



NASTEEL

Driving Business Transaction Performance ®



AutoPilot®

*Middleware-Centric
Application Performance
Management*

**Nastel Technologies
48 South Service Road
Melville, NY, USA 11747**

About Me

- Richard Nikula
 - VP of Product Development and Support
- Management software for “middleware”
 - Mainframe and distributed
- Involved in “MQ” since early 90’s
 - Primarily at the technology layer
 - Various certifications



About Nastel Technologies, Inc.

VENDOR PROFILE

- Middleware management and "Middleware-centric" application management & monitoring
- Messaging Middleware, Java & .Net Application Servers, ESB's, SOA technologies
- Key value proposition : Identify performance and quality of service issues before business is impacted

CUSTOMERS AND USE CASES

- Large companies, leaders in their markets
- Mission Critical Applications
- Powered by Middleware
- Trading, Order processing, Payments, Funds transfers

KEY DIFFERENTIATORS

- Best of breed solution for management and monitoring of WebSphere MQ
- Single point of control for multiple middleware
- Policy driven, Operational and Transactional Monitoring



About this Session

Solving the top 10 problems in MQ/IIB with Nastel AutoPilot

- MQ and other middleware are often behind the scenes, but they are vital to the successful operation of business applications. A problem in the middleware layer can mean loss of revenue or penalties for your organization.
- In this session, you will learn how Nastel AutoPilot can be used to solve typical problems that can impact your business applications. Nastel AutoPilot provides technical views to the Middleware administrator, secure self-service views to application support teams, and forensic analysis for business teams. In addition, Nastel AutoPilot is the only solution that offers all of these capabilities across the middleware space, including MQ, IIB, DataPower, Managed File Transfer, Java application servers, Tibco and many more.



Top 10 Problems?



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The Top 10 List



- PROBLEM #1 - BUSINESS PROBLEMS
 - DELAYED/LOST TRANSACTIONS
- PROBLEM #2 SECURITY
 - PEOPLE ABLE TO DO WHAT THEY ARE NOT SUPPOSED TO DO, TOO MANY RIGHTS, TOO MUCH ACCESS
- PROBLEM #3 MESSAGE PROBLEMS
 - MESSAGES STUCK IN QUEUES, QUEUE HIGH, QUEUE FULL, OLD MESSAGES
- PROBLEM #3 CHANNEL PROBLEMS
 - STOPPED CHANNELS, RETRYING CHANNELS, CERTIFICATE ISSUES, CLIENT CONNECTIONS
- PROBLEM #4 “DEAD LETTER QUEUE” MESSAGES
 - IDENTIFYING, FIXING, PREVENTING
- PROBLEM #5 INEFFICIENT APPLICATION DESIGN
 - TOO MANY MESSAGES, NOT HANDLING ERROR CONDITIONS, BROKEN FLOWS, FLOWS NOT PERFORMING AS EXPECTED, USING TOO MANY RESOURCES, SLOW, BLOCKED, ETC.
- PROBLEM #6 ADMINISTRATIVE MISTAKES
 - MISSING DEFINITIONS, INCONSISTENT CHANGES, CLUSTERS, TYPOS
- PROBLEM #7 NEW TECHNOLOGY INTRODUCTION
 - MANAGED FILE TRANSFER, AMS, IIB 10, MQ V9, MQ APPLIANCE
- PROBLEM #8 ONGOING ISSUES THAT AREN'T SIGNIFICANT ENOUGH TO NOTICE
 - INCREASING FREQUENCY OF FAILURE
- PROBLEM #9 IT ISN'T AN MQ PROBLEM
 - APPLICATION AND OTHER SYSTEM ISSUES BUT MQ GETS THE BLAME
- PROBLEM #10 ONLY HAVING 9 PROBLEMS IN YOUR PRESENTATION
 - FORTUNATELY I REPEATED NUMBER 3

“The” Problem - Business Problems

You have MQ/IIB not for the sake of having them but to run your business and if they are not working, than business functions are not being met. These are real problems our customers have faced.

- **MQ Messages not processed can cost you Millions \$\$\$!**
 - \$2M Order stuck in processing queue, ordering customer decided to go elsewhere with specific order and future business
- **MQ Messages not processed can put in your company in non-compliance**
 - Stockbroker in order to meet Dodd Frank compliance had to process trades in a timely manner but had no visibility into trade status once entered in into MQ (and IIB)
- **Queues contain real money not just messages**
 - Bank uses IIB and MQ to send payment information and if not processed in a timely manner could prevent bank from being able to do business
- **Messages control processes**
 - Supplier uses MQ to complete product orders. Messages not processed before shipping deadline means you didn't get your (game | shoes | purse | tires | stuff)

Stakeholders and Benefits



Middleware
Team



Application
Support



Application
Development



Enterprise
Architect



Application
Owner

- Proactive Middleware Monitoring in DEV, TEST and PROD

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

- User Acceptance Testing
- Improve quality of new releases
- Compare real behavior with expectations

- Monitor applications
- Improve processes
- Lower costs
- Prevent performance problems



How does Nastel help you with
these problems?



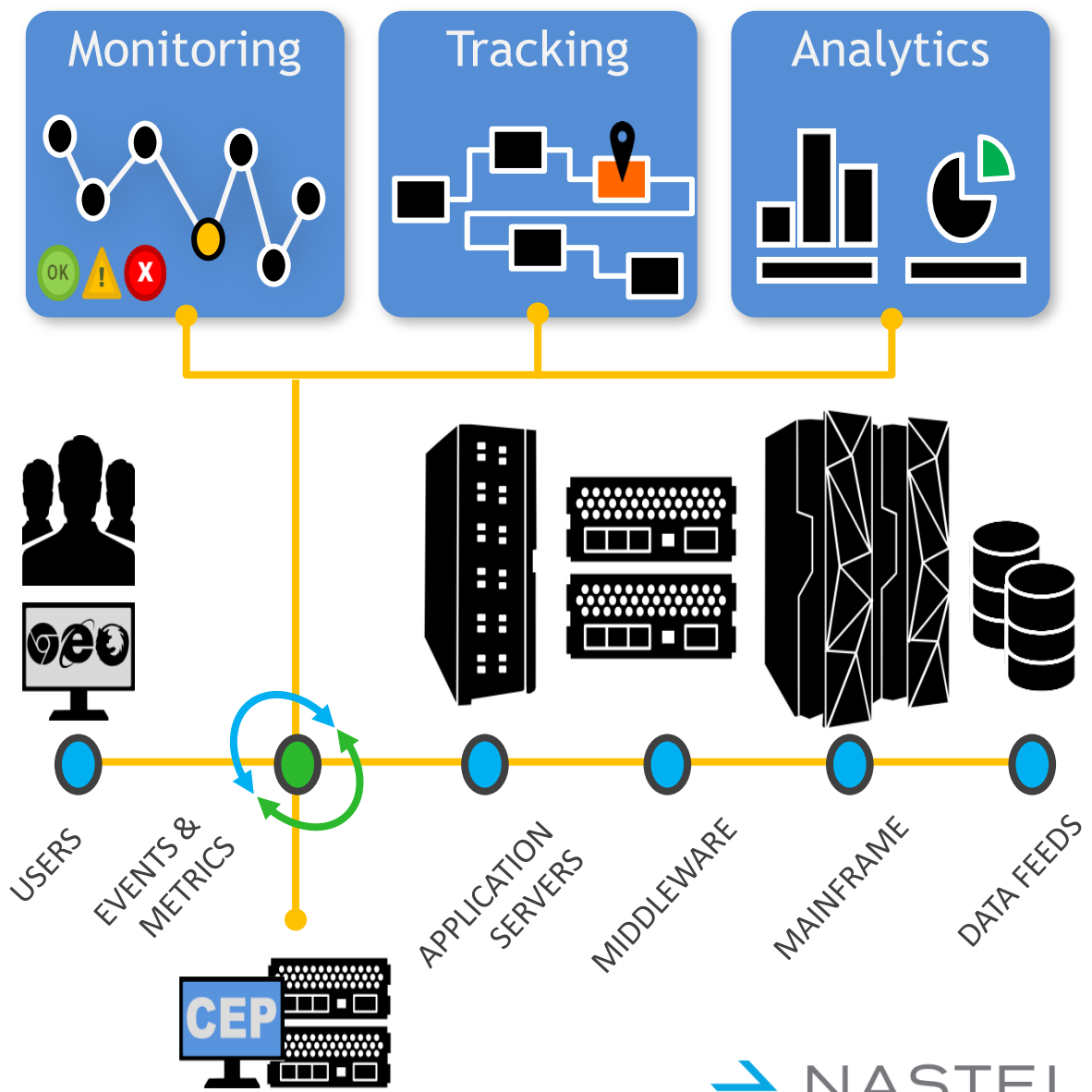
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Nastel AutoPilot®: key takeaways

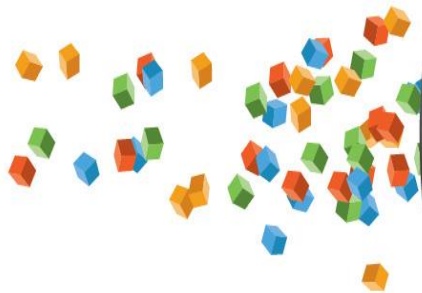
- Automatic Transaction Tracking & Auditing
- Complex Event Processing (CEP: Situational Awareness)
- Unified Application Analytics and Log Analytics
- End-User Monitoring, Performance Analytics
- Middleware Management and Monitoring
- Built on a Big-Data Platform for Extreme Scalability
- On-premise or Cloud-based Solutions



The AutoPilot® difference: making the complex simple

1

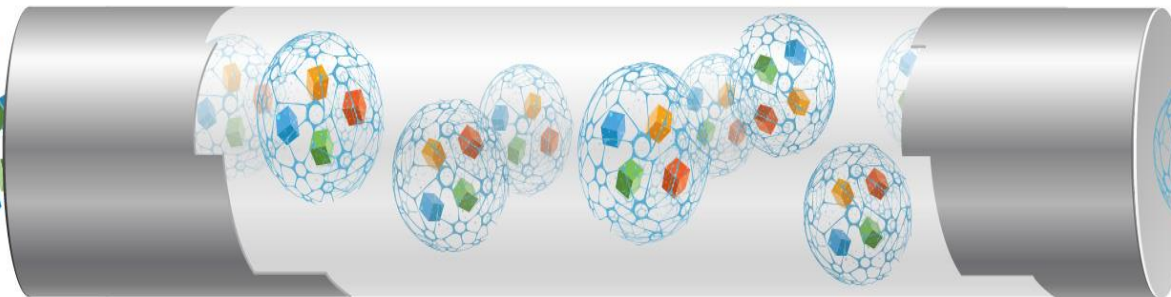
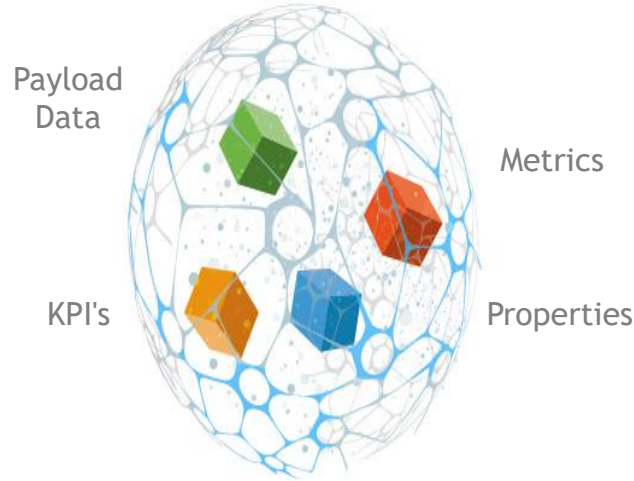
Logs, Metrics & Transactions From Multiple Sources



Chaotic Complexity
Low-value Data

2

Event/Transaction Synthesis with Alerts and Notifications



Data Enrichment & Business Milestones

3

Intuitive, Actionable Business Insights



Simplicity
High-value Data

AutoPilot®: example data collectors

Log
Analytics

Log4j/SLF4J/Logback
Syslog

Folder & File Tracking
Log Streams

Files, HDFS, Kafka,
JMS, WMQ, MQTT,
Logstash, Apache
Flume ...)



Application
Performance

Java JMX
JEE Servlet Filter

Java Garbage
Collection

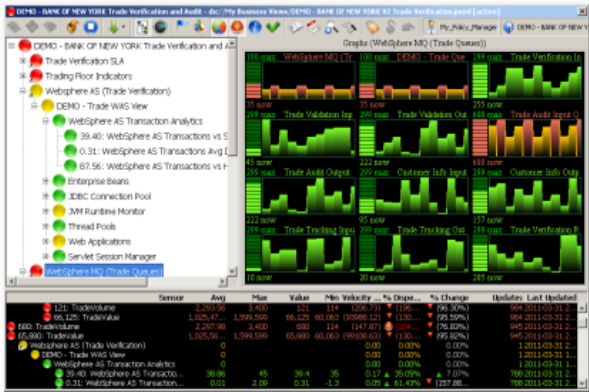
Java Transaction
Profiling

End User Monitoring
via Browser

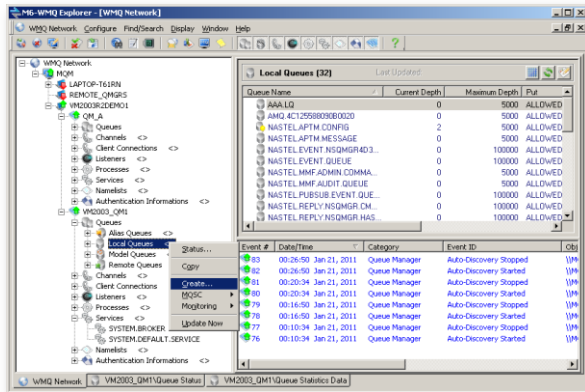
Middleware (WMQ,
Tibco, IIB, DataPower
...)
Databases
Operating Systems

AutoPilot® for WebSphere MQ - 3 x "M"

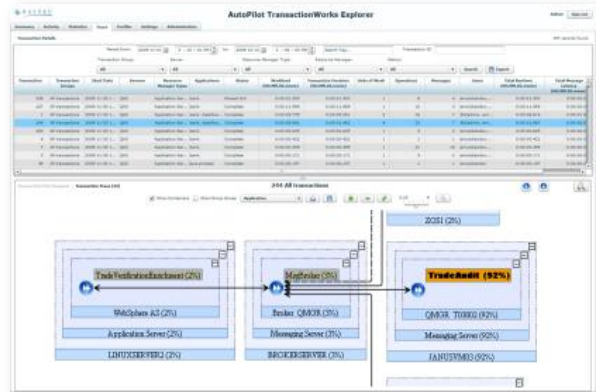
WebSphere® MQ MONITORING




WebSphere® MQ MANAGEMENT




WebSphere® MQ MESSAGE TRACKING

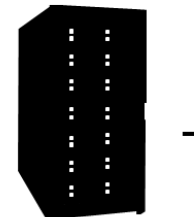


WebSphere® MQ




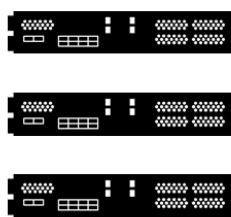
Z/OS






**UNIX
LINUX**





WINDOWS



+ Tandem, iSeries, VAX, ...



Monitoring



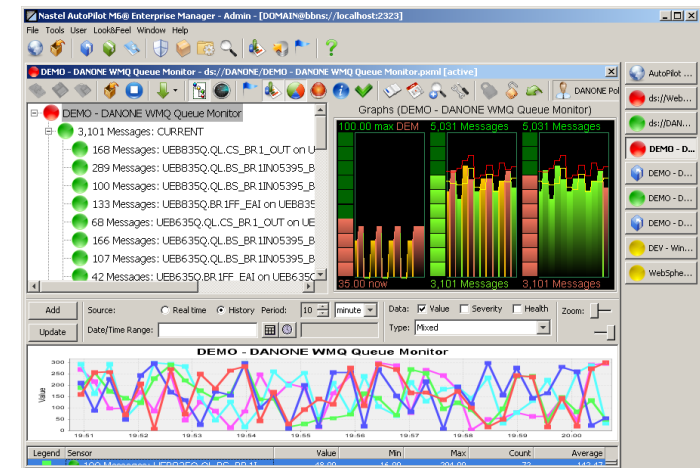
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WebSphere® MQ MONITORING

- Pre-defined & User-Defined Dashboards with intuitive KPI's
- Policy-based, Wizard-built monitoring
- No scripting
- Dynamic Thresholds & Automatic Base-lining
- Alerts, Notifications & Automated Actions
- Real-time and historical analysis
- Easily locate & resolve performance issues *before* business impact

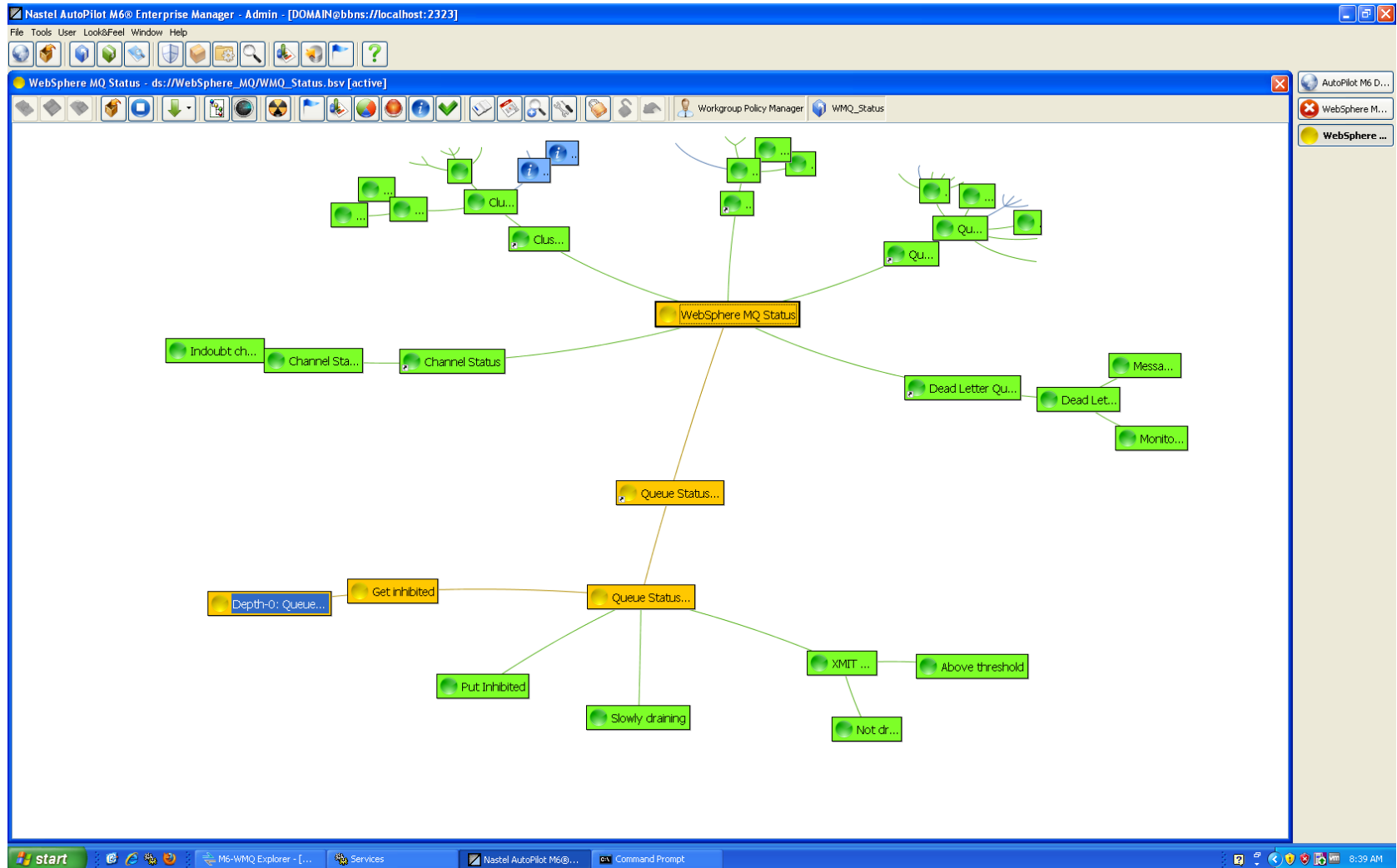


AutoPilot® Insight: example dashboard



Single View of MQ Environment

17



17

Policy - Solving an MQ Problem !

Start with a problem statement

We need to see any Queues that are Disabled

Alert me if any queue is not **Get Enabled**.

If there are message(s) on the queue, it should be a higher severity.

Once the queue is not longer get inhibited, it should be removed from monitoring.

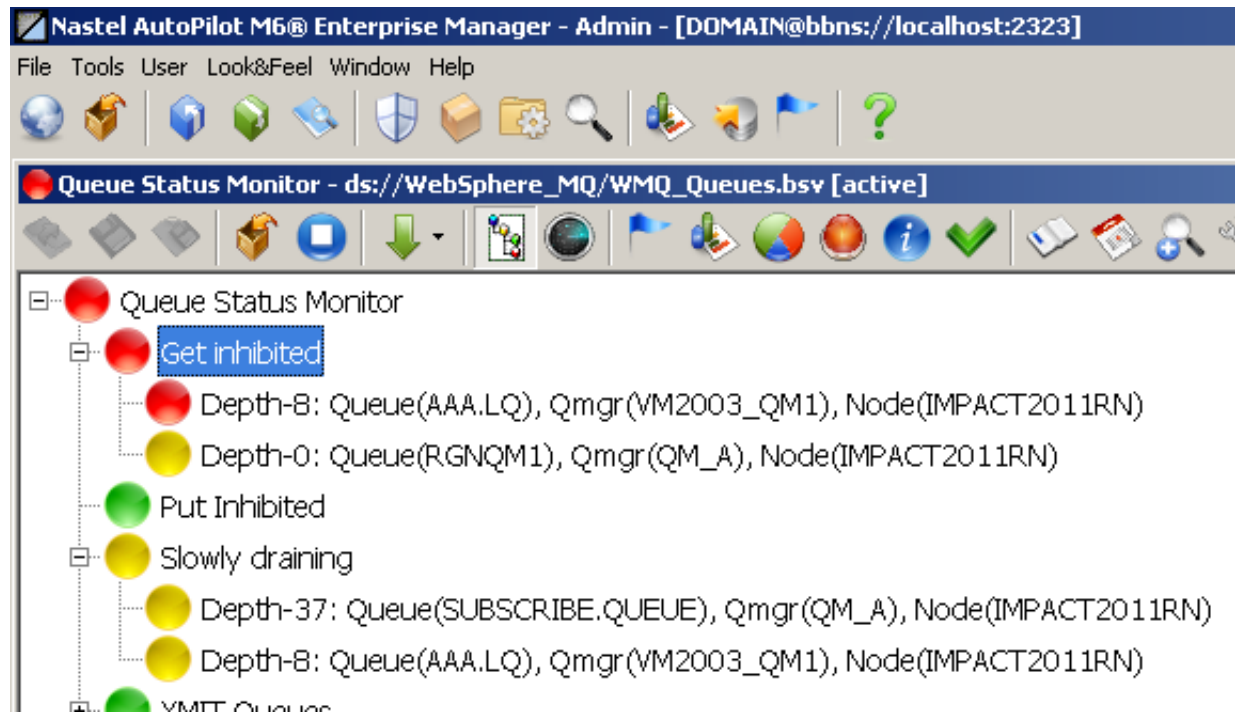
We want to alert when Queues are not Draining

Alert me if any queue where messages are building

If no Application is reading the queue, it should be a higher severity

...

Policy - Identifying the problems



Policy Fundamentals

Sensor Wizard - Get inhibited

Select Facts To Monitor

Include facts:

- [%f0] {QUEMON}{{GROUP}}*{*}*GET
- [%f1] {QUEMON}{{GROUP}}*{*}*CURDEPTH

Fact: {QUEMON}{{GROUP}}*{*}*GET

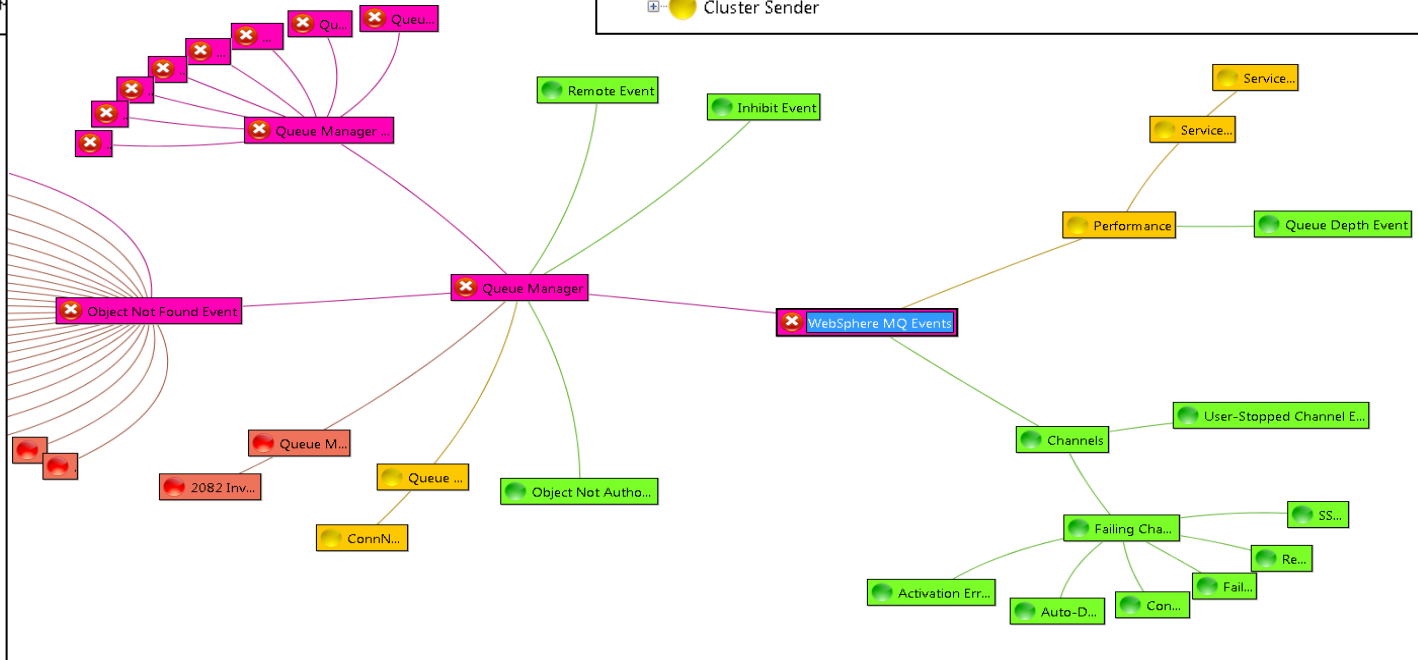
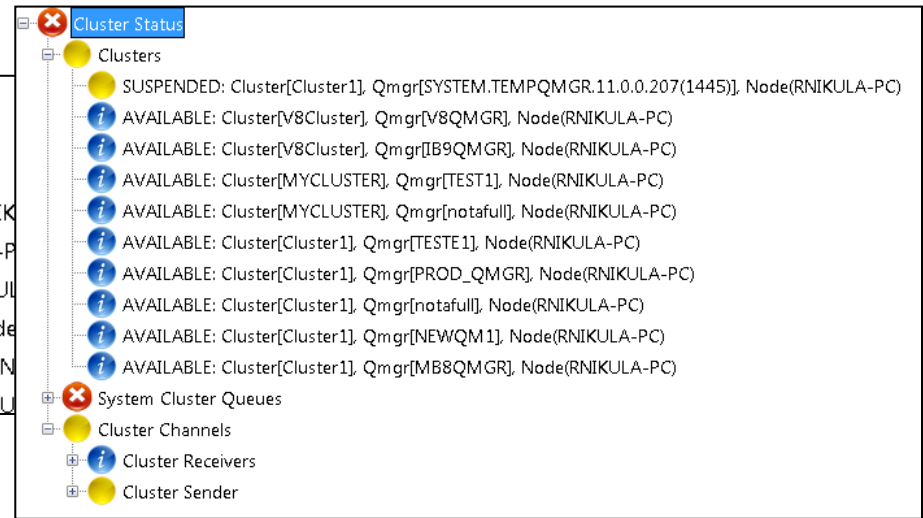
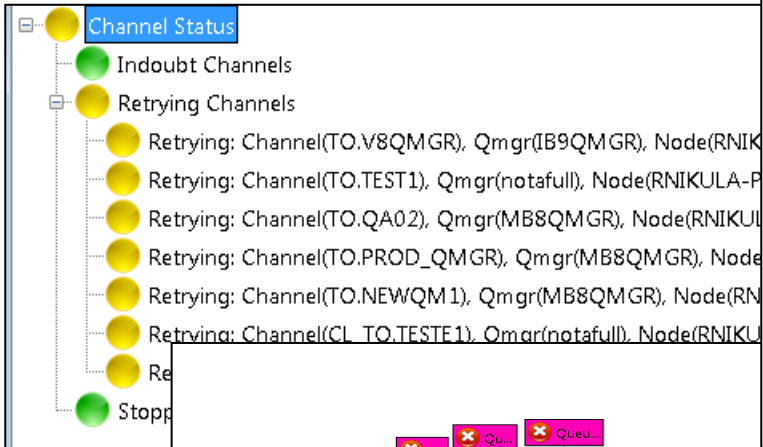
Dynamic sensor options

Summarize: Expire dynamic sensor seconds after sensor health \geq 1.0

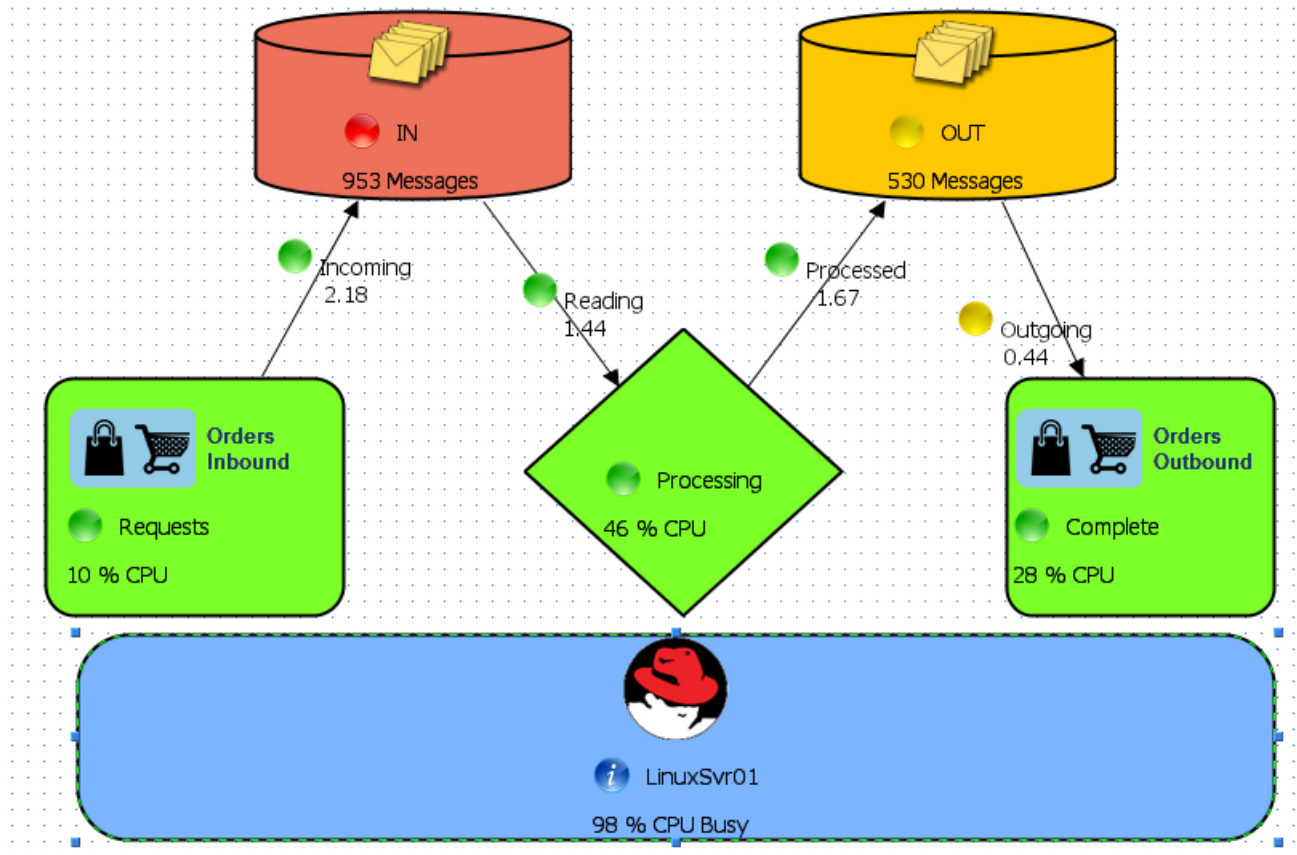
Define rules for dynamic sensors: ● ● Environment: Function | + -

+ X	<input type="checkbox"/>	Severity: ● Error	Actions: <input type="text"/>	Show value: <input type="text" value="Depth-%f1:Value"/>
+ X		When <input type="text" value="%f0:Value"/> is not <input type="text" value="ENABLED"/>		
+ X		And <input type="text" value="%f1:Value"/> is greater than <input type="text" value="0"/>		
+ X	<input checked="" type="checkbox"/>	Severity: ● Warning	Actions: <input type="text"/>	Show value: <input type="text" value="Depth-%f1:Value"/>
+ X		When <input type="text" value="%f0:Value"/> is not <input type="text" value="ENABLED"/>		
+ X	<input type="checkbox"/>	Severity: ● Success	Actions: <input type="text"/>	Show value: <input type="text" value="Depth-%f1:Value"/>
		For all other conditions		

More Examples...



Using a Self Service Dashboard to Observe Behavior





Management

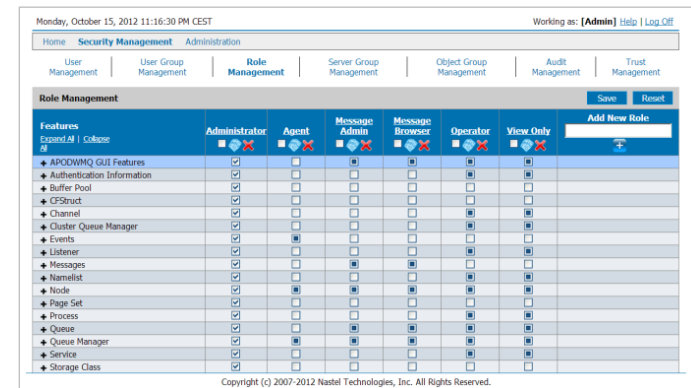
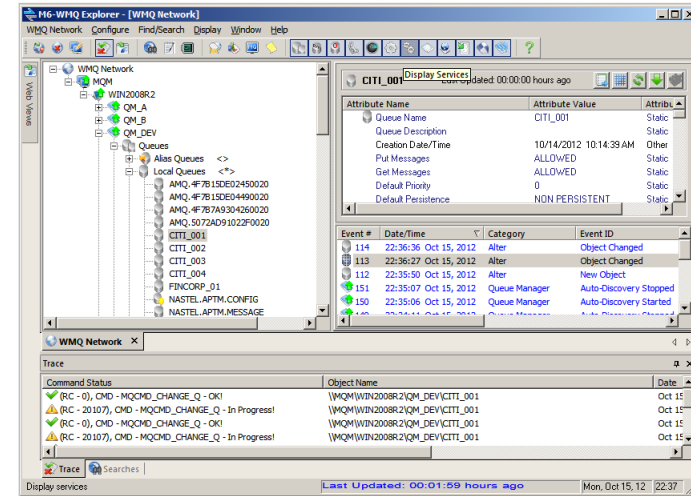


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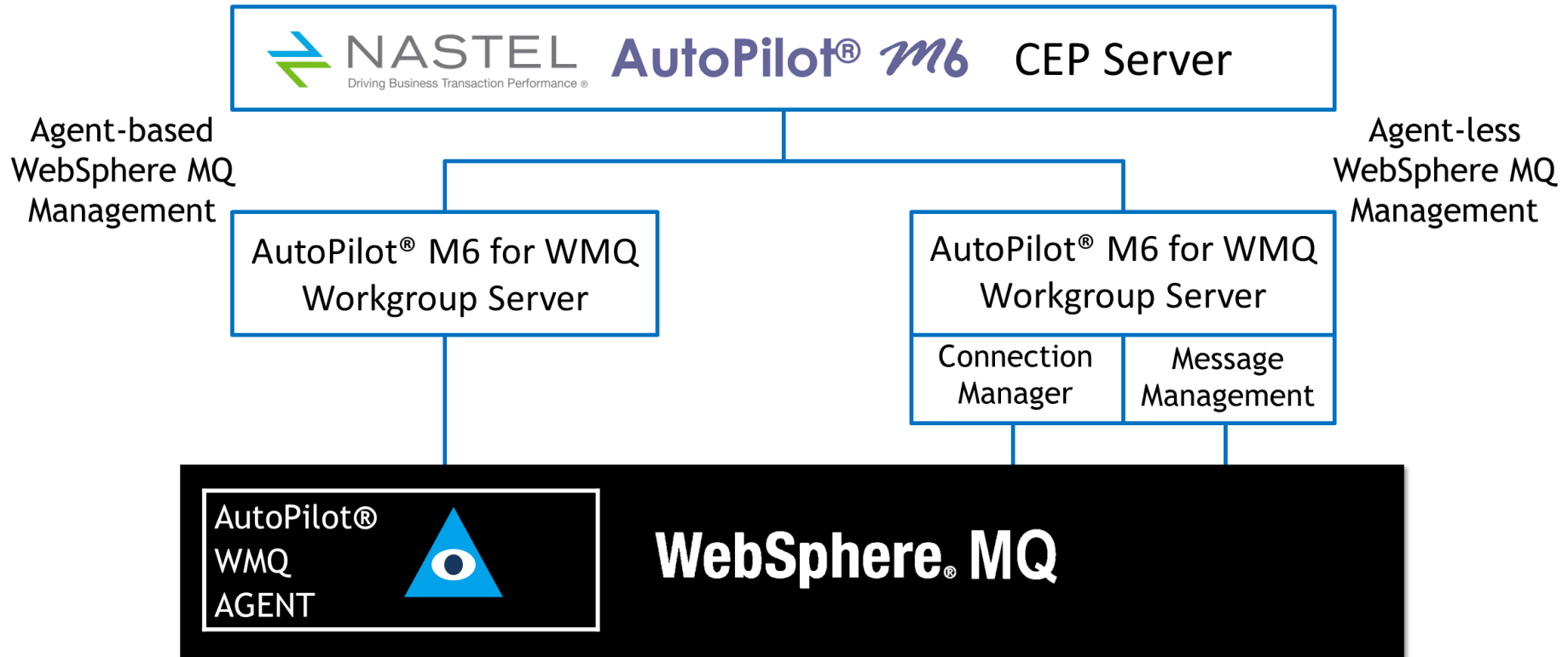
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- Auto discovery of WMQ objects
- Automatic Configuration Management
- Audit trail & Rollback of changes to WMQ objects
- Agent and Agent-less management
- Message Management & Search
- View, Edit, Move, Copy, Delete, Re-route, DLQ handling
- Secure, Self Service WMQ Management - worry-free, highly *controlled* delegation of selected admin tasks to Application Developers and Operations teams

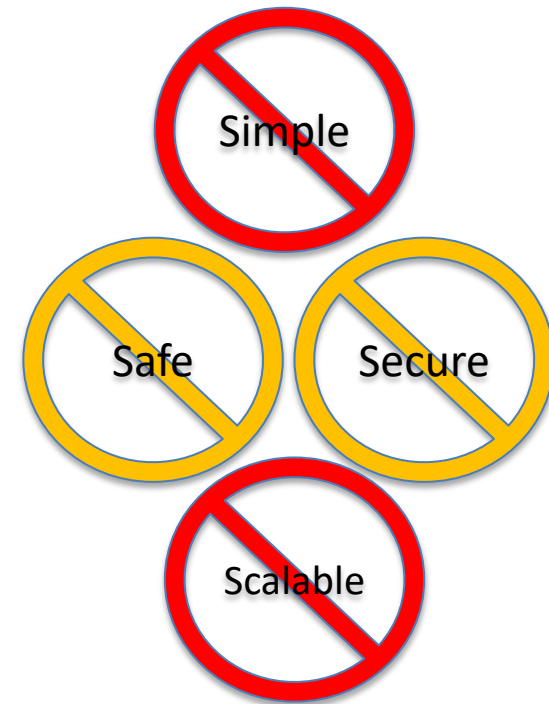


AutoPilot® M6 for WMQ - Agent or Agentless

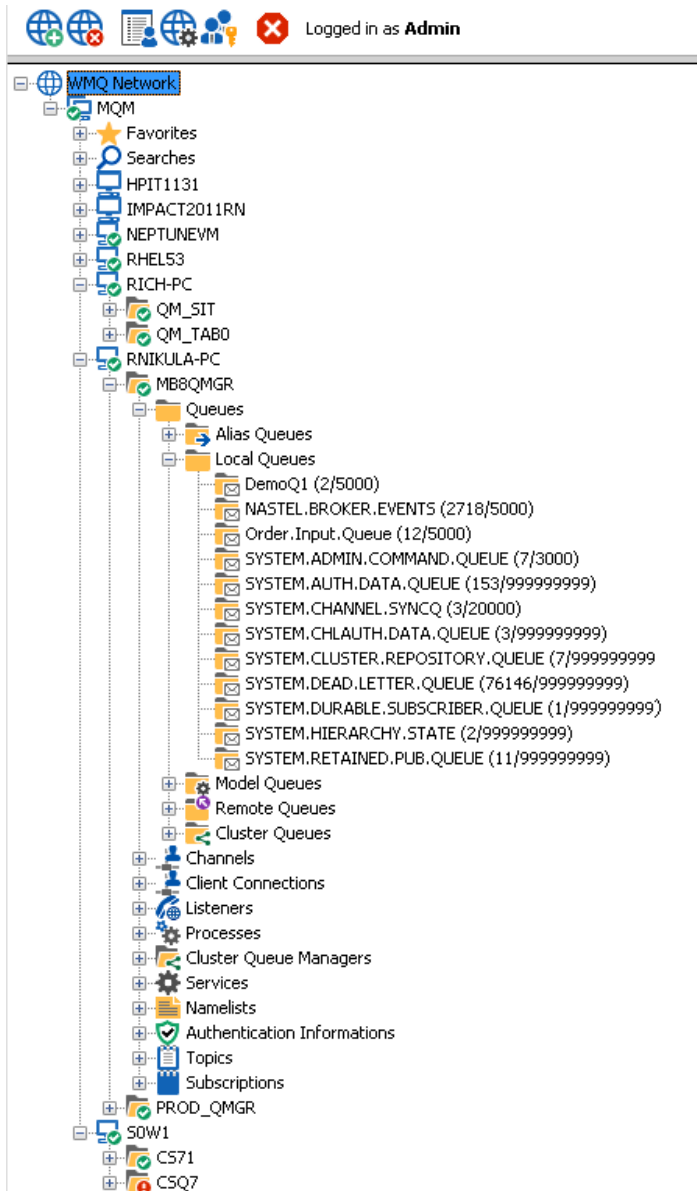


Using MQ Explorer for Self Service

- Eclipse client required
 - Installation
 - Maintenance
 - Configuration
- Can potentially see and do more than needed
 - Additional security planning required
- Problems not easily visible
 - Primarily an Admin tool
- Opening ports and client channels required
 - MQ improvements in V7/V8/V9 lock down better



Access to all MQ Objects



- Across Operating Systems
- Across Versions of MQ
- Access to All MQ Objects
- Queues
- Channels
- Processes
- Etc.

Security Management

Saturday, October 11, 2014 12:44:47 AM CEST

Working as: **[Admin]** [Help](#) | [Log Off](#)

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

[User Management](#) | [User Group Management](#) | **[Role Management](#)** | [Server Group Management](#) | [Object Group Management](#) | [Audit Management](#) | [Trust Management](#)

Role Management

Features	Administrator	Agent	Message Admin	Message Browser	Operator	View
Expand All Collapse All						
+ APODWMQ GUI Features	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
+ Authentication Information	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
+ Buffer Pool						
+ CFstruct						
+ Channel						
+ Cluster Queue Manager						
+ Events						
+ Listener						
+ Messages						
+ Namelist						
+ Node						
+ Page Set						
+ Process						
+ Queue						
+ Queue Manager						
+ Service						
+ Storage Class						
+ Subscription						
+ Topic						
+ Workgroup Server						

Messages	Queue
<input type="checkbox"/>	<input checked="" type="checkbox"/>
Change Folder	<input type="checkbox"/>
Copy Messages	<input type="checkbox"/>
Create Messages	<input type="checkbox"/>
Delete Messages	<input type="checkbox"/>
Edit Messages	<input type="checkbox"/>
Find Messages	<input type="checkbox"/>
Load Messages	<input type="checkbox"/>
Message Folder	<input type="checkbox"/>
Move Messages	<input type="checkbox"/>
Requeue Messages	<input type="checkbox"/>
Reroute Messages	<input type="checkbox"/>
Save Messages	<input type="checkbox"/>
Show Message Headers	<input type="checkbox"/>
Show Messages	<input checked="" type="checkbox"/>
Unload Messages	<input type="checkbox"/>

Queue	
<input checked="" type="checkbox"/>	
Change Queue	<input type="checkbox"/>
Clear Messages from Queue	<input type="checkbox"/>
Copy Queue	<input type="checkbox"/>
Create Queue	<input type="checkbox"/>
Delete Queue	<input type="checkbox"/>
Refresh Queue Runtime	<input checked="" type="checkbox"/>
Reset Queue Statistics	<input type="checkbox"/>
Show Queue Attributes	<input checked="" type="checkbox"/>
Show Queue Status	<input type="checkbox"/>
Show Queues	<input checked="" type="checkbox"/>

■ Role Management

■ Objects
■ Q Mgrs
■ Users
■ Groups
■ Roles

Secure access ... for viewing authorized objects

Logged in as David

Secure access

Actions Messages Status Views Topology Views

ntu-VM\QM_DEV\P03013.PMT.REQ (31 / 500)

Page size: 100 Set and browse

	Put Date	MD::Put Time	Message Data
<input type="checkbox"/>	<u>1</u>	334 20150207 12313885	{1:F01BEBEDEBBAXXX3768156193}{2:O3001139050822CF
<input type="checkbox"/>	<u>2</u>	169 20150207 12341799	{1:F01CHASUS33AXXX3768156193}{2:O3001139050822CF
<input type="checkbox"/>	<u>3</u>	189 20150207 12342965	{1:F01CHASUS33AXXX3768156193}{2:O3001139050822CF
<input type="checkbox"/>	<u>4</u>	333 20150207 12345626	{1:F01CRESCHZZAXXX3768156193}{2:O3001139050822B
<input type="checkbox"/>	<u>5</u>	169 20150207 12351490	CHASUS33AXXX3768156193}{2:O3001139050822CF

QM_DEV

- Queues
 - Alias Queues
 - Local Queues
 - P03013.PMT.REQ (31/500)
 - P03013.PMT.RSP (46/500)
 - Model Queues
 - Remote Queues

- Authorized MQ objects and messages *only*

<input type="checkbox"/>	#	Message Size	MD::Put Date	MD::Put Time
<input type="checkbox"/>	<u>1</u>	334	20150207	12313885
<input type="checkbox"/>	<u>2</u>	169	20150207	12341799
<input type="checkbox"/>	<u>3</u>	189	20150207	12342965

- View queue depth
- View message details

Secure access ... for authorized actions

Logged in as David

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

Copy Local Queue P03013.PMT.RSP

General

Queue name: P03099.PMT.IPN

Description: P03099.PMT.IPN used by PO3 Applications Development Group

Queue Usage: Normal

Scope: Queue Manager

Default Bind: On Open

Default Persistence: Non Persistent

Put Messages: Allowed

Get Messages: Allowed

Default Priority: 0

Replace existing definition

OK Cancel Help

- Copy definition of Local Queue

Secure access ... for authorized actions

Logged in as David
















The screenshot shows the IBM MQ console interface. On the left is a tree view of the MQM hierarchy, with 'P03013.PMT.REQ (31/500)' selected under 'Local Queues'. The main pane shows the configuration for this queue. A dialog box titled 'Copy Local Queue P03013.PMT.IPN' is open, showing the 'General' tab. The 'Queue name' field contains 'M04045.ORD.REQ', which is highlighted by a yellow callout bubble containing the text 'NOT OK'. Other fields include 'Description: M04045.ORD.REQ used by M040 Order Processing', 'Queue Usage: Normal', 'Default Bind: On Open', 'Scope: Queue Manager', and 'Default Persistence: Non Persistent'. The 'Get Messages' dropdown is set to 'Allowed'. At the bottom of the dialog are 'OK', 'Cancel', and 'Help' buttons.

The error dialog box displays the following information:

- 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

An 'OK' button is located at the bottom of the dialog.

Secure access to message actions

	Put new messages		View Messages		Select columns to display
	Copy messages		Edit Messages		Browse options
	Move messages		Load messages from file		Export table as text
	Delete messages		Save selected msgs to file		Export table as CSV
	Re-route messages		Save all msgs in queue		Export table as HTML

Favorites and Searches

WMQ Network

- MQM
 - Favorites
 - My Hot List
 - My Queue Managers
 - QM_DEV
 - Order Objects
 - Order.Alias.Queue
 - Order.Input.Queue (42/50)
 - Order.Output.Queue (0/50)
 - Order.Subscription.Request
 - Process.Order.App
 - Problem Objects
 - Searches
 - Queue::*:*:Order* (3)
 - Order.Alias.Queue
 - Order.Input.Queue (42/50)
 - Order.Output.Queue (0/50)
 - Scott-Ubuntu-VM
 - QM_DEV

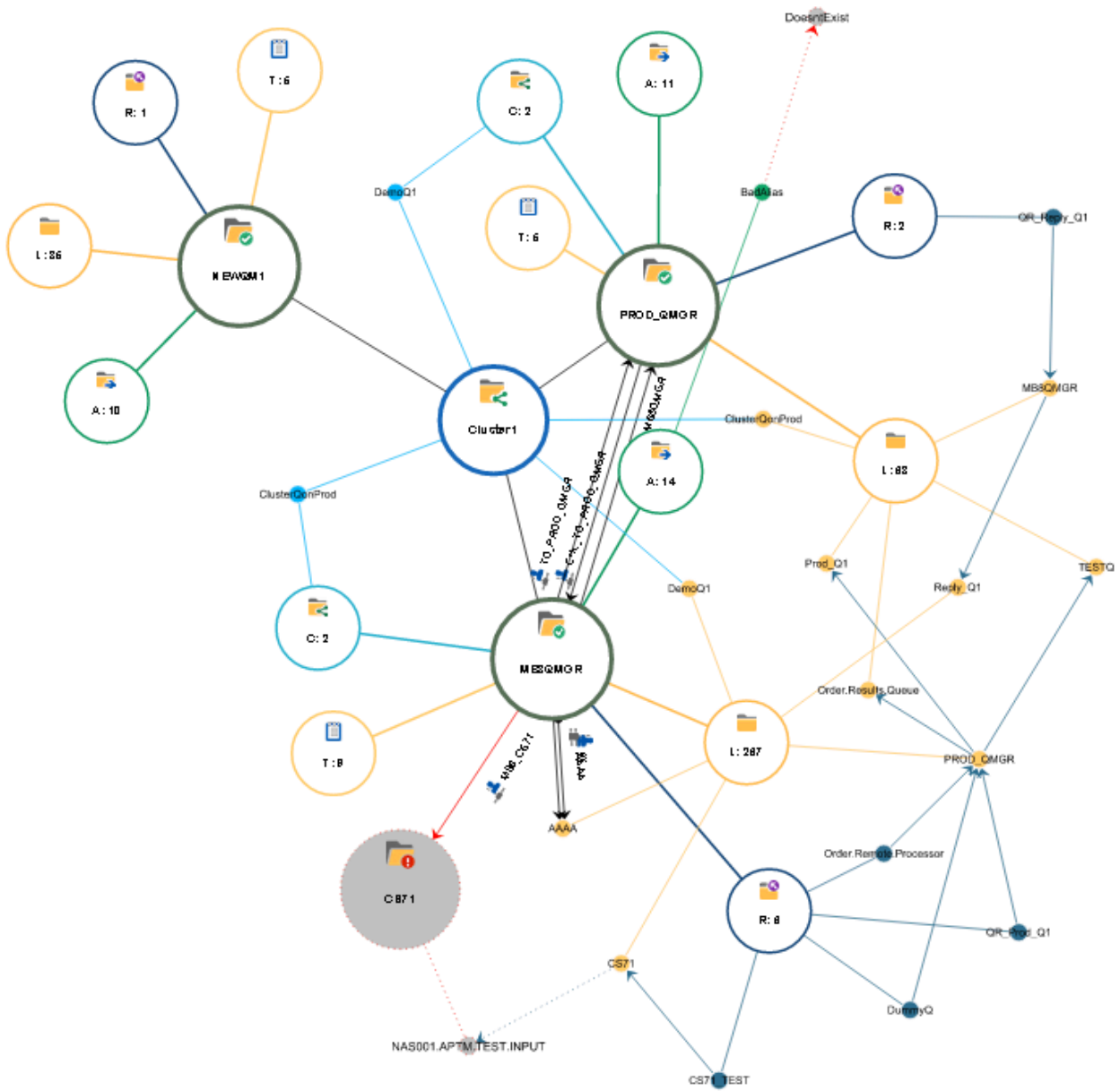
Order Objects

- Order.Alias.Queue
- Order.Input.Queue (42/50)
- Order.Output.Queue (0/50)
- Order.Subscription.Request
- Process.Order.App

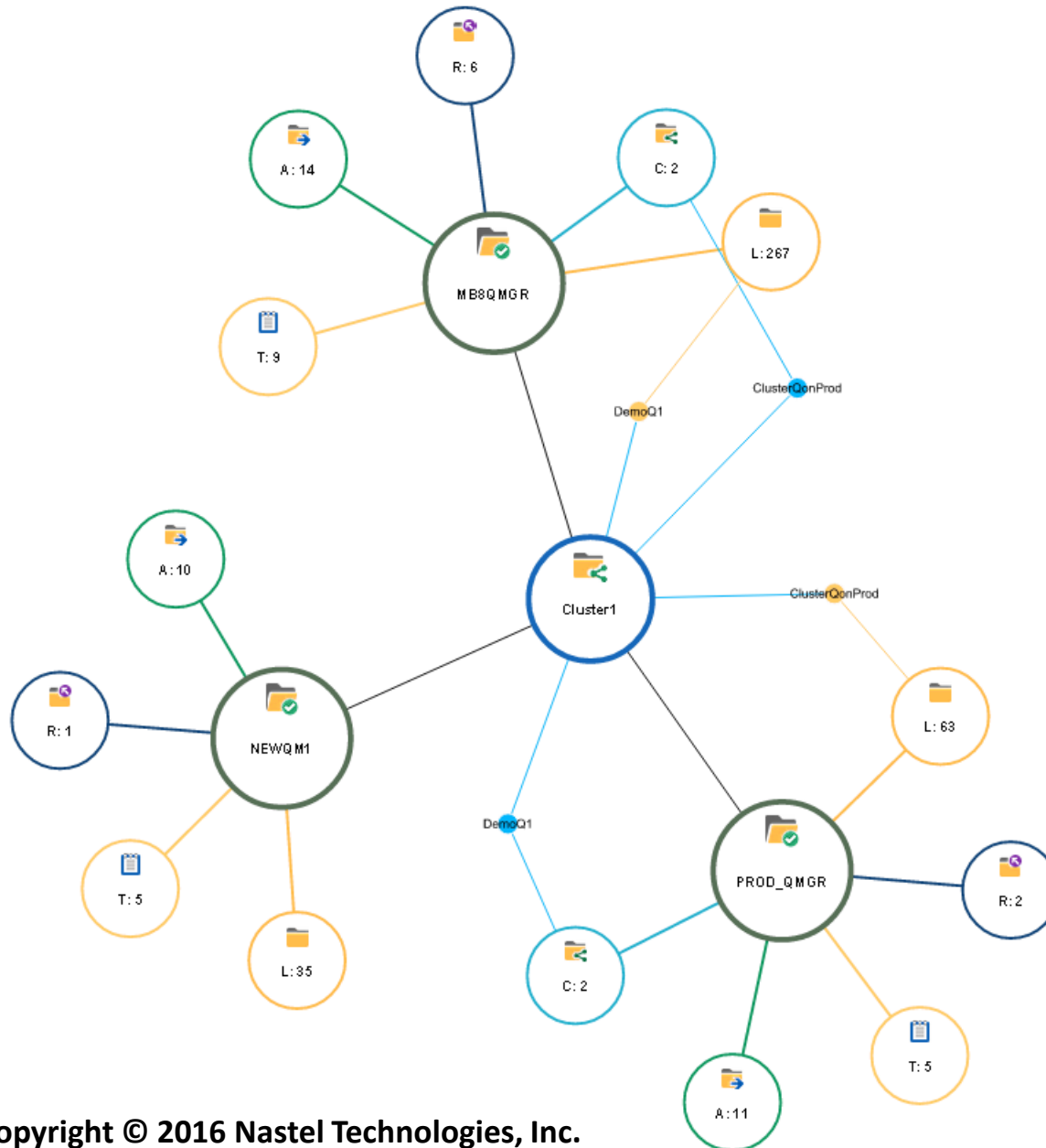
Searches

- Queue::*:*:Order* (3)
 - Order.Alias.Queue
 - Order.Input.Queue (42/50)
 - Order.Output.Queue (0/50)

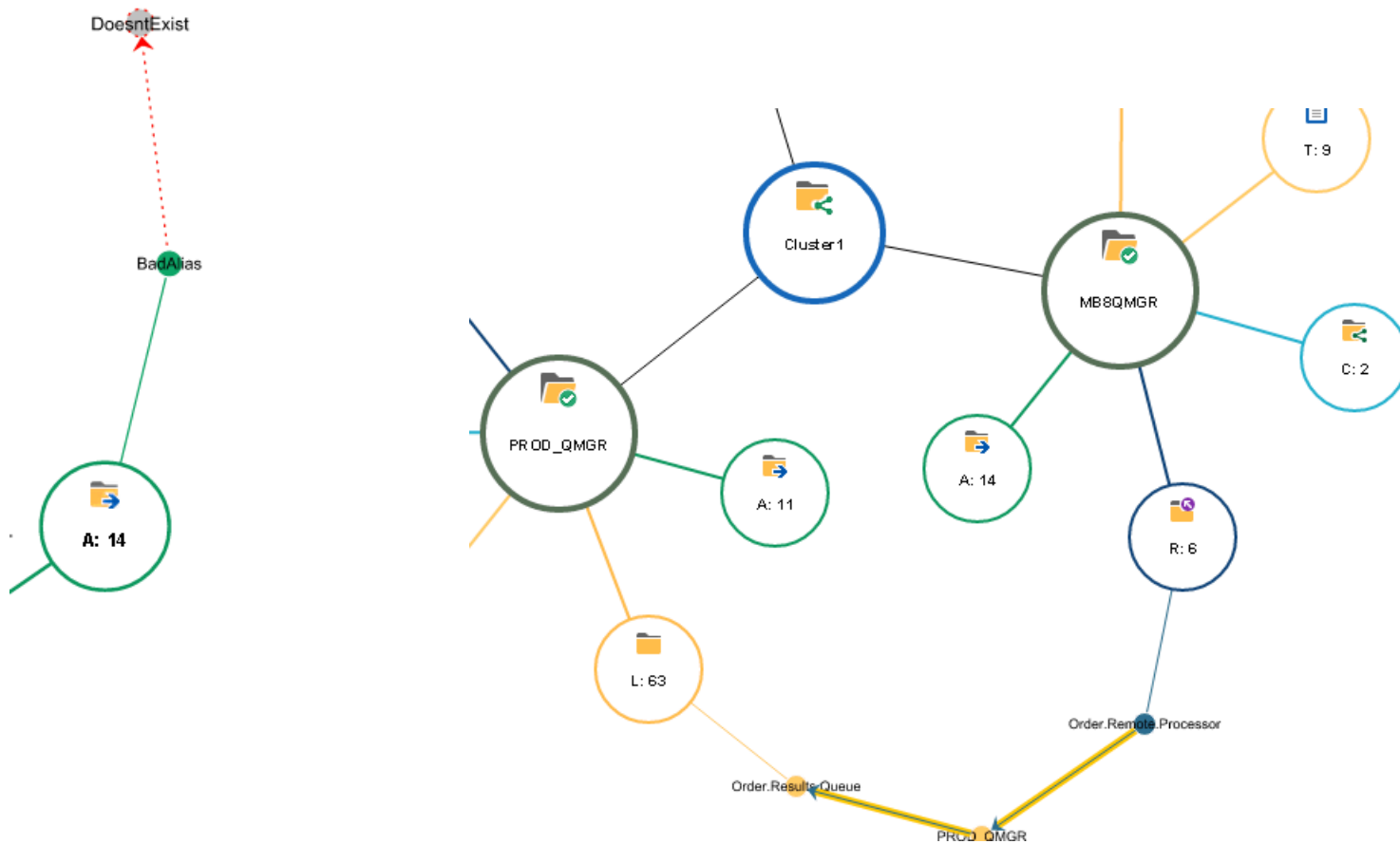
Queue Manager Topology



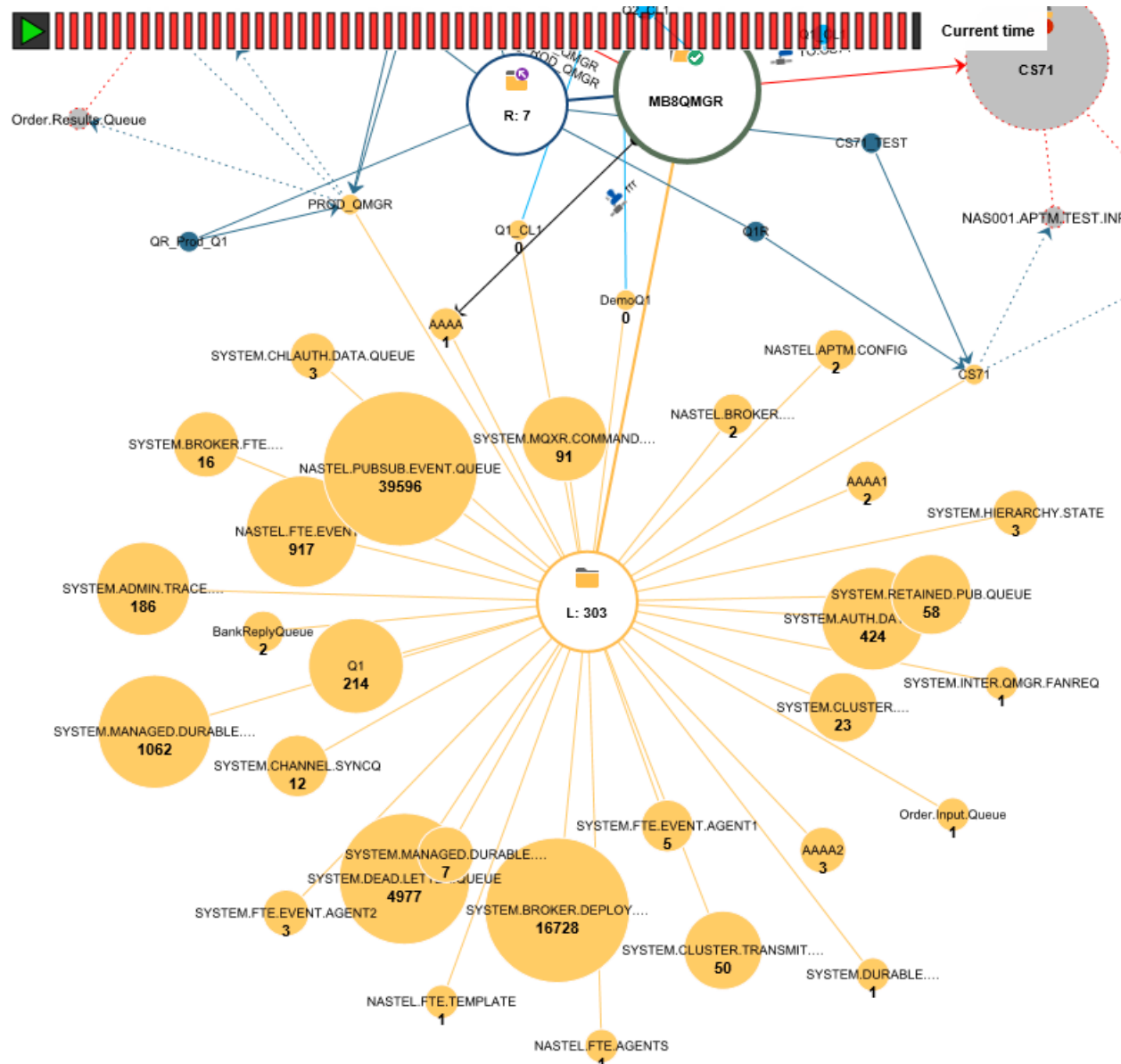
Cluster Topology



Invalid Definitions / Message Flow



Topology Activity and Animation





Message Tracking

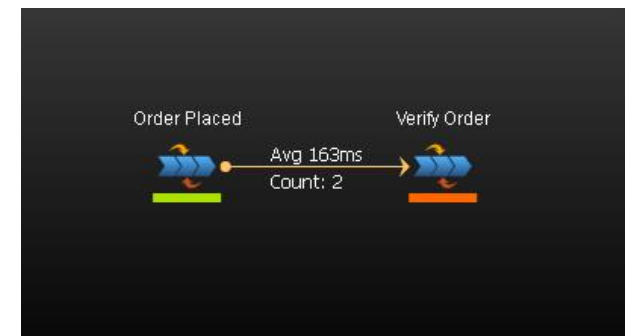
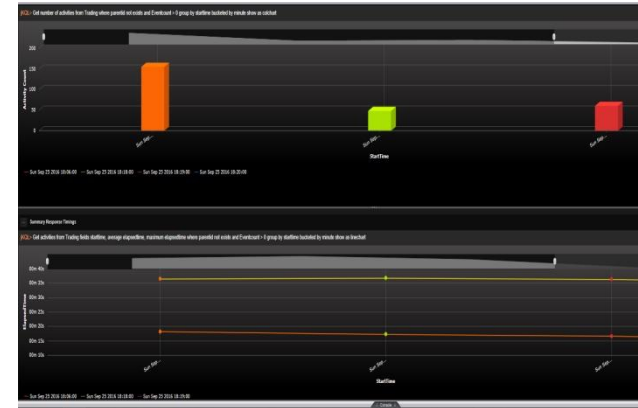


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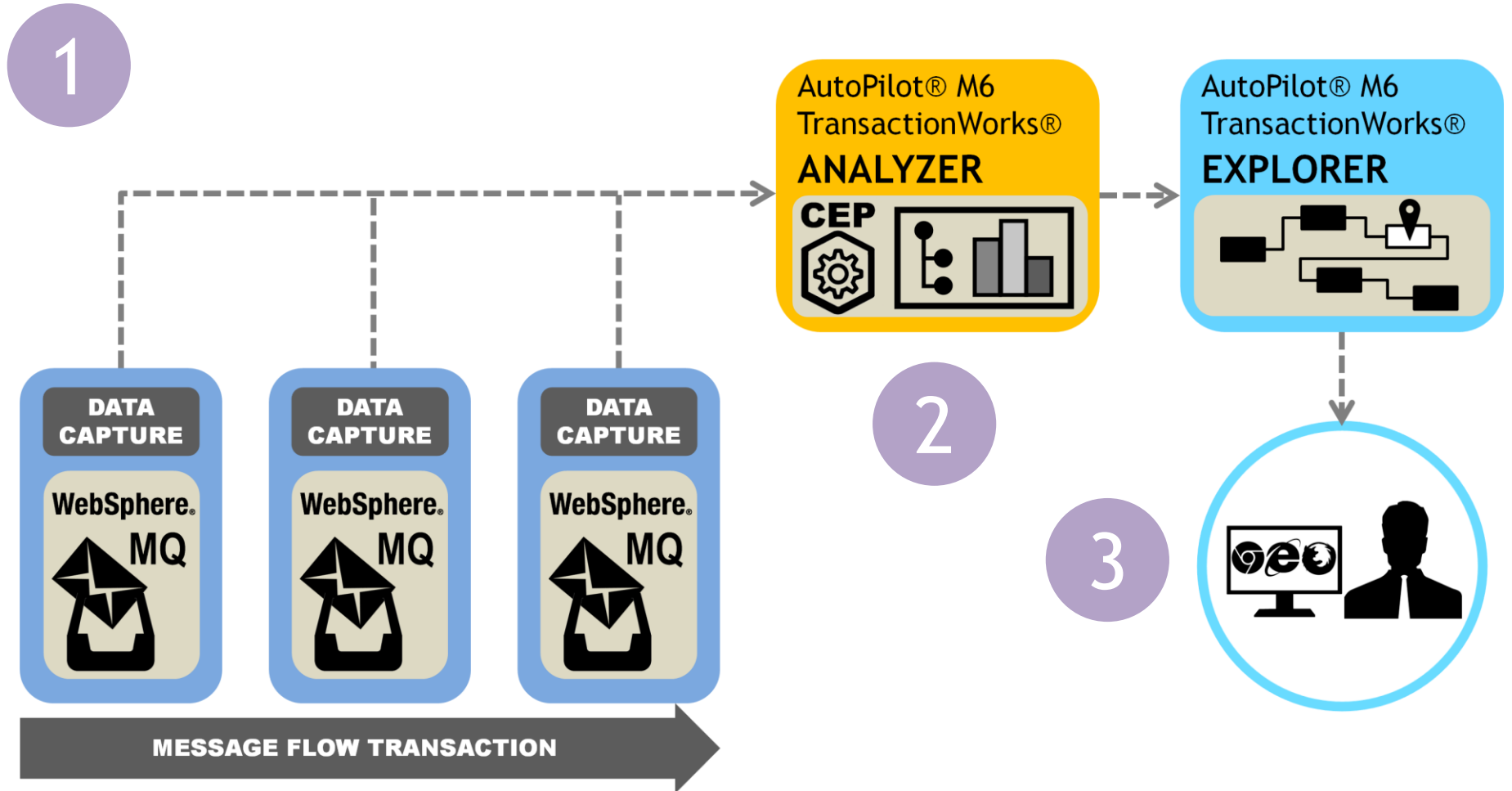
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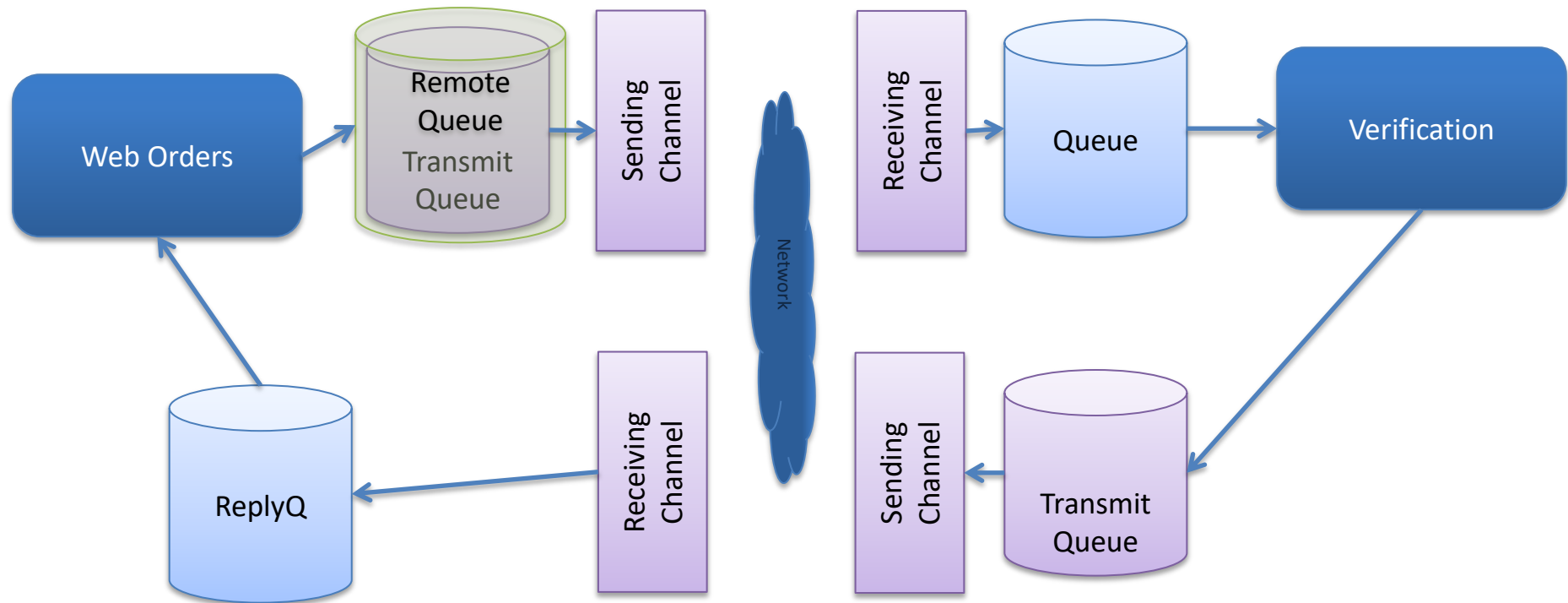
- Graphical depiction of WMQ Message Flows, with details of each operation
- Real-time and historical analysis
- Create SLA's for message flows in one click
- Pinpoint message delivery problems, message latency and SLA breaches
- Criteria-based message search
- ALL message tracking information is recorded in SQL database - Persistent as well as Non-Persistent messages
- Agent and Agent-less options



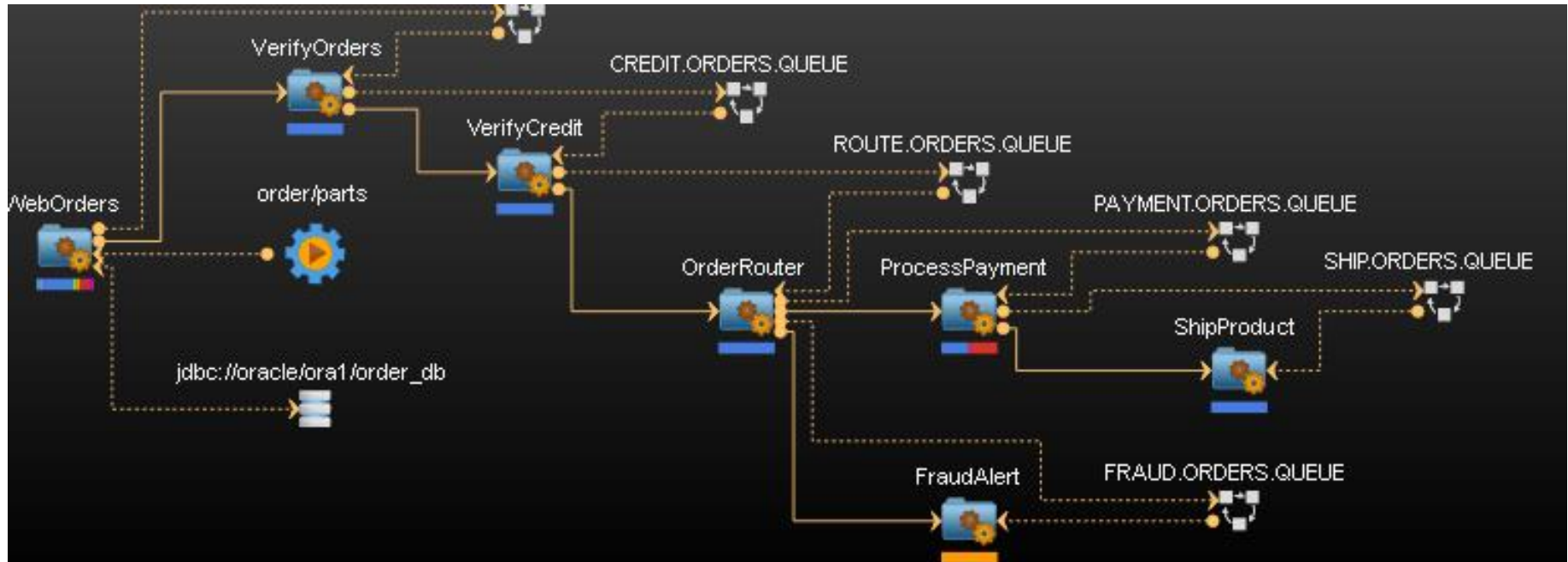
Message Flow Tracking



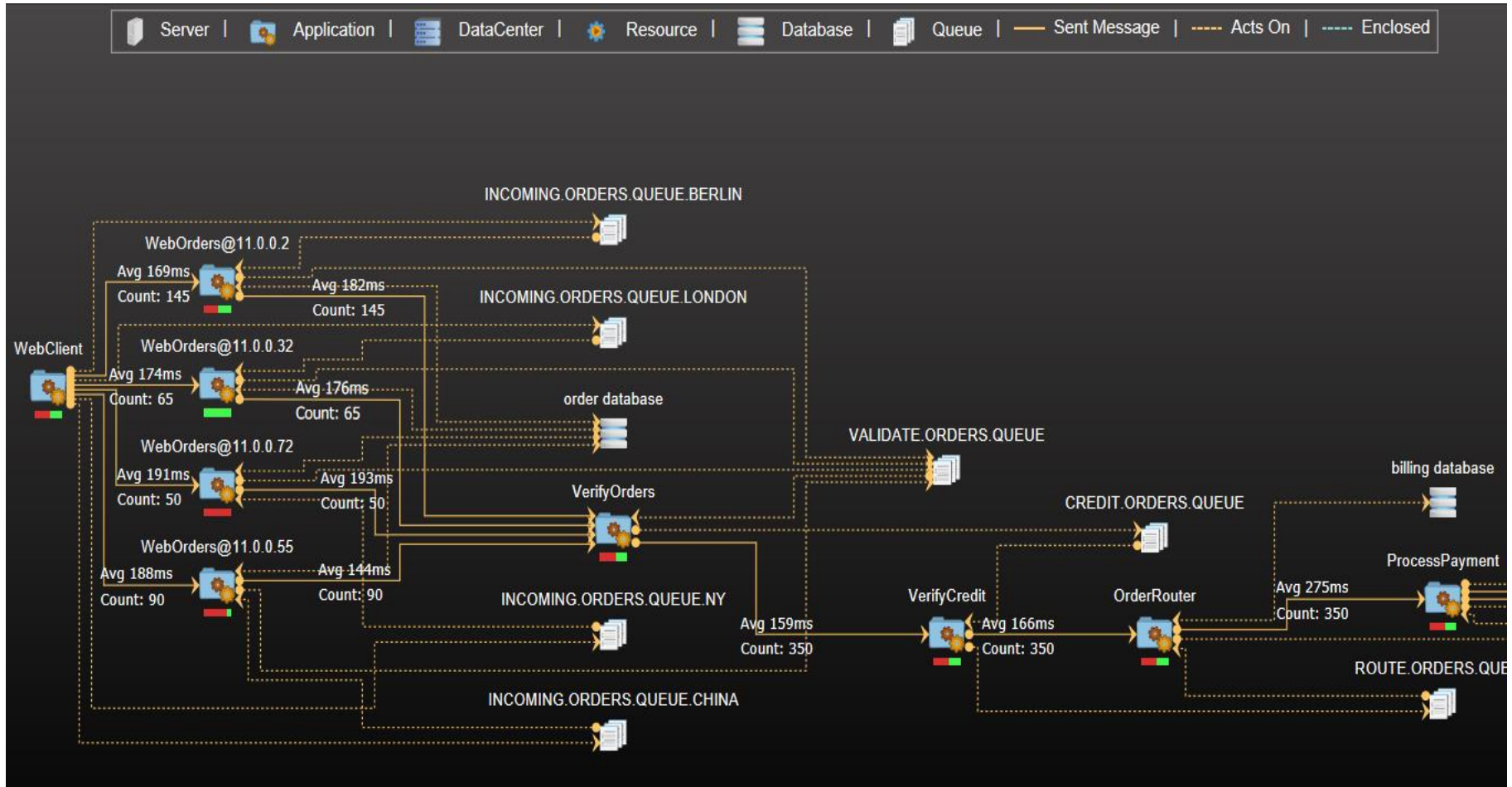
Simple WMQ Example


























Message Tracking



























Message Flow Transaction Monitoring



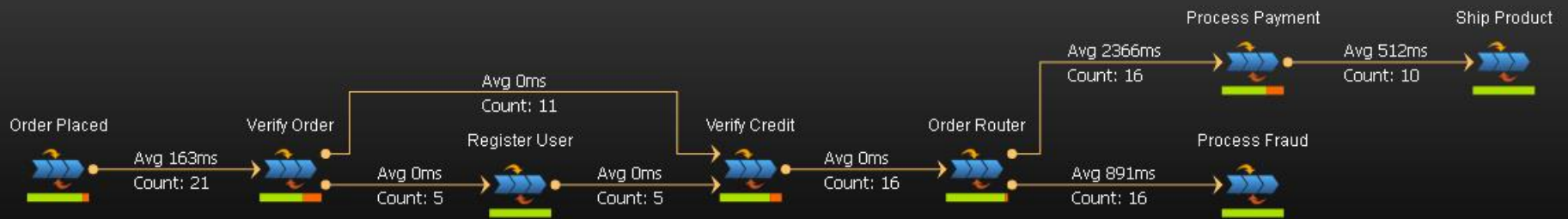
Another View of the Message Flow

■	EventName	StartTime	ElapsedTime	EventType	Message	Severity	Exception
<input type="checkbox"/>	MQPUT	2016-09-25 18:06:16.91139	11ms	SEND	Message10 	 INFO	
<input type="checkbox"/>	MQPUT	2016-09-25 18:06:16.80742	8ms	SEND	<TRADE_ENTRY_... 	 INFO	
<input type="checkbox"/>	QueueSender.send	2016-09-25 18:06:16.80047	6ms	SEND	<TRADE_ENTRY_... 	 INFO	
<input type="checkbox"/>	MQPUT	2016-09-25 18:06:16.98813	13ms	SEND	Message4 	 INFO	
<input type="checkbox"/>	ENDBR	2016-09-25 18:06:16.97920	8ms	CLOSE	Sample Customer... 	 INFO	
<input type="checkbox"/>	GETNEXT	2016-09-25 18:06:16.96721	11ms	RECEIVE	Sample Customer... 	 INFO	
<input type="checkbox"/>	com/acme/trading/verify.con	2016-09-25 18:06:17.04527	4ms	CALL		 INFO	
<input type="checkbox"/>	MQGET	2016-09-25 18:06:17.00170	9ms	RECEIVE	Message4 	 INFO	
<input type="checkbox"/>	STARTBR	2016-09-25 18:06:16.95326	13ms	OPEN	Sample Customer... 	 INFO	
<input type="checkbox"/>	HTTP/POST/trading/verifica	2016-09-25 18:06:17.04964	13ms	RECEIVE	HTTP Post... 	 INFO	
<input type="checkbox"/>	MQPUT	2016-09-25 18:06:17.01150	10ms	SEND	Message5 	 INFO	
<input type="checkbox"/>	QueueSender receive	2016-09-25 18:06:17.03192	13ms	RECEIVE	Message5 	 INFO	

Tracking Application Activity

ReceiveOrder	Verify ProductId=8...		Queue full, re-routing to dead letter queue.		 <u>ERROR</u>
ReceiveOrder	Verify ProductId=8...		Queue full, re-routing to dead letter queue.		 <u>ERROR</u>
ReceiveOrder	Verify ProductId=8...		Queue full, re-routing to dead letter queue.		 <u>ERROR</u>
ValidateAndVerify	Verify ProductId=8...				 <u>NOTICE</u>
ReadOrder	Verify ProductId=8...				 <u>NOTICE</u>
ReceiveOrder	Verify ProductId=8...				 <u>NOTICE</u>
UpdatePayment	Verify ProductId=8...				 <u>NOTICE</u>
EvaluateFraud	Verify ProductId=8...		Possible fraud		 <u>NOTICE</u>
Credit	Verify ProductId=8...				 <u>NOTICE</u>
ReadAndRoute	Verify ProductId=8...				 <u>NOTICE</u>

Taking a Business View





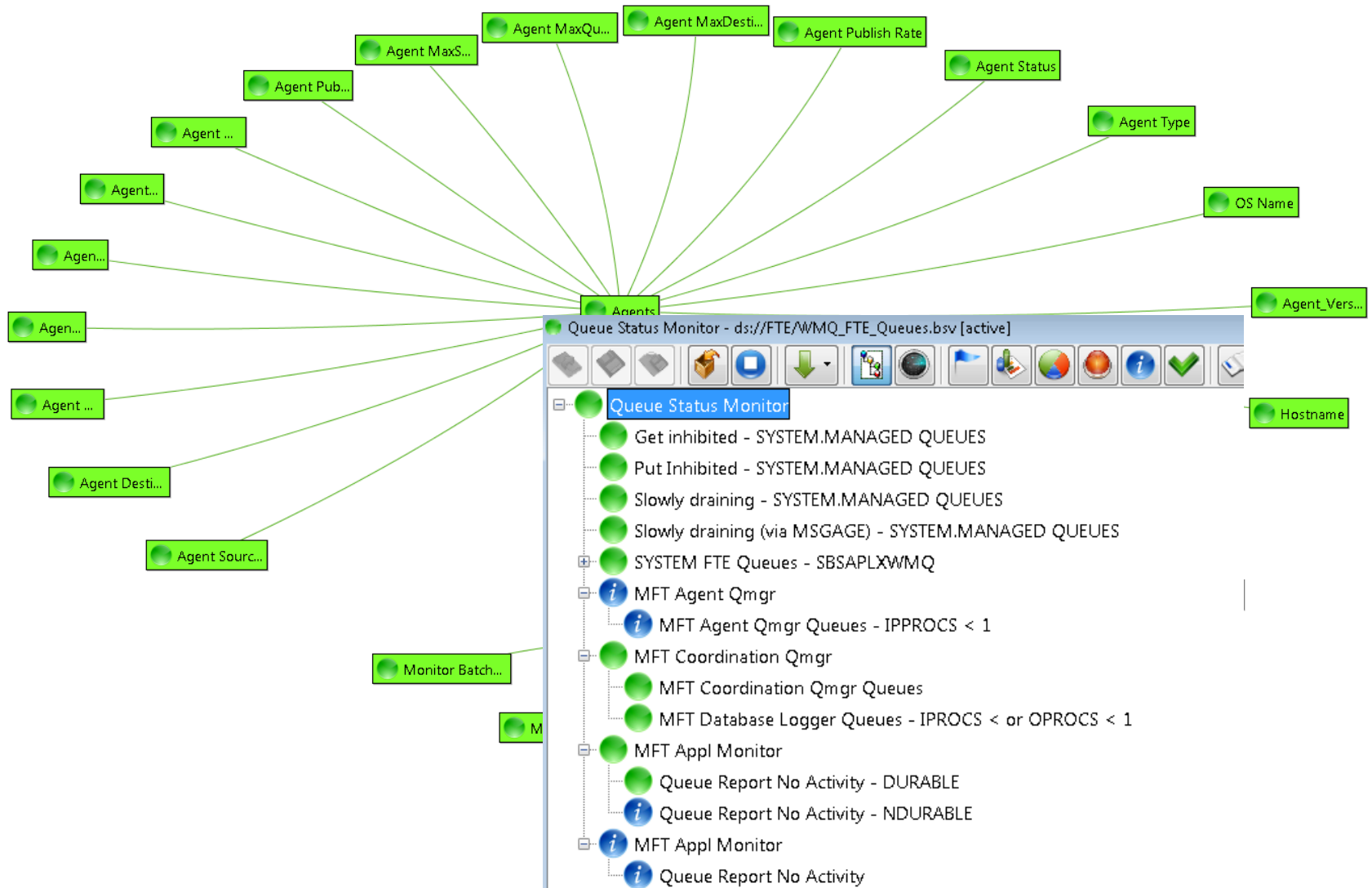
Beyond MQ



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Monitoring Message Broker Statistics

Message Flow Level (for the flow)

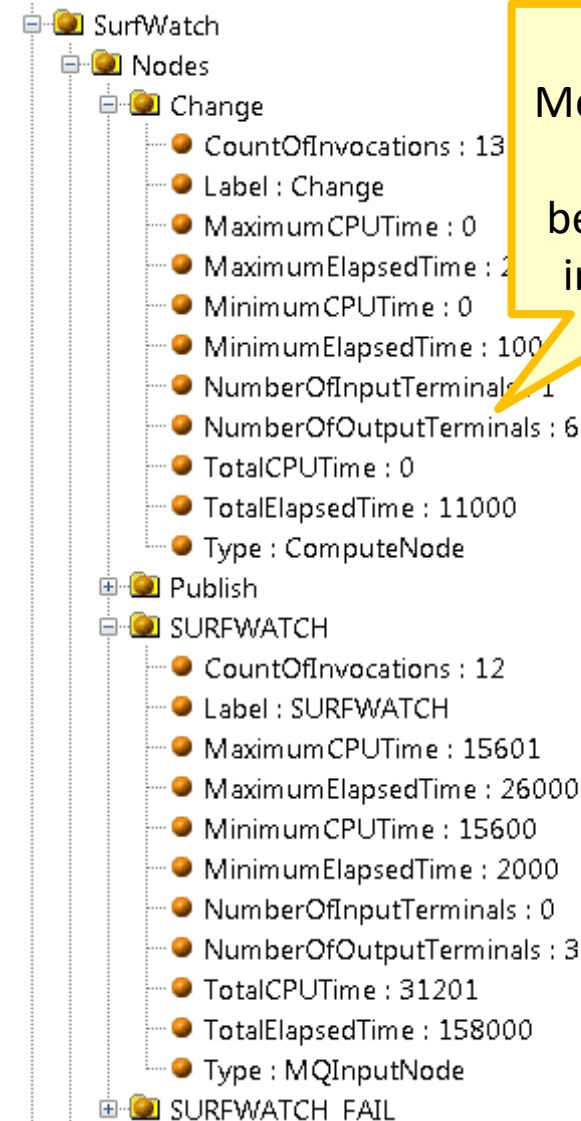
- Total Messages Processed
- Total Messages in Error
- CPU Time Spent
- Message Statistics

Node Level (for each processing node)

- Invocations
- CPU Time
- Information

Thread Level (for each thread)

- Messages Processed
- CPU Time Spent
- Message Statistics



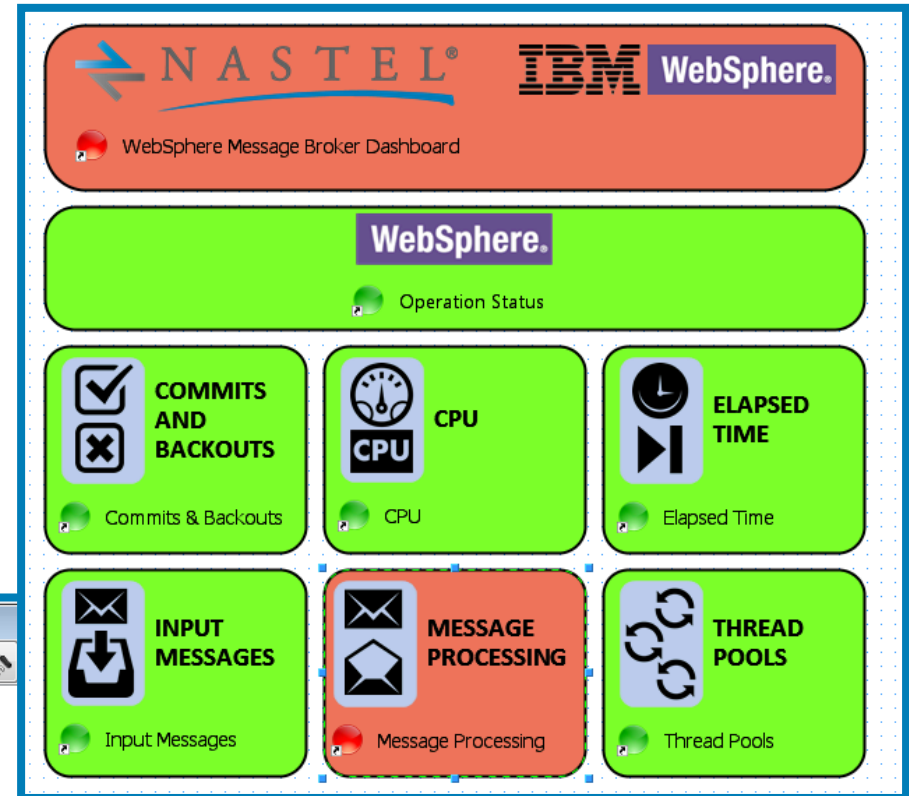
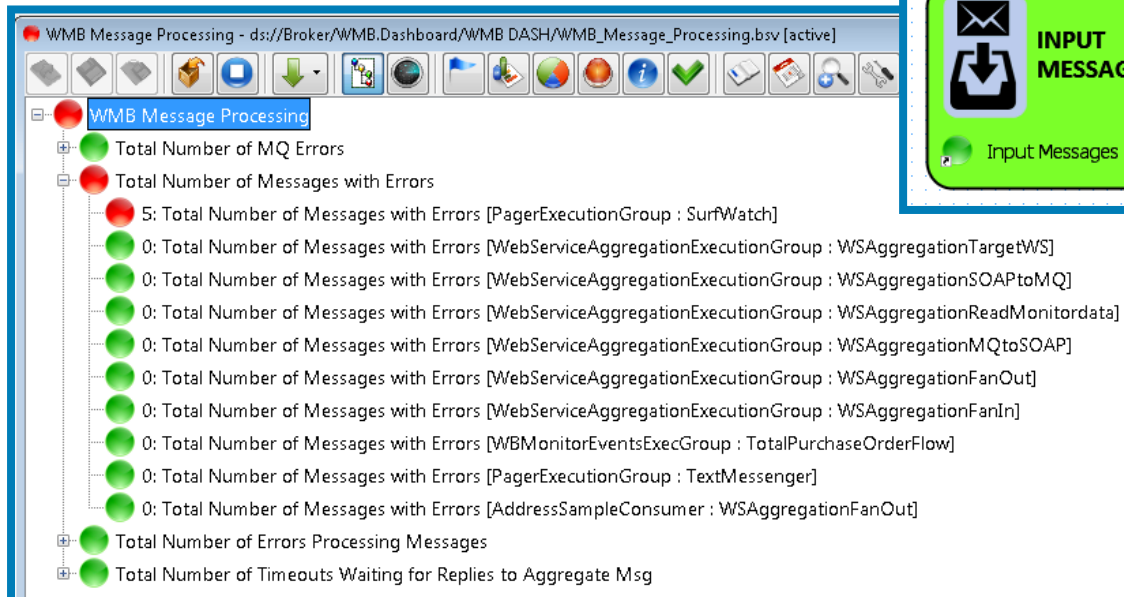
Published
Message Broker
Statistics
become FACTS
in AutoPilot®

Monitoring Message Broker

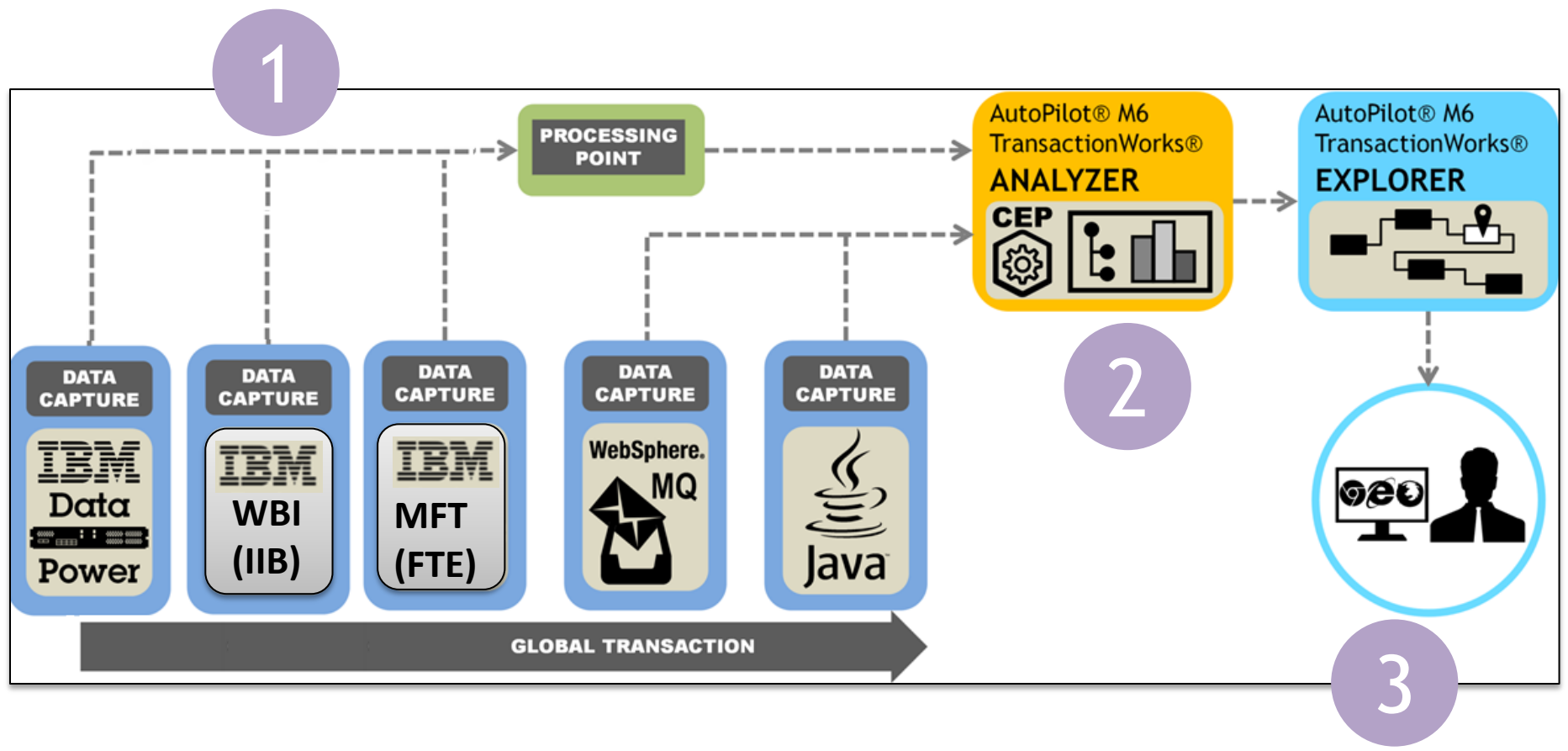
- FACTS are used in AutoPilot® M6 rule-based dashboards

(Business Views)

- In this example: message processing errors are occurring
- Alerts → Notifications & Automated corrective actions



Other Transaction Monitoring





Conclusion



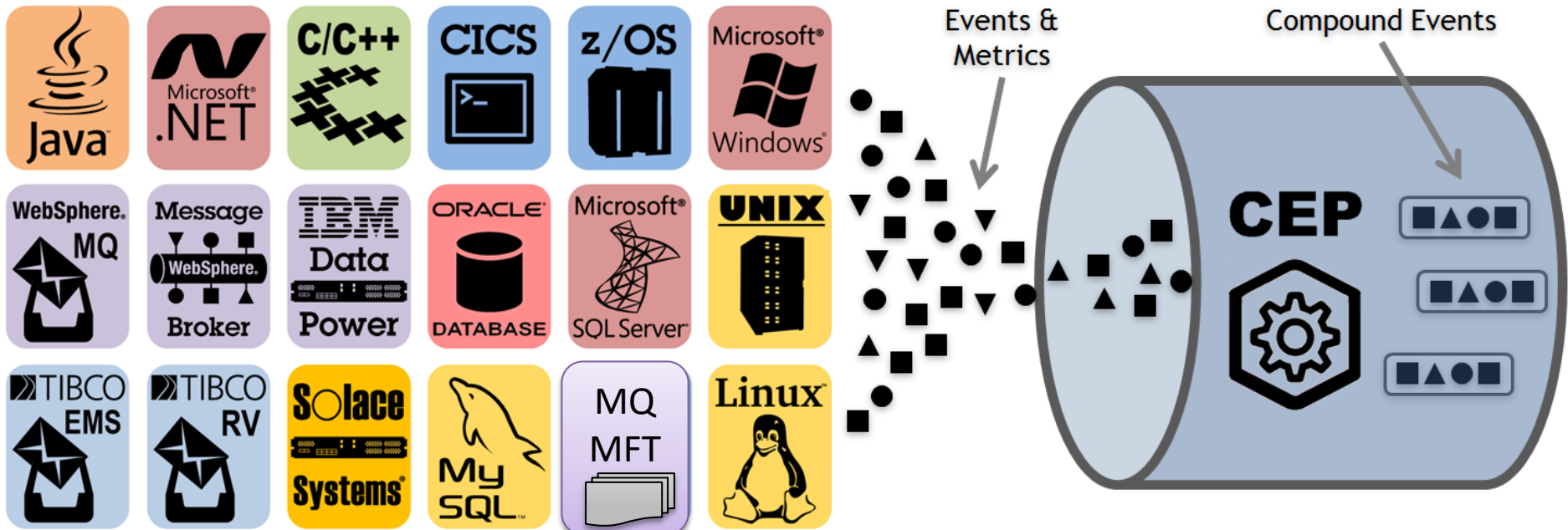
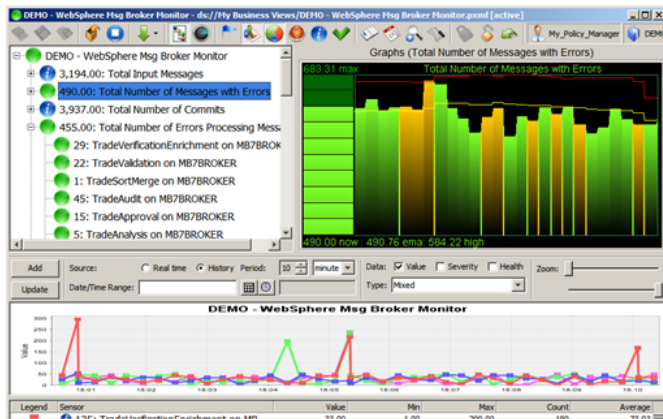
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- Business Activity & IT Dashboards
- Context Sensitive Application Views
- Business Transaction Management



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Questions?



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