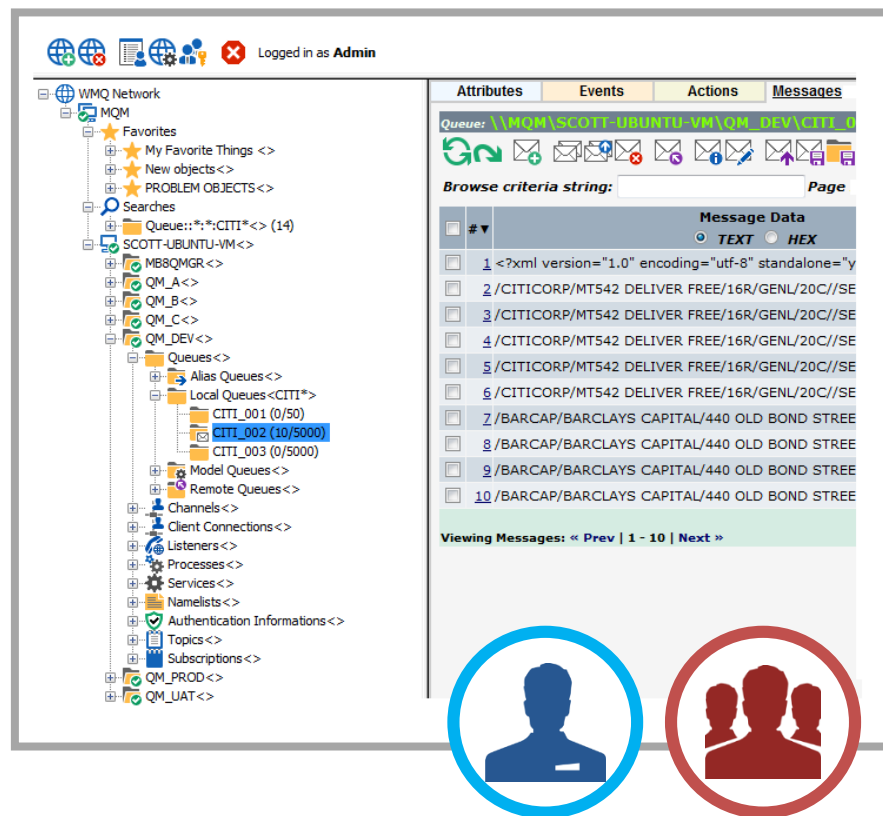


- Unix
- Linux
- Windows



AutoPilot - Management of IBM MQ

- Auto discovery of WMQ objects
- Automatic Configuration Management
- Audit trail & Rollback of changes to WMQ objects
- Agent and Agent-less management
- Message Management & Search
- Secure, Self Service WMQ Management



The screenshot displays the AutoPilot management interface for IBM MQ. The left pane shows a hierarchical tree of objects under 'WMQ Network' and 'MQM'. The right pane shows the 'Messages' tab for a specific queue, displaying a list of messages with their attributes and a 'Browse criteria string' field. Below the screenshot are two circular icons: a blue one with a single person silhouette and a red one with three person silhouettes.

WMQ Network

- MQM
 - Favorites
 - My Favorite Things <>
 - New objects <>
 - PROBLEM OBJECTS <>
 - Searches
 - Queue::*:CITI*<> (14)
 - SCOTT-UBUNTU-VM<>
 - MB8QMGR<>
 - QM_A<>
 - QM_B<>
 - QM_C<>
 - QM_DEV<>
 - Queues<>
 - Alias Queues<>
 - Local Queues<CITI*>
 - CITI_001 (0/50)
 - CITI_002 (10/5000)
 - CITI_003 (0/5000)
 - Model Queues<>
 - Remote Queues<>
 - Channels<>
 - Client Connections<>
 - Listeners<>
 - Processes<>
 - Services<>
 - Namlists<>
 - Authentication Informations<>
 - Topics<>
 - Subscriptions<>
 - QM_PROD<>
 - QM_UAT<>

Attributes Events Actions Messages

Queue: \MQM\SCOTT-UBUNTU-VM\QM_DEV\CITI_002

Browse criteria string: Page

#	Message Data
1	<?xml version="1.0" encoding="utf-8" standalone="y
2	/CITICORP/MT542 DELIVER FREE/16R/GENL/20C//SE
3	/CITICORP/MT542 DELIVER FREE/16R/GENL/20C//SE
4	/CITICORP/MT542 DELIVER FREE/16R/GENL/20C//SE
5	/CITICORP/MT542 DELIVER FREE/16R/GENL/20C//SE
6	/CITICORP/MT542 DELIVER FREE/16R/GENL/20C//SE
7	/BARCAP/BARCLAYS CAPITAL/440 OLD BOND STREE
8	/BARCAP/BARCLAYS CAPITAL/440 OLD BOND STREE
9	/BARCAP/BARCLAYS CAPITAL/440 OLD BOND STREE
10	/BARCAP/BARCLAYS CAPITAL/440 OLD BOND STREE

Viewing Messages: < Prev | 1 - 10 | Next >

AutoPilot - Monitoring of IBM MQ

- Pre-defined & User-Defined Dashboards with intuitive KPI's
- Policy-based, Wizard-built monitoring
- No scripting
- Dynamic Thresholds & Automatic Baselining
- Alerts, Notifications & Automated Actions
- Real-time and historical analysis



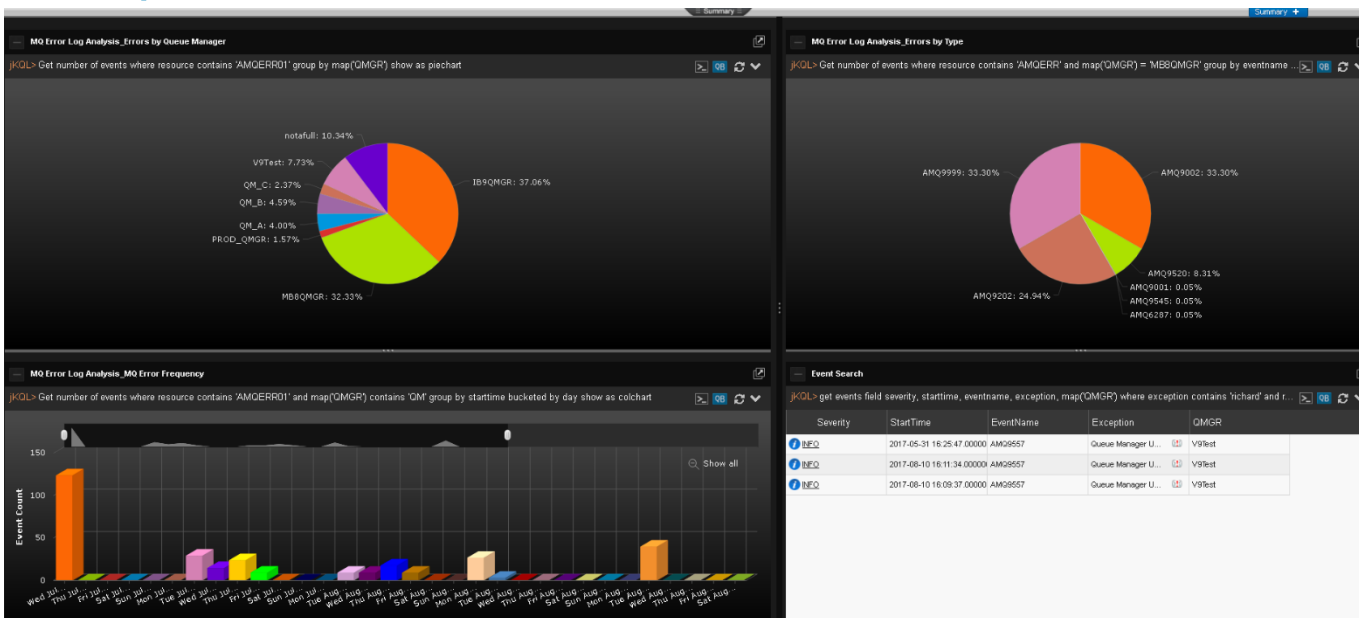
AutoPilot - Message Transaction Tracking of IBM MQ

- Graphical views of MQ Message Flow transactions
- Categorize MQ message flows (e.g. by Business Unit, application type)
- Pinpoint message delivery problems, message latency and SLA breaches
- Criteria-based message search
- Message tracking information stored in NoSQL database
- Real-time and historical analysis



Log Analytics - MQ/IIB and any other logs

- Centralized access to logs from queue managers and brokers
- Analyze trends
- Search for specific content or conditions





AutoPilot® for IBM MQ

IBM MQ Configuration & Message Management

www.nastel.com

IBM MQ Stakeholders



**Middleware
Team**

- DEV, TEST & PROD
- Management of messaging backbone



**Application
Support**

- Faster time to repair (MTTR)
- Identify root cause of MQ issues



**Application
Developers**

- User Acceptance Testing
- Improve quality of new releases of applications



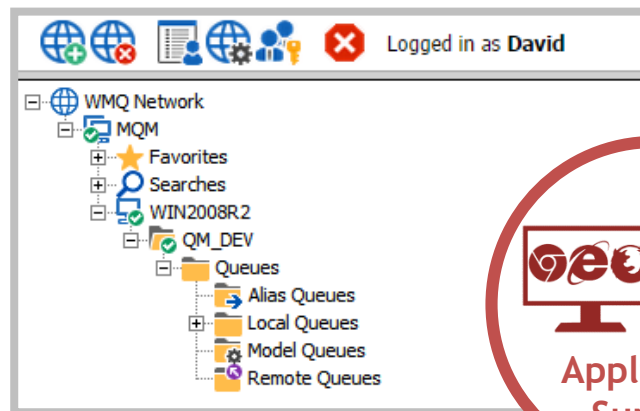
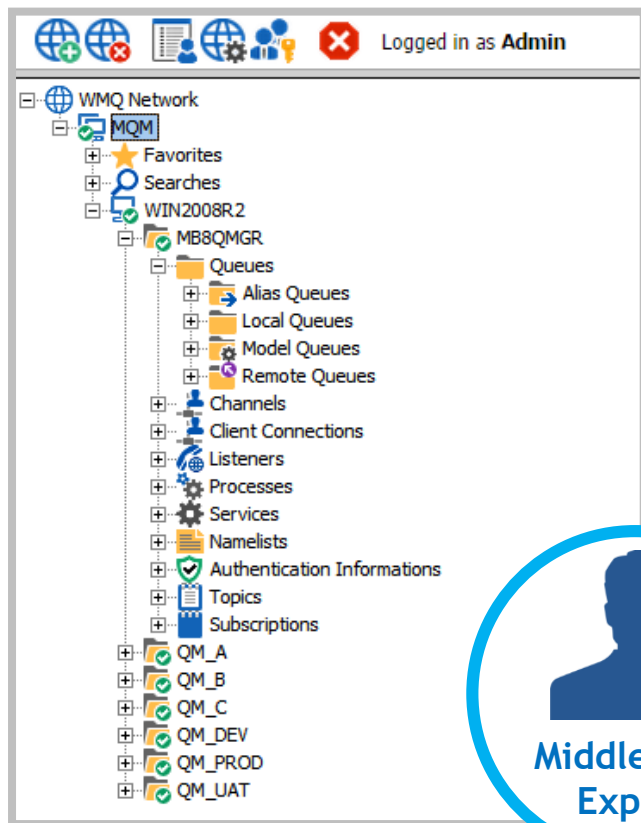
**Enterprise
Architects**

- Improve processes
- Reduce costs
- Prevent performance problems



**Application
Owners**

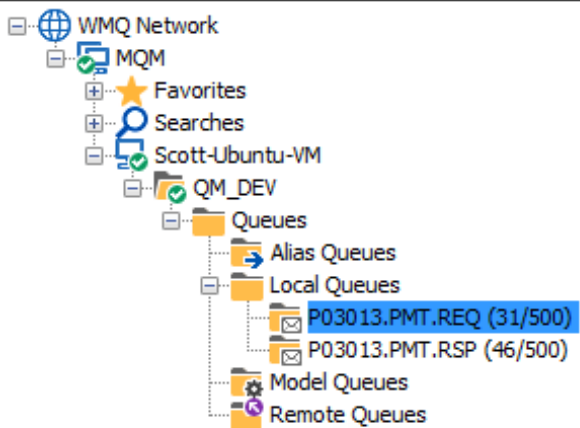
Targeted delegation of access rights



- **Safe:** protect MQ estate
- **Secure:** highly granular, role-based security
- **Simple:** delegate selected tasks to Dev/Ops teams
- **Scalable:** to a large number of users

Secure access ... for viewing authorized objects

Logged in as David



Tree view of
authorized MQ
objects

Attributes

Events

Actions

Messages

Status Views

Topology Views

Queue: \\MQM\Scott-Ubuntu-VM\QM_DEV\P03013.PMT.REQ (31 / 500)

Export all

Browse criteria string:

Page size: 100

Set and browse

	#	Message Size	MD::Put Date	MD::Put Time	Message Data
					<input checked="" type="radio"/> TEXT <input type="radio"/> HEX
<input type="checkbox"/>	1	334	20150207	12313885	{1:F01BEBEDEBBAXXX3768156193}{2:O3001139050822CF
<input type="checkbox"/>	2	169	20150207	12341799	{1:F01CHASUS33AXXX3768156193}{2:O3001139050822CF
<input type="checkbox"/>	3	189	20150207	12342965	{1:F01CHASUS33AXXX3768156193}{2:O3001139050822CF
<input type="checkbox"/>	4	333	20150207	12345626	{1:F01CRESCHZZAXXX3768156193}{2:O3001139050822BF
<input type="checkbox"/>	5	169	20150207	12351490	{1:F01CHASUS33AXXX3768156193}{2:O3001139050822CF
<input type="checkbox"/>	6	189	20150207	12352464	{1:F01CHASUS33AXXX3768156193}{2:O3001139050822CF
<input type="checkbox"/>	7	334	20150207	12354439	{1:F01BEBEDEBBAXXX3768156193}{2:O3001139050822CF
<input type="checkbox"/>	8	334	20150207	12354439	{1:F01BEBEDEBBAXXX3768156193}{2:O3001139050822CF
<input type="checkbox"/>	9	334	20150207	12354439	{1:F01BEBEDEBBAXXX3768156193}{2:O3001139050822CF
<input type="checkbox"/>	10	334	20150207	12354439	{1:F01BEBEDEBBAXXX3768156193}{2:O3001139050822CF
<input type="checkbox"/>	11	334	20150207	12354439	{1:F01BEBEDEBBAXXX3768156193}{2:O3001139050822CF

Secure access ... for viewing authorized objects

The screenshot displays the IBM MQ Explorer interface. At the top, a status bar indicates 'Logged in as David'. The left pane shows a tree view of the MQM structure, with 'QM_DEV' expanded to show 'Local Queues'. The queue 'P03013.PMT.REQ (31/500)' is selected. The main pane shows the 'Messages' tab for this queue, displaying a table of message details. A yellow callout box highlights the 'Secure access' status. Another yellow callout box highlights the 'Authorized MQ objects only' status. A third yellow callout box highlights the 'View queue depth' and 'View message details' options.

Logged in as David

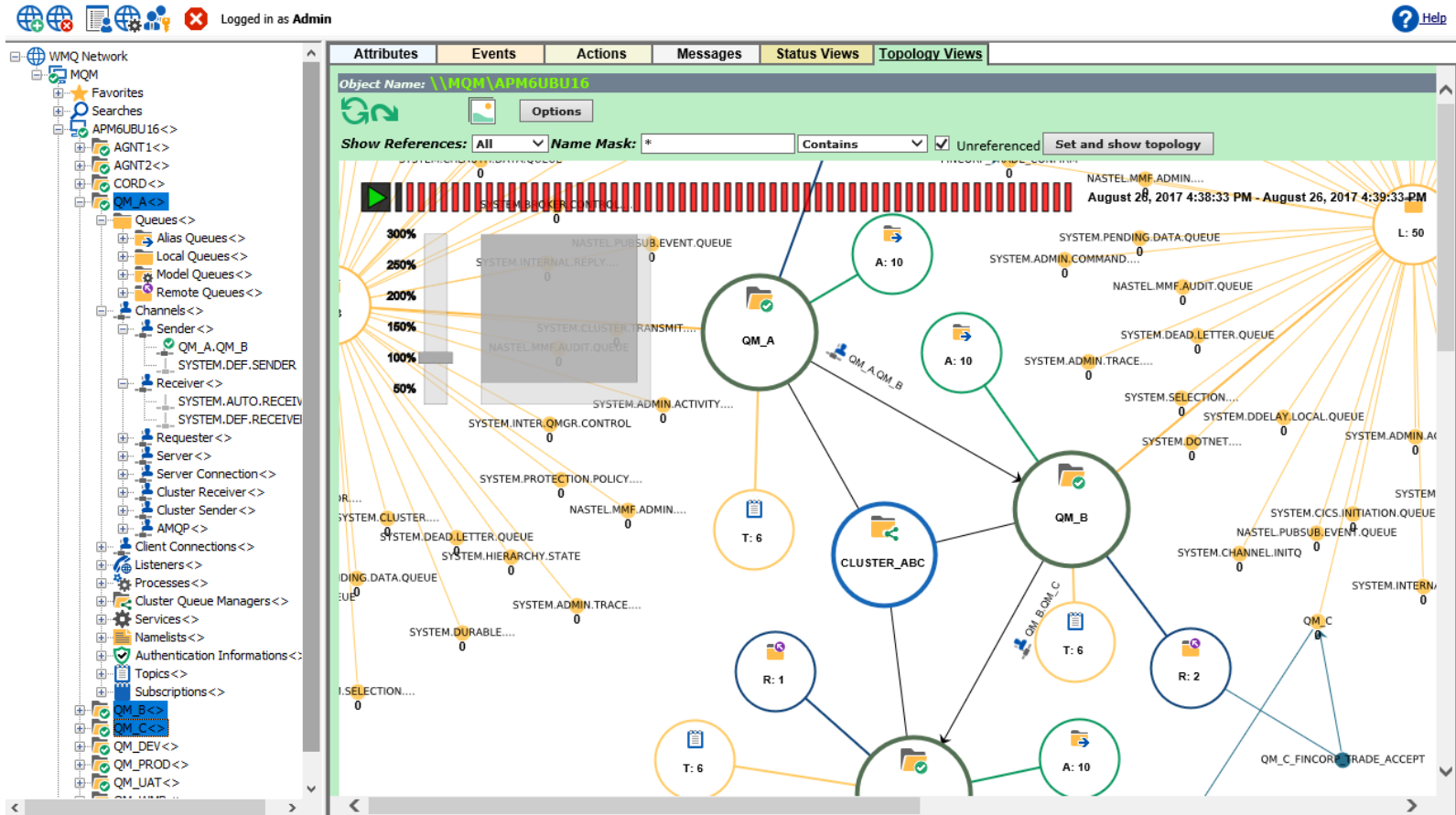
Secure access

Authorized MQ objects only

View queue depth
View message details

#	Message Size	MD::Put Date	MD::Put Time	Message Data
1	334	20150207	12313885	{1:F01BEBEDEBBAXXX3768156193}{2:O3001139050822CF}
2	169	20150207	12341799	{1:F01BEBEDEBBAXXX3768156193}{2:O3001139050822CF}
3	189	20150207	12342965	{1:F01BEBEDEBBAXXX3768156193}{2:O3001139050822CF}

MQ Topology View



Secure access ... for authorized actions

WMQ Network

- MQM
 - Favorites
 - Searches
 - Scott-Ubuntu-VM
 - QM_DEV
 - Queues
 - Alias Queues
 - Local Queues
 - P03013.PMT.REQ (31/500)
 - P03013.PMT.RSP (46/500)

Logged in as David

Copy Local Queue P03013.PMT.IPN

Queue name: M04045.ORD.REQ

Description: M04045.ORD.REQ used by M040 Order Processing

Queue Usage: Normal

Scope: Queue Manager

Default Bind:

Default Persistence:

Replace existing definition

OK Cancel Help

NOT OK

AutoPilot On-Demand for WebSphere MQ

Command status: (RC - 2035), CMD - MQCMD_COPY_Q - Failed!

Origin: \\MQM\Scott-Ubuntu-VM\QM_DEV\Queues\Local Queues\P03013.PMT.IPN

Destination: M04045.ORD.REQ

Timestamp: Feb 10 2015 20:27:51

Reason: NOT AUTHORIZED

Description: MQRC_NOT_AUTHORIZED: The user is not authorized to perform the operation attempted

OK

Audit Trail

[Home](#) [Security Management](#) [Administration](#)

[Import Data](#) | [Export Data](#) | [Audit Report](#) | [Miscellaneous](#)

User List

Filter

40 1 - 27 / 27

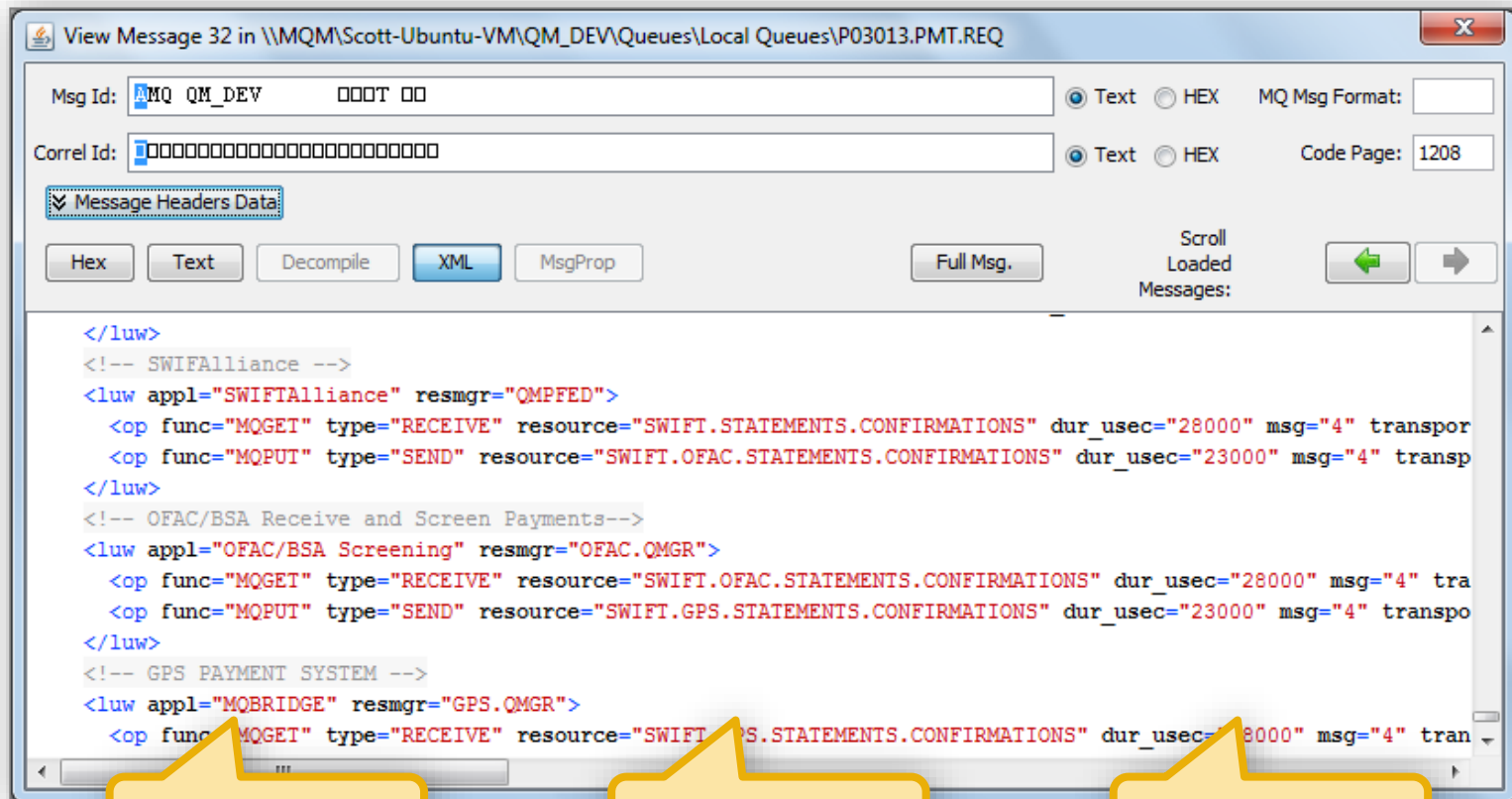
User Name	MQ Manager Name	Object Type	Object Name	Command	Access	Date
David		All Objects			All	From 08/26/2017 To
DAVID	QM_DEV	Queue	CITI_01	EXCMD_MG_BROWSE	GRANTED	Sat Aug 26 23:41:46 2017
DAVID	QM_DEV	Queue	CITI_01	EXCMD_MG_BROWSE	GRANTED	Sat Aug 26 23:41:48 2017
DAVID	QM_DEV	Queue	CITI_01	EXCMD_MG_NEW	GRANTED	Sat Aug 26 23:41:51 2017
DAVID	QM_DEV	Queue	CITI_01	EXCMD_MG_BROWSE	GRANTED	Sat Aug 26 23:41:51 2017
DAVID	QM_DEV	Queue	CITI_01	EXCMD_MG_MOVE	GRANTED	Sat Aug 26 23:42:01 2017
DAVID	QM_DEV	Queue	CITI_01	EXCMD_MG_MOVE	GRANTED	Sat Aug 26 23:42:01 2017
DAVID	QM_DEV	Queue	CITI_01	EXCMD_MG_MOVE	GRANTED	Sat Aug 26 23:42:01 2017
DAVID	QM_DEV	Queue	CITI_01	EXCMD_MG_MOVE	GRANTED	Sat Aug 26 23:42:02 2017
DAVID	QM_DEV	Queue	CITI_01	EXCMD_MG_MOVE	GRANTED	Sat Aug 26 23:42:02 2017
DAVID	QM_DEV	Queue	CITI_01	EXCMD_MG_BROWSE	GRANTED	Sat Aug 26 23:42:02 2017
DAVID	QM_DEV	Queue	CITI_03	EXCMD_MG_BROWSE	GRANTED	Sat Aug 26 23:42:02 2017
DAVID	QM_DEV	Queue	CITI_03	EXCMD_MG_DELETE	GRANTED	Sat Aug 26 23:42:02 2017
DAVID	QM_DEV	Queue	CITI_03	EXCMD_MG_DELETE	GRANTED	Sat Aug 26 23:42:02 2017
DAVID	QM_DEV	Queue	CITI_03	EXCMD_MG_BROWSE	GRANTED	Sat Aug 26 23:42:02 2017
DAVID	QM_PROD	Queue	CITI_012	MQCMD_COPY_Q	DENIED	Sat Aug 26 23:43:02 2017
DAVID	QM_PROD	Queue	CITI_012	MQCMD_COPY_Q	DENIED	Sat Aug 26 23:43:02 2017
DAVID	QM_DEV	Queue	CITI_02	EXCMD_MG_BROWSE	GRANTED	Sat Aug 26 23:43:10 2017

Unauthorized
action denied

Filter

40 1 - 27 / 27

Secure Access to Messages



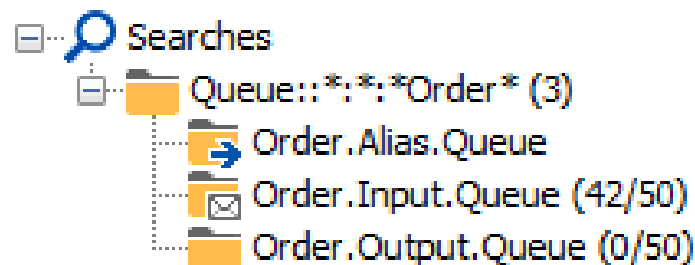
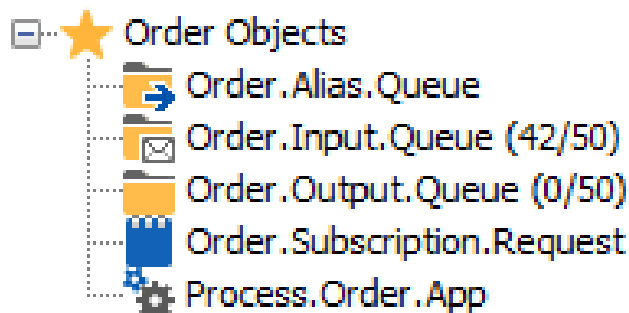
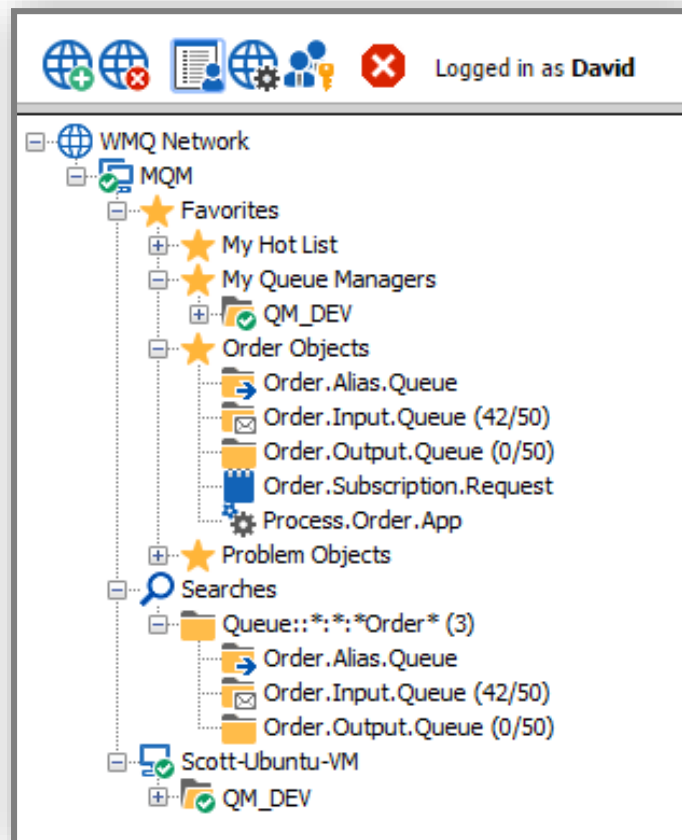
The screenshot shows a window titled "View Message 32 in \\MQM\Scott-Ubuntu-VM\QM_DEV\Queues\Local Queues\P03013.PMT.REQ". The window contains fields for "Msg Id:" (AMQ QM_DEV) and "Correl Id:" (a long string of zeros). There are radio buttons for "Text" and "HEX" under "MQ Msg Format:" and "Code Page:" (1208). A checkbox labeled "Message Headers Data:" is checked. Below these are buttons for "Hex", "Text", "Decompile", "XML" (highlighted), and "MsgProp". A "Full Msg." button and a "Scroll Loaded Messages:" section with left and right arrows are also present. The main area displays XML content with the following structure:

```
</luw>
<!-- SWIFAlliance -->
<luw appl="SWIFAlliance" resmgr="QMPFED">
  <op func="MQGET" type="RECEIVE" resource="SWIFT.STATEMENTS.CONFIRMATIONS" dur_usec="28000" msg="4" transpor
  <op func="MQPUT" type="SEND" resource="SWIFT.OFAC.STATEMENTS.CONFIRMATIONS" dur_usec="23000" msg="4" transp
</luw>
<!-- OFAC/BSA Receive and Screen Payments-->
<luw appl="OFAC/BSA Screening" resmgr="OFAC.QMGR">
  <op func="MQGET" type="RECEIVE" resource="SWIFT.OFAC.STATEMENTS.CONFIRMATIONS" dur_usec="28000" msg="4" tra
  <op func="MQPUT" type="SEND" resource="SWIFT.GPS.STATEMENTS.CONFIRMATIONS" dur_usec="23000" msg="4" transpo
</luw>
<!-- GPS PAYMENT SYSTEM -->
<luw appl="MQBRIDGE" resmgr="GPS.QMGR">
  <op func="MQGET" type="RECEIVE" resource="SWIFT.S.STATEMENTS.CONFIRMATIONS" dur_usec="28000" msg="4" tran
```

Three yellow callout boxes are overlaid on the bottom of the window:

- Hex format
- Text format
- XML format

Favorites and Searches



MQSC Export/Import and Console

The screenshot displays the MQSC console interface. On the left, a tree view shows the hierarchy of objects, with 'QM_A' selected. A context menu is open over 'QM_A', listing various actions such as 'Refresh', 'Properties...', 'Events...', 'Show Object Attributes', 'Show Topology', 'Commands', 'Cluster membership', 'MQSC', 'Discover now', 'Delete', 'Delete from Database', 'Add to favorites...', and 'Filter...'. The 'MQSC' option is highlighted, and a sub-menu is open showing 'Apply from', 'Save to', and 'Console...'. The main window, titled 'QM_A (HPENVY0113)', has a header with 'Attribute Name' and 'Attribute Value'. Below the header, it says 'No Attributes to list...'. The 'Command:' field contains 'dis qmgr'. The 'Response:' field displays the output of the command, which is a list of attributes and their values, such as 'SCMD SERV (QMGR)', 'SSL CRLNL ()', 'SSL ELEV (DISABLED)', 'SSL KEYR (C:\ProgramData\IBM\MQ\qmgrs\QM_A\ssl\key)', 'SSL KEYC (0)', 'STAT CHL (MEDIUM)', 'STAT MQI (OFF)', 'STRSTPEV (ENABLED)', 'SYNCP', 'SPLCAP (ENABLED)', 'SSL CRYPT ()', 'SSL EIPS (NO)', 'STAT ACLS (QMGR)', 'STAT INT (1800)', 'STAT Q (ON)', 'SUITEB (NONE)', 'TREELIFE (1800)', and 'VERSION (09000200)'. A yellow callout box points to the 'Console...' option in the sub-menu, containing the text: 'Also available as command line for automation'. At the bottom of the console window, there are buttons for 'Clear', 'Copy', 'Save', and 'Help'.

■ Also available as command line for automation



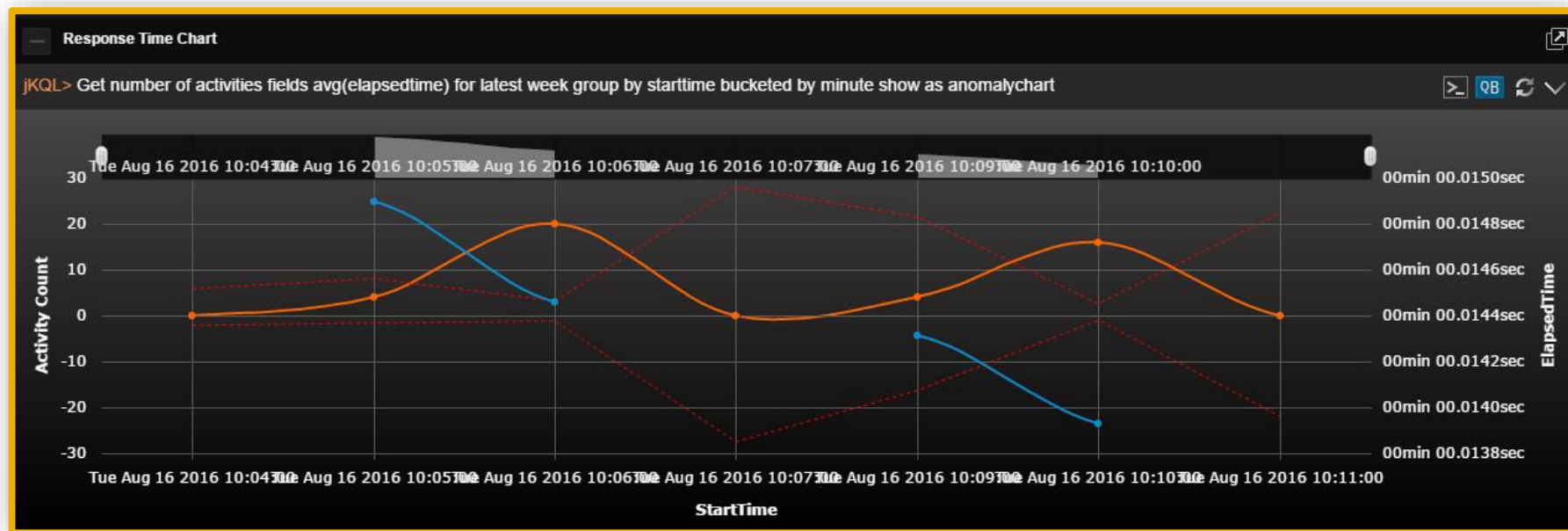
Forensic Investigation

Unique features of AutoPilot Insight

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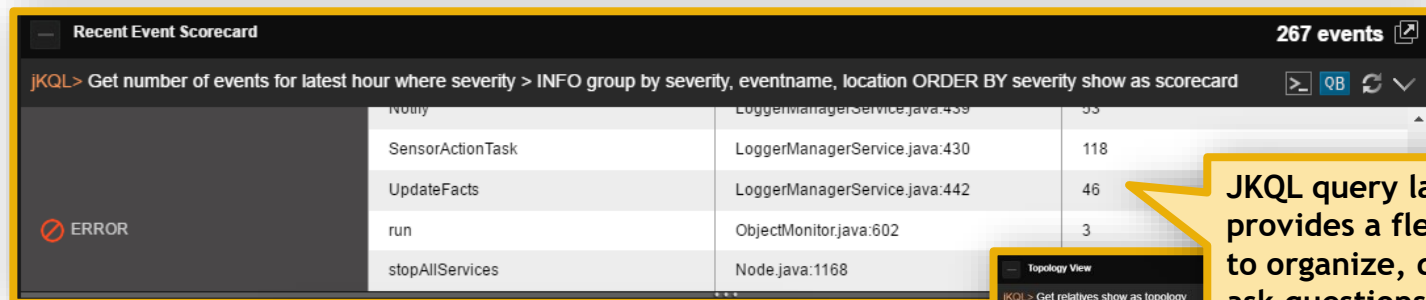
Natural query language

- AutoPilot Insight English like query language lets you analyze transactions, logs, performance and combines data query with visualization in a single statement
 - Get number of events show as linechart



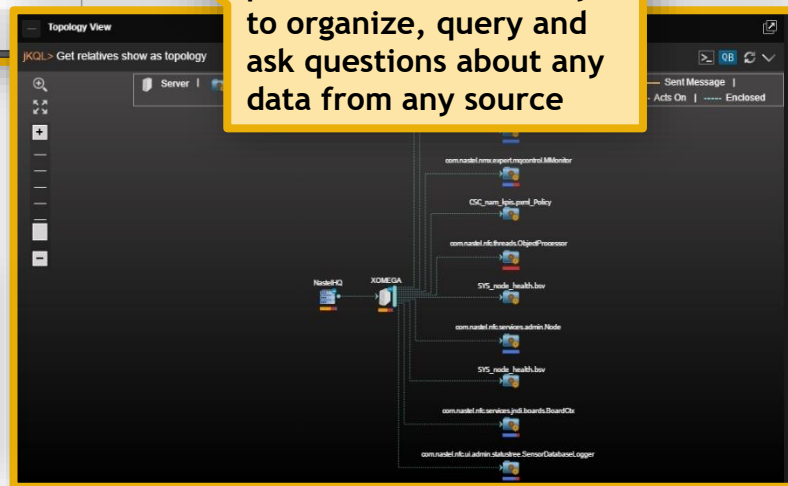
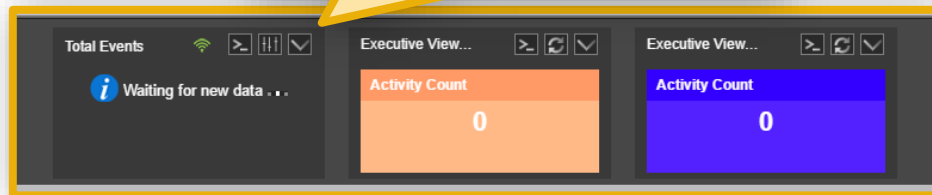
Natural query language

- Ability to ask any question about application performance, logs, transaction and metrics using JKQL English like query language.



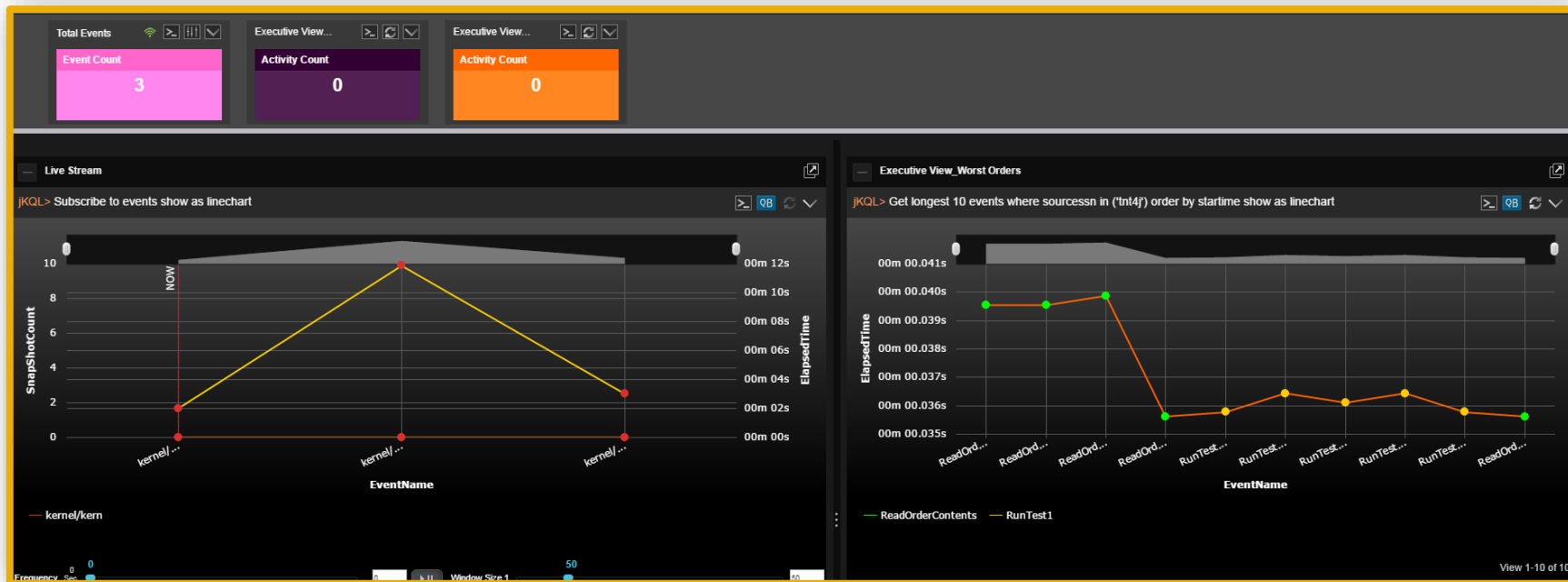
JKQL query language provides a flexible way to organize, query and ask questions about any data from any source

Real time (CEP/EPL) expressions that let App Support see what's happening in real-time



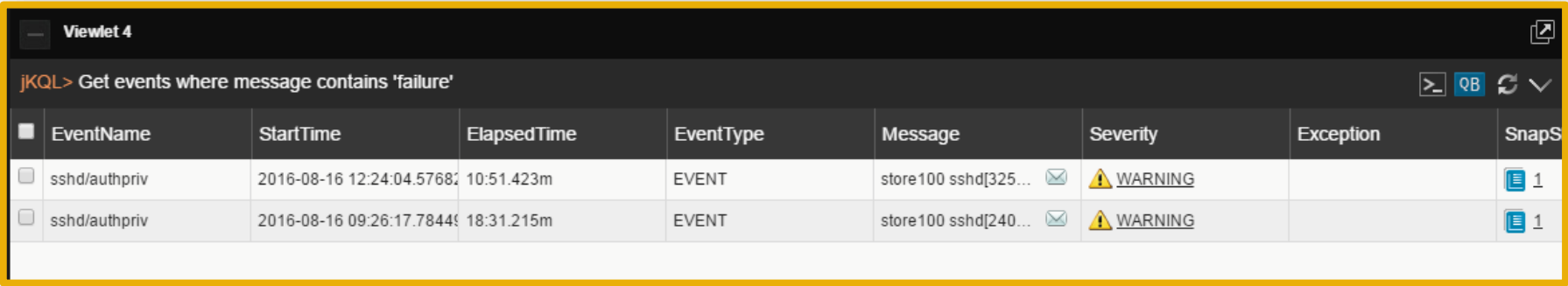
Subscribe function for streaming time series data

- AutoPilot Insight lets you subscribe to APM data using JKQL “subscribe” queries.
 - “Subscribe to number of events group by location show as summary”
 - Developers can write streaming, query apps using our open source API
 - <https://github.com/Nastel/jKoolRestClients#running-jkool-queries-asynchronously>









Flow tracking, Log Analytics and Monitoring

- AutoPilot Insight can track transactions, performance as well as message and transaction payload, as well as logs.
 - Example of how someone might search for a specific order from command line:
 - JKCcmd -search “failure” -file args.file
 - JKCcmd -query “get number of events where message contains ‘failure’” -file args.file



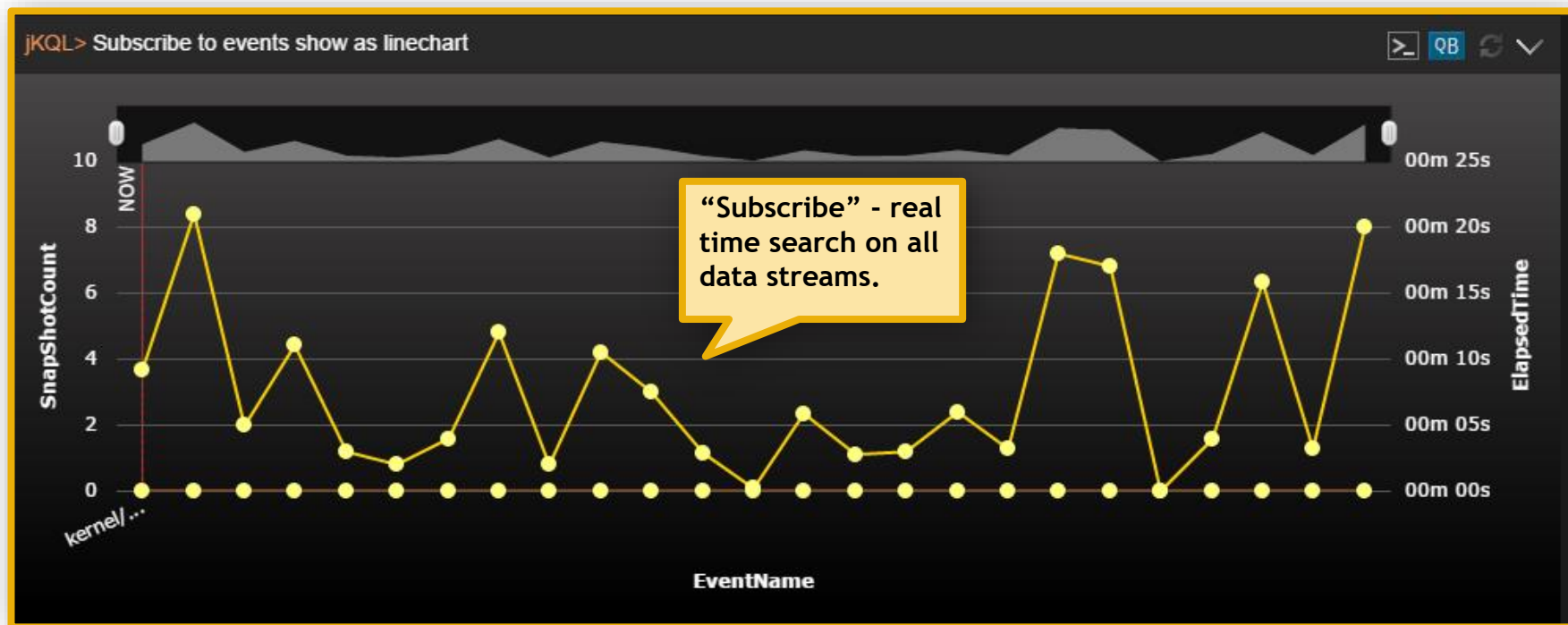
Viewlet 4

JQQL> Get events where message contains 'failure'

	EventName	StartTime	ElapsedTime	EventType	Message	Severity	Exception	SnapS
<input type="checkbox"/>	sshd/authpriv	2016-08-16 12:24:04.57682	10:51.423m	EVENT	store100 sshd[325... 	 WARNING		 1
<input type="checkbox"/>	sshd/authpriv	2016-08-16 09:26:17.78449	18:31.215m	EVENT	store100 sshd[240... 	 WARNING		 1

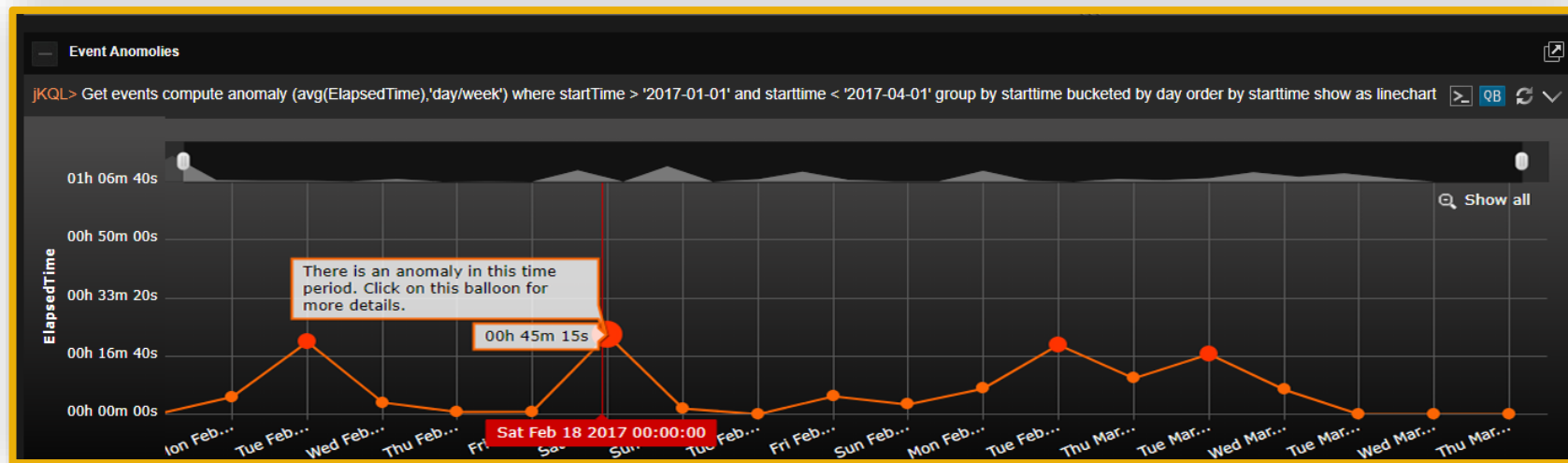
Real time continuous search on all data streams

- Use AutoPilot Insight “subscribe” capability to run real-time continuous searches against all data streams.



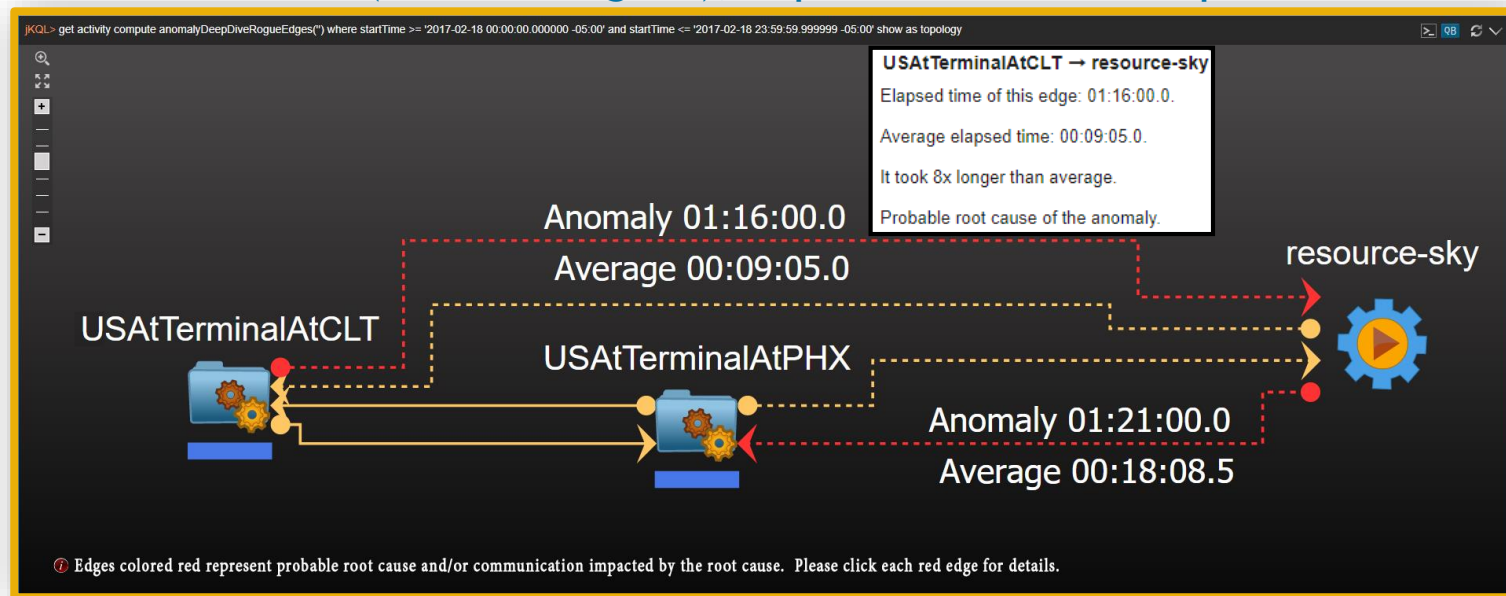
Machine Learning, Anomaly Detection & Root Cause Analysis

- Detecting anomalies - algorithm based on Robust Principal Component Analysis
- No learning rules required for training
- Viewlets provide drill-down capability for root-cause analysis



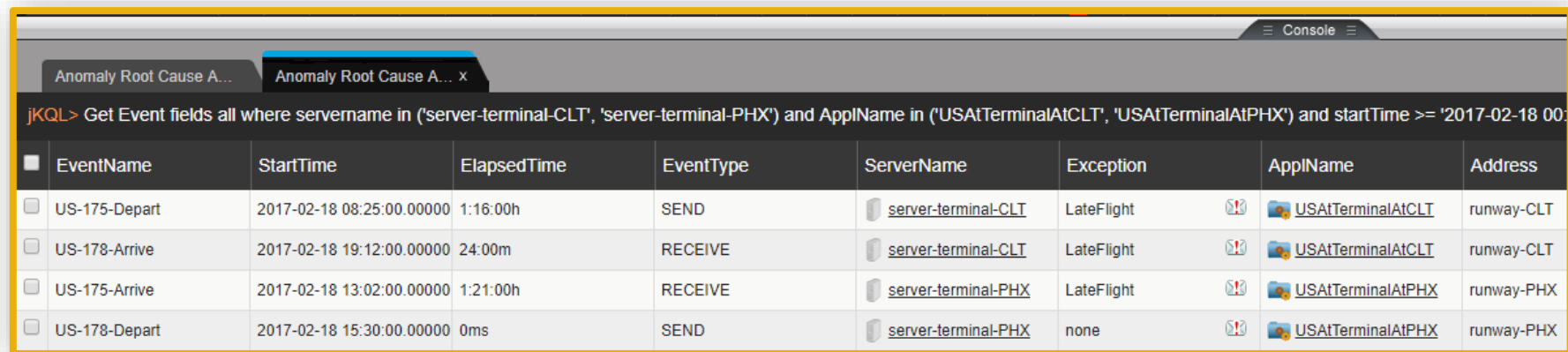
Machine Learning, Anomaly Detection & Root Cause Analysis

- Drilldown to graph of nodes and edges representing topology at time of anomaly
- Topology graph automatically created for all relationships in time window
- Related nodes are automatically stitched together
- Lines between nodes (called “edges”), represent relationships between nodes







Machine Learning, Anomaly Detection & Root Cause Analysis

- Drilldown to events - looking at all relationships from the graph, we detect which edges are significantly different than their statistical average for the time window (configurable)
- The worst “edge(s)” are the potential root cause.



The screenshot shows a console window with a tab titled "Anomaly Root Cause A...". The console displays a JQL query: `jKQL> Get Event fields all where servername in ('server-terminal-CLT', 'server-terminal-PHX') and ApplName in ('USATTerminalAtCLT', 'USATTerminalAtPHX') and startTime >= '2017-02-18 00:`. Below the query, a table lists the results of the query.

	EventName	StartTime	ElapsedTime	EventType	ServerName	Exception	ApplName	Address
<input type="checkbox"/>	US-175-Depart	2017-02-18 08:25:00.00000	1:16:00h	SEND	server-terminal-CLT	LateFlight 	USATTerminalAtCLT	runway-CLT
<input type="checkbox"/>	US-178-Arrive	2017-02-18 19:12:00.00000	24:00m	RECEIVE	server-terminal-CLT	LateFlight 	USATTerminalAtCLT	runway-CLT
<input type="checkbox"/>	US-175-Arrive	2017-02-18 13:02:00.00000	1:21:00h	RECEIVE	server-terminal-PHX	LateFlight 	USATTerminalAtPHX	runway-PHX
<input type="checkbox"/>	US-178-Depart	2017-02-18 15:30:00.00000	0ms	SEND	server-terminal-PHX	none 	USATTerminalAtPHX	runway-PHX

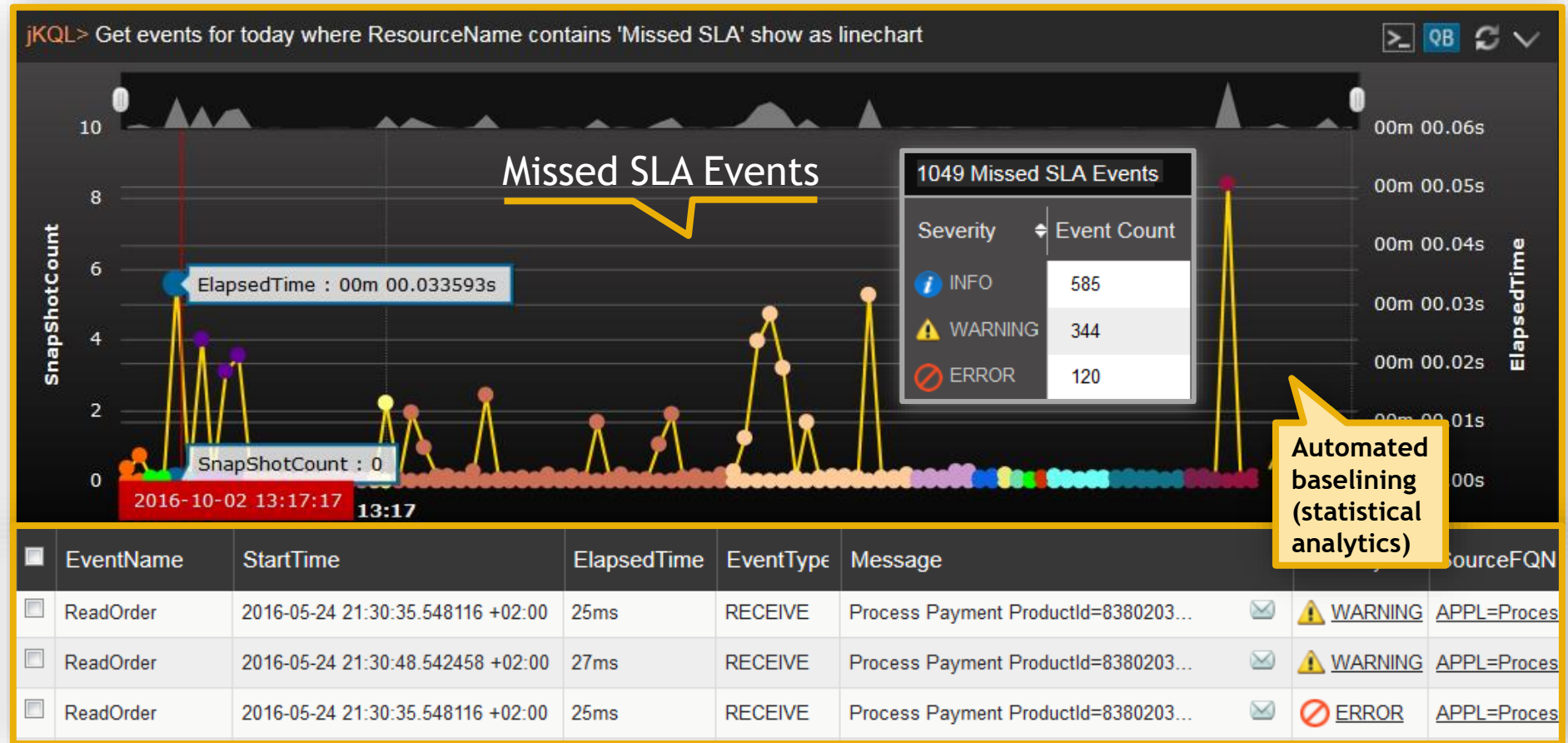


IT Operations Use Case

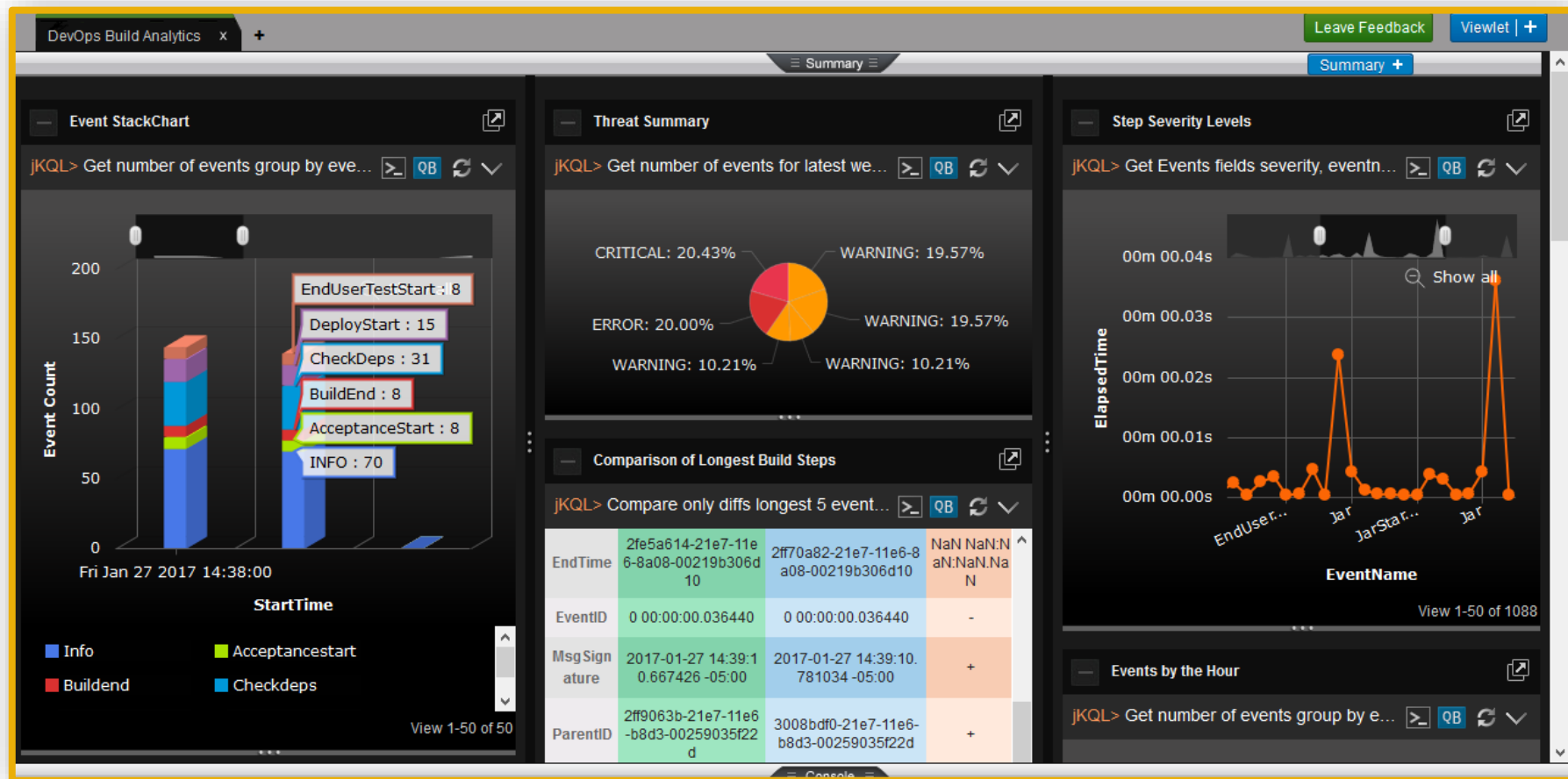
Susan is the senior IT operations manager, responsible for monitoring applications and alerting the IT organization when anomalies are detected in terms of response times and service levels.

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Use automated transaction baselining to set SLA's



Monitor a planned update to application architecture



Monitor a planned update to application architecture



Monitor a planned update to application architecture

DevOps Build Analytics x +

Leave Feedback Viewlet | +

Summary

Summary +

Build Scorecard 1088 events

JKQL> Get number of events for latest hour group ...

Severity	EventName	ResourceName	Event Count
CRITICAL	Vulnerability	commons-collections-3.2.2.jar	48
ERROR	RunTest2	myAndroidApp-Oracle	24
		myAppl-Oracle	23
WARNING	AcceptanceEnd	Project-Android	22
	DeployEnd	Project-Android	46

Comparison of Longest Build Steps

JKQL> Compare only diffs longest 5 events ...

Compare	Event 2ff9063b-21e7-11e6-b8d3-00259035f22d	Event 3008bdf0-21e7-11e6-b8d3-00259035f22d	Difference
ActivityID	2fe9ebe5-21e7-11e6-8a08-00219b306d10,319ddd14-21e7-11e6-b8d3-00259035f22d	2ff9a2a3-21e7-11e6-8a08-00219b306d10,319db602-21e7-11e6-b8d3-00259035f22d	+
Correlator	182.175.23.34	182.175.23.34	-

Jenkins Build Workflow

JKQL> Get relatives show as t...

```
graph LR; Jenkins --> Gradle; Jenkins --> Maven; Jenkins --> Deploy; Gradle --> Maven; Maven --> Deploy;
```

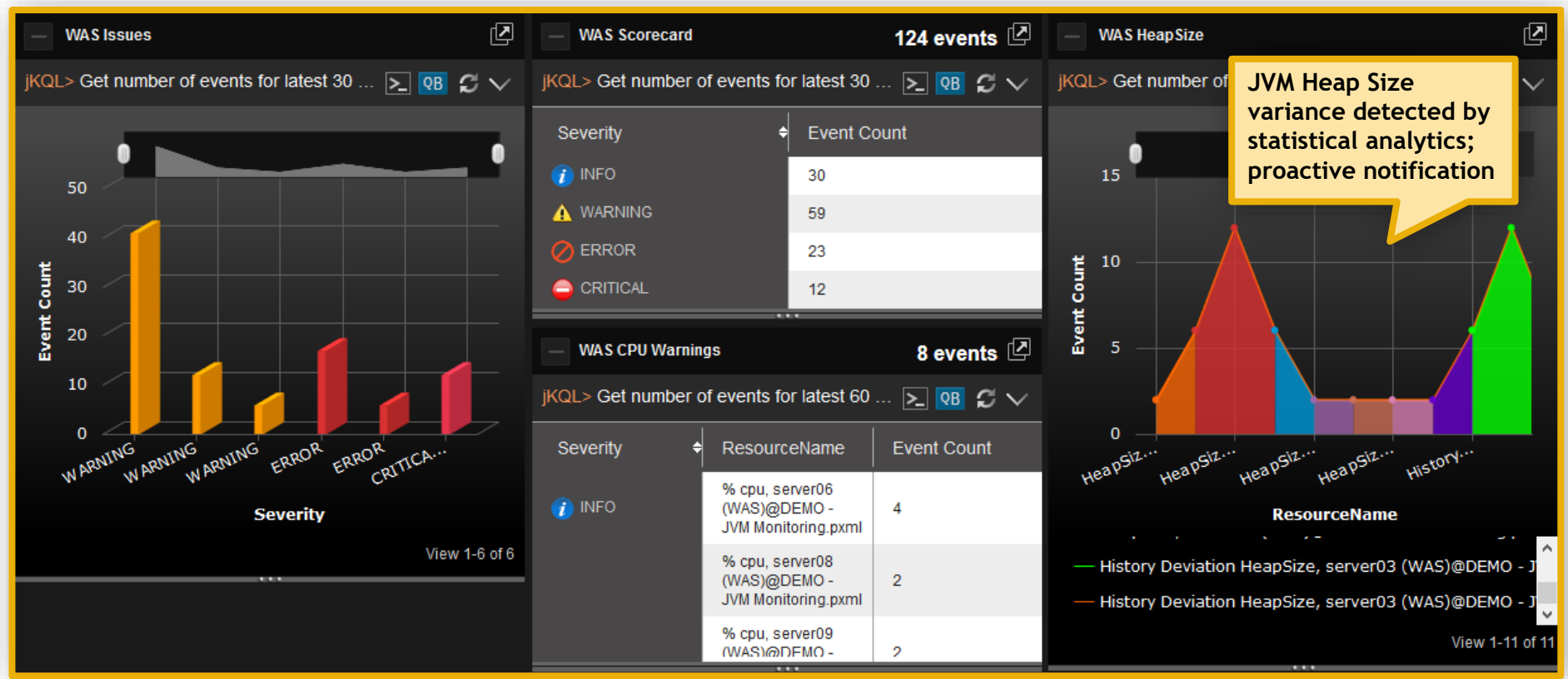
Viewlet 6 x

Console

JKQL> Get event for latest hour where severity in ('WARNING') and eventname in ('Gradle') and resource in ('com/nastel/test/VoiceTools.java')

	EventName	StartTime	ElapsedTime	EventType	Message	Severity	Exception	EventID	ParentID
<input type="checkbox"/>	Gradle	2017-01-27 14:38:53.834875 -05:00	0ms	CALL	Compiling VoiceTools.java	WARNING	Deprecated API usage	25f5170e-21e7-11e6-b8d3-25e5d593-21e7	
<input type="checkbox"/>	Gradle	2017-01-27 14:38:53.693812 -05:00	0ms	CALL	Compiling VoiceTools.java	WARNING	Deprecated API usage	25e0572e-21e7-11e6-b8d3-25d07867-21e7	
<input type="checkbox"/>	Gradle	2017-01-27 14:38:53.769273 -05:00	0ms	CALL	Compiling VoiceTools.java	WARNING	Deprecated API usage	25eb2cce-21e7-11e6-b8d3-25dbc33d-21e7	

Notification of an impending problem



Alert Wizard Creates Notifications about MQ Problem

Alert Wizard

Create an Alert

Create an Action

Manage alerts

Manage actions

Logs

INFOCASESACTIONS

Name: *JVM Heap Problem

Severity:Warning

What you want to monitor?

ActivitiesEvents

What information you want to get?

Number of occurrencesDetails

How often to report?

per occurrence

Every10occurrences

Every60seconds

< Go Back

← Back

Test

Next →

Alert Wizard

Create an Alert

Create an Action

Manage alerts

Manage actions

Logs

INFOCASESACTIONS

Pick an objective(s) you want to be alerted about (can be selected only from the same set)

Search objectives...

<input checked="" type="checkbox"/>	JVM Heap	((ActivityName starts with ... CompletedWithout...	Count(EventId) =0 where ...
<input type="checkbox"/>	JVM Heap	((ActivityName starts with ... Completed	ActivityStatus = 'END'
<input type="checkbox"/>	Order Placed	ActivityName = 'AcceptOr...	Successful CompCode = "SUCCESS"
		HasAllSteps	list(SetName) has all of ('a...
		SLA	ElapsedTime <= 2 seconds
		Successful	CompCode = "SUCCESS"
		Response Time SLA	ElapsedTime < "3 seconds"

Send an emailWrite to a logfileRun a program

Insight Email Notification

Create new

Set Some Options

← Back

Test

Next →

Subject: [{TriggerSeverity}] Trigger \${TriggerName}

Message:

[\${TriggerSeverity}] On \${TriggerTime:date} at \${TriggerTime:time} Trigger \${TriggerName} found \${NumberOf[0]} activities.

[Browse available placeholders](#)

Set default values

< Go Back

← Back

Test

Finish

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Performance problem due to "CPU stealing"

JKQL> Get Event for latest 4 hour where EventName = 'RunTest1'

EventName	StartTime	ElapsedTime	EventType	Message	Severity	Exception	SnapshotCount
RunTest1	2016-05-24 15:47:31.58996	36ms	CALL	Running acceptan...	INFO		0
RunTest1	2016-05-24 15:38:53.78776	35ms					0
RunTest1	2016-05-24 15:39:31.71623	31ms					0
RunTest1	2016-05-24 15:39:31.67023	36ms					0
RunTest1	2016-05-24 15:39:31.78654	31ms					0
RunTest1	2016-05-24 15:47:31.82954	33ms					0
RunTest1	2016-05-24 15:39:10.76998	31ms					0
RunTest1	2016-05-24 15:39:31.76014	32ms					0
RunTest1	2016-05-24 15:38:40.93280	36ms					0
RunTest1	2016-05-24 15:38:53.89703	35ms					0
RunTest1	2016-05-24 15:47:31.79304	32ms					0
RunTest1	2016-05-24 15:39:10.55071	31ms					0
RunTest1	2016-05-24 15:38:40.88671	35ms					0
RunTest1	2016-05-24 15:38:41.01963	31ms					0

Create an Analysis Viewlet

Make your Selection or go Next.

Select a Snapshot and then select the properties to display

Snapshot Name	Snapshot Properties	Selected Properties
Activity	<input checked="" type="checkbox"/> Count	▼ CPU (3)
Memory	<input checked="" type="checkbox"/> TotalCpuUsec	○ Count
PS Scavenge	<input checked="" type="checkbox"/> TotalCpuUserUsec	○ TotalCpuUsec
PS MarkSweep		○ TotalCpuUserUsec
CPU		
Thread		
ShopingCart		

< Previous

Next >

Create

Cancel

Selecting runtime snapshots (CPU metrics)

View 1-48 of 48

Performance problem due to "CPU stealing"

JKQL> Get Event for latest 4 hour where EventName = 'RunTest1'

EventName	StartTime	ElapsedTime	EventType	Message	Severity	Exception	SnapshotCount
RunTest1	2016-05-24 15:47:31.58996	36ms	CALL	Running acceptan...	INFO		0
RunTest1	2016-05-24 15:38:53.78776	35ms					0
RunTest1	2016-05-24 15:39:31.71623	31ms					0
RunTest1	2016-05-24 15:39:31.67023	36ms					0
RunTest1	2016-05-24 15:39:31.78654	31ms					0
RunTest1	2016-05-24 15:47:31.82954	33ms					0
RunTest1	2016-05-24 15:39:10.76998	31ms					0
RunTest1	2016-05-24 15:39:31.76015	32ms					0
RunTest1	2016-05-24 15:38:40.93280	36ms					0
RunTest1	2016-05-24 15:38:53.89700	35ms					0
RunTest1	2016-05-24 15:47:31.79300	32ms					0
RunTest1	2016-05-24 15:39:10.55070	31ms					0
RunTest1	2016-05-24 15:38:40.88670	35ms					0
RunTest1	2016-05-24 15:38:41.01960	31ms					0

Create an Analysis Viewlet

Make your Selection or go Next.

Show Items
This is seriousness of data.

- ☐ Critical severity
This displays the current status of your data elements
- ☒ All severity levels
This displays all severity data.
- ☐ Only volume
This displays only volume of activities and events.

< Previous Create Cancel

View all runtime events during selected time interval

View 1-48 of 48

Performance problem due to "CPU stealing"



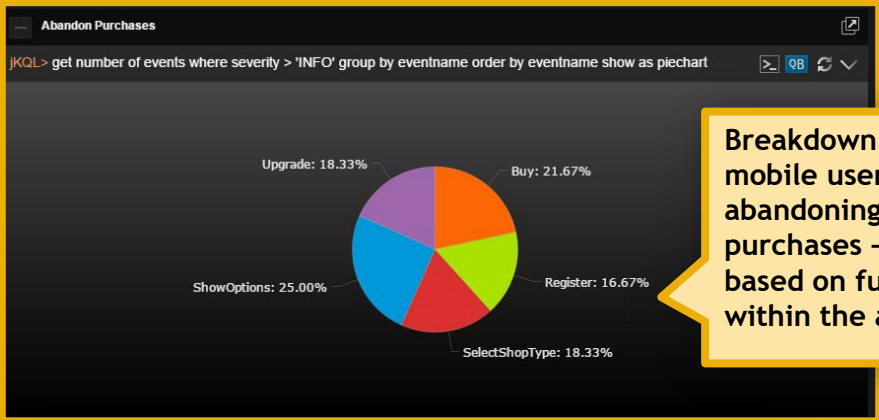


Business Analysis Use Case

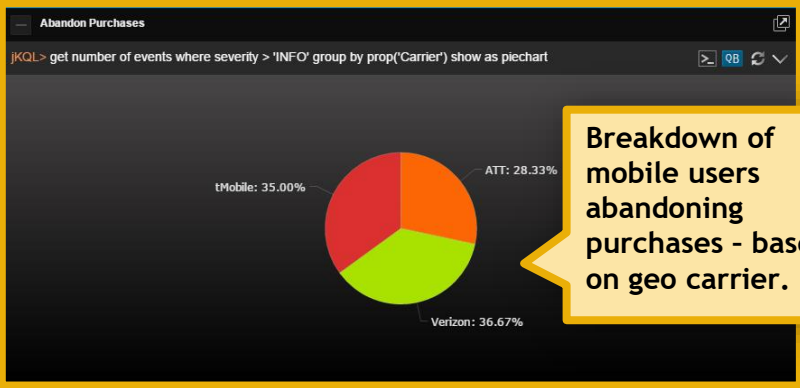
Emma, vice president of the digital business marketing organization, is focused on metrics that show how the business is performing. She expects IT to notify her of problems before they begin to impact customer behavior.

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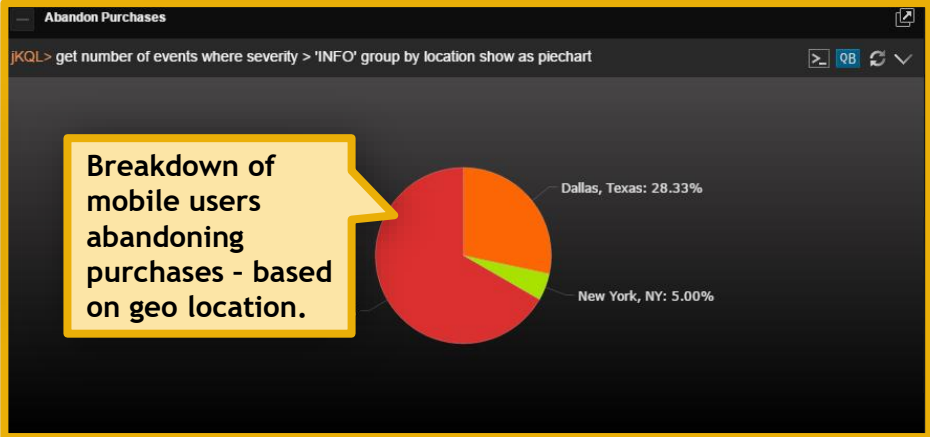
Determine where mobile users abandon online purchases



Breakdown of mobile users abandoning purchases - based on funnel within the app.

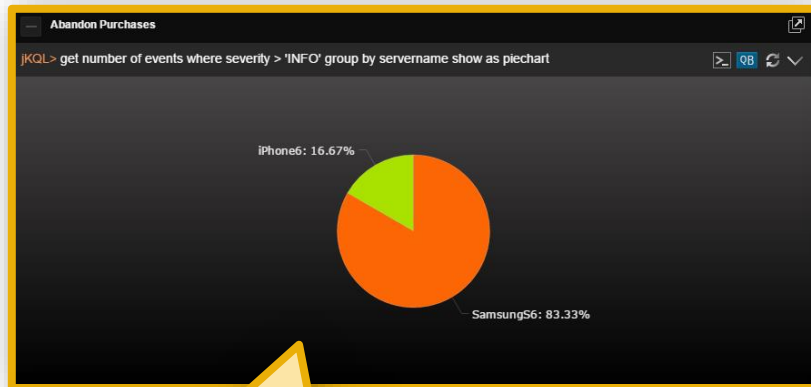


Breakdown of mobile users abandoning purchases - based on geo carrier.



Breakdown of mobile users abandoning purchases - based on geo location.

Abandoned purchases (e.g. users, devices, geographies)

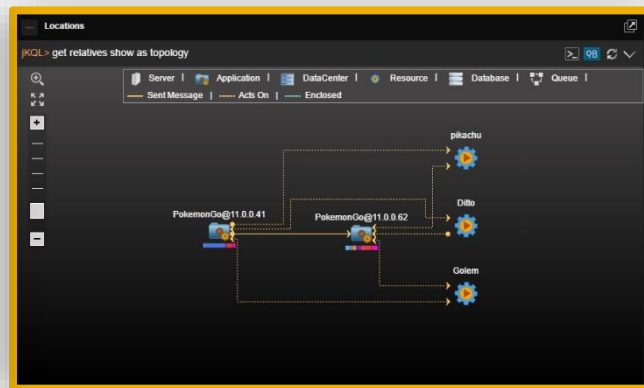
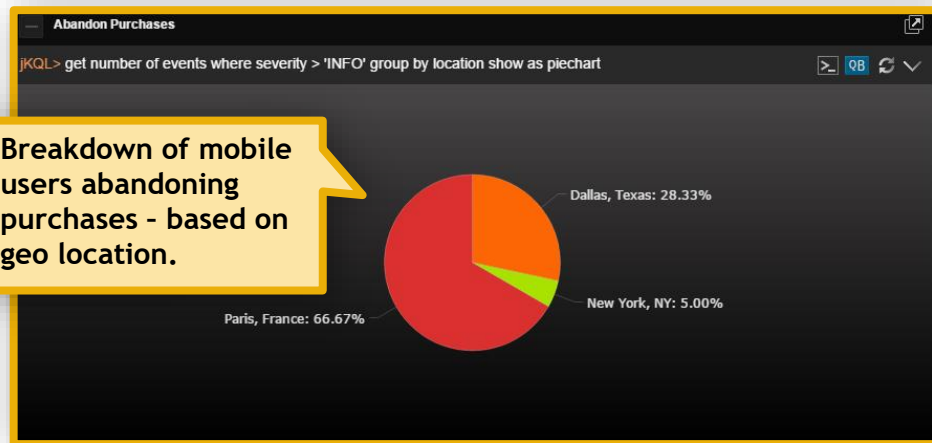


Breakdown of mobile users abandoning purchases by device type/name.

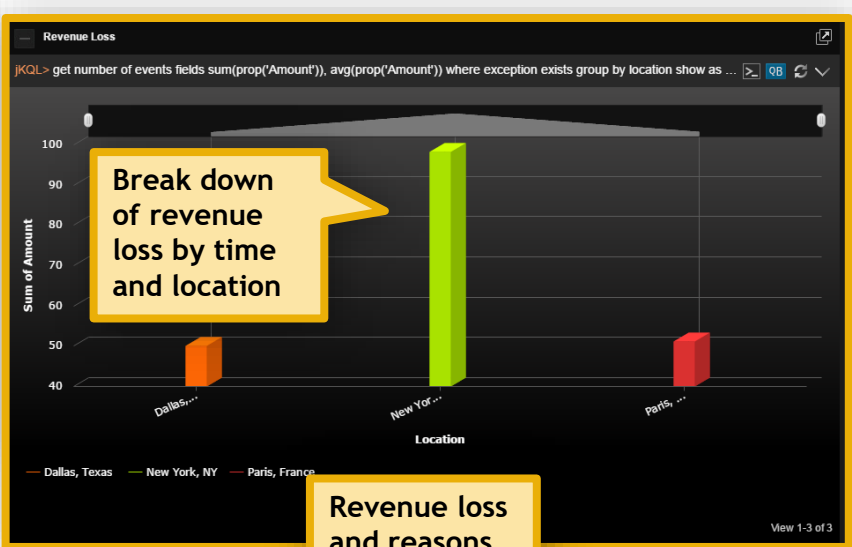
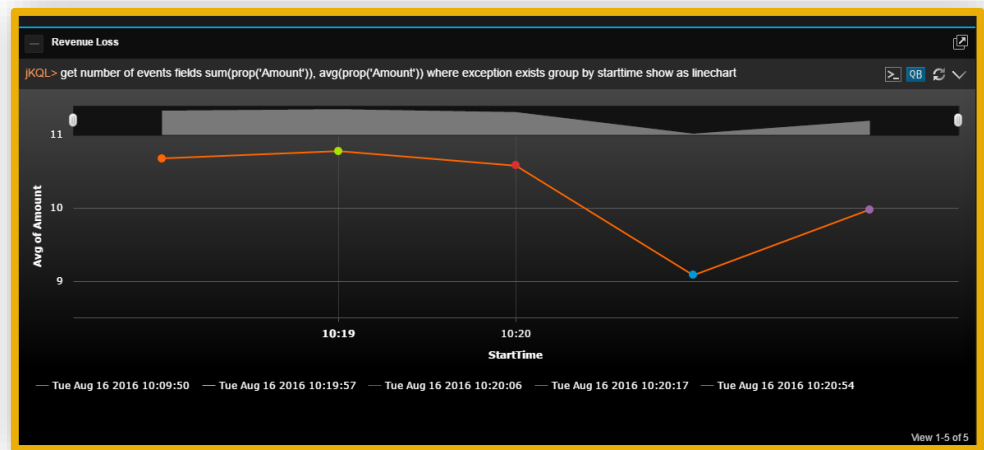
Geo maps and transaction topology of where and how abandonment happens.



Breakdown of mobile users abandoning purchases - based on geo location.



Revenue potentially lost due to performance problems



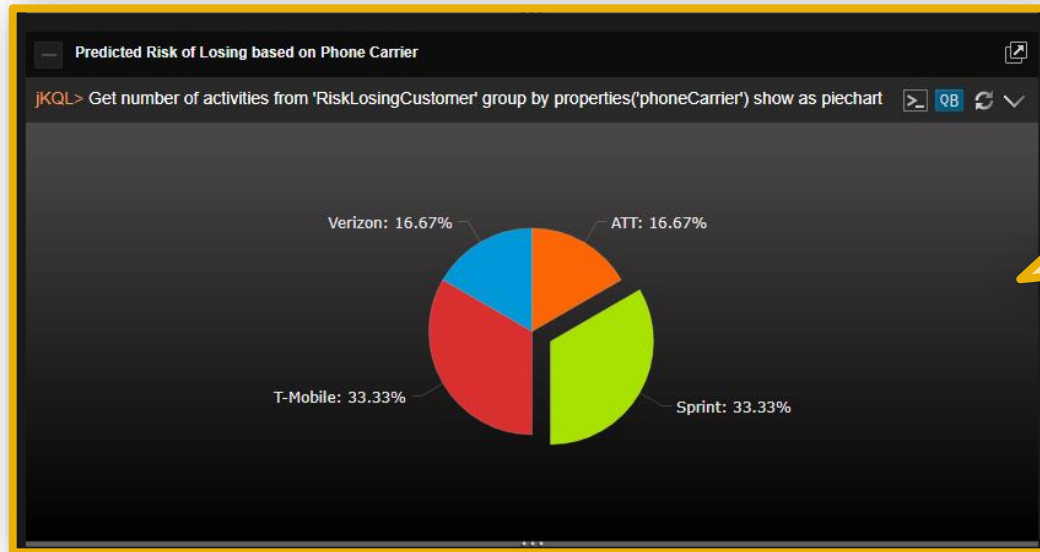
Dill down into all events responsible for revenue loss

jqQL> Get event for Today where exception exists and location in('Paris, France')

EventName	StartTime	ElapsedTime	EventType	Message	Severity	Amount	Exception
Buy	2016-08-16 10:10:10.5870	0ms	CALL	Buy pokemon.coin...	ERROR	5.3892000000000001	Security Violation
Buy	2016-08-16 10:10:10.5969	0ms	CALL	Buy pokemon.coin...	ERROR	5.2894000000000005	Security Violation
Buy	2016-08-16 10:09:28.0229	0ms	CALL	Buy pokemon.coin...	ERROR	5.3393000000000001	Security Violation
Buy	2016-08-16 10:10:10.6074	0ms	CALL	Buy pokemon.coin...	ERROR	4.5409000000000001	Security Violation
Buy	2016-08-16 10:10:10.6442	0ms	CALL	Buy pokemon.coin...	ERROR	4.99	Security Violation

How to improve revenue via machine learning

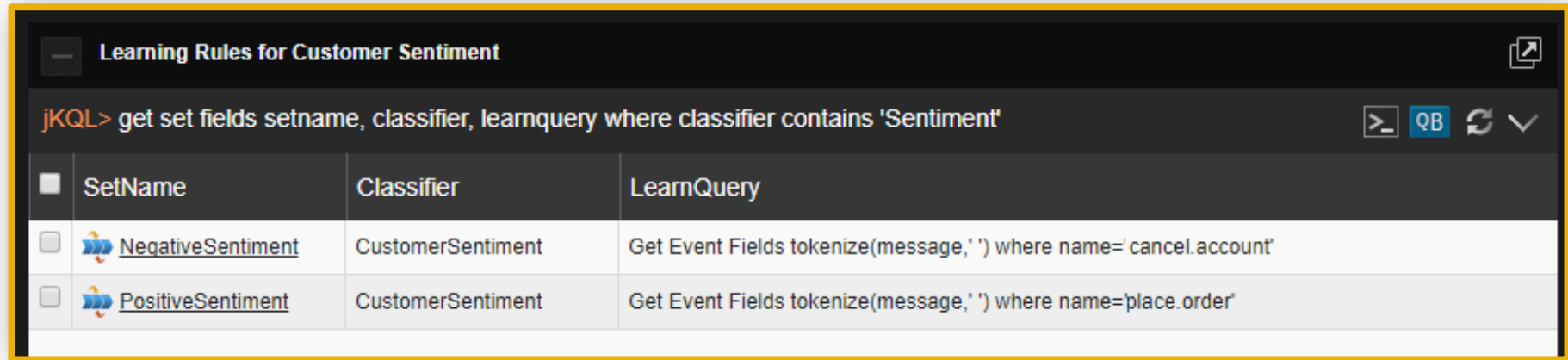
- Bayesian Classification used to automatically determine probability of events
- Bayes algorithm applies learned information to newly streamed data
- Groups data into sets and determines probability





This query retrieves activities from the set “Risk Losing Customer”, which is populated by the Bayes function and grouped by phone carrier

How to improve revenue - Bayes classification and Prediction

- Sentiment analysis is supported by analyzing messages
- Trained via rules to know the difference between customers with negative and positive sentiment, the Bayes algorithm is used to “profile” negative and positive outcomes (cancelled accounts, placed orders)



The screenshot shows a software interface titled "Learning Rules for Customer Sentiment". At the top, there is a command bar with the text "jKQL> get set fields setname, classifier, learnquery where classifier contains 'Sentiment'". Below this is a table with four columns: "SetName", "Classifier", and "LearnQuery". The table contains two rows of data. The first row is for "NegativeSentiment" with the classifier "CustomerSentiment" and the learn query "Get Event Fields tokenize(message, ' ') where name='cancel.account'". The second row is for "PositiveSentiment" with the classifier "CustomerSentiment" and the learn query "Get Event Fields tokenize(message, ' ') where name='place.order'".

	SetName	Classifier	LearnQuery
<input type="checkbox"/>	 NegativeSentiment	CustomerSentiment	Get Event Fields tokenize(message, ' ') where name='cancel.account'
<input type="checkbox"/>	 PositiveSentiment	CustomerSentiment	Get Event Fields tokenize(message, ' ') where name='place.order'

Open source instrumentation

- Streaming Ecosystem -- <https://github.com/Nastel/tnt4j-streams>
 - HDFS, MQTT, JMS, Node.js, Angular.js, Collectd, Nagios, WebServices, JSON, etc
- RESTFul and WebSocket APIs -- <https://github.com/Nastel/jkool-client-java-api>
- Python Streaming API -- <https://github.com/Nastel/tnt4py>
- Real User Monitoring -- <https://github.com/Nastel/jkool-rum-plugin>
- Syslog -- <https://github.com/Nastel/tnt4j-syslogd>
- Log4J -- <https://github.com/Nastel/tnt4j-log4j12>
- Java Byte Code -- <https://github.com/Nastel/tnt4j-streams-zorka>