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Driving Business Transaction Performance ®

AutoPilot®

Middleware-Centric Application Performance Management

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

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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

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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

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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.

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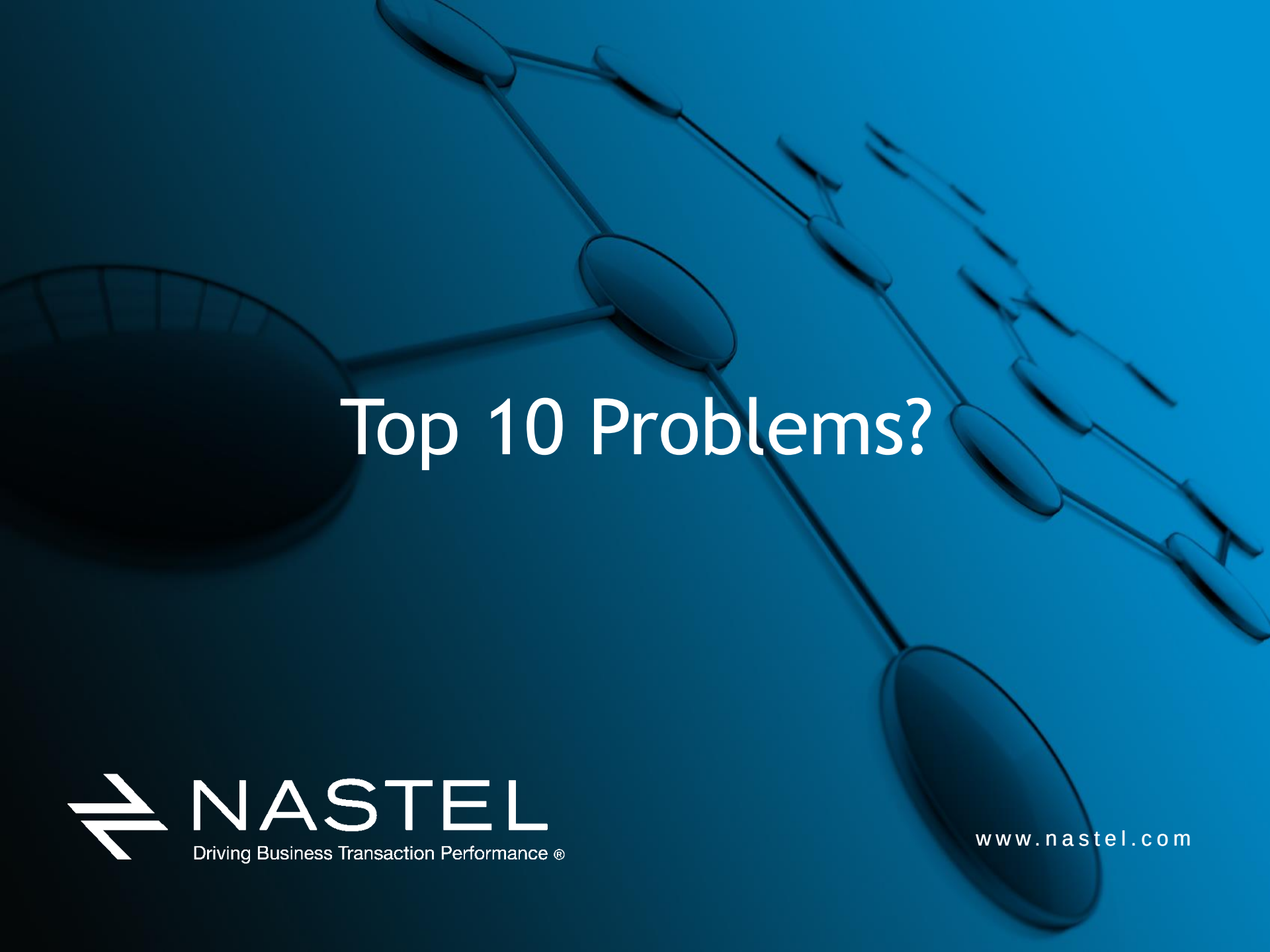
Top 10 Problems?
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The Top 10 List

- 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

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“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)

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Stakeholders and Benefits

Middleware Team

- Proactive Middleware Monitoring in DEV, TEST and PROD

Application Support

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

Application Development

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

Enterprise Architect

Application Owner

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

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How does Nastel help you with these problems?
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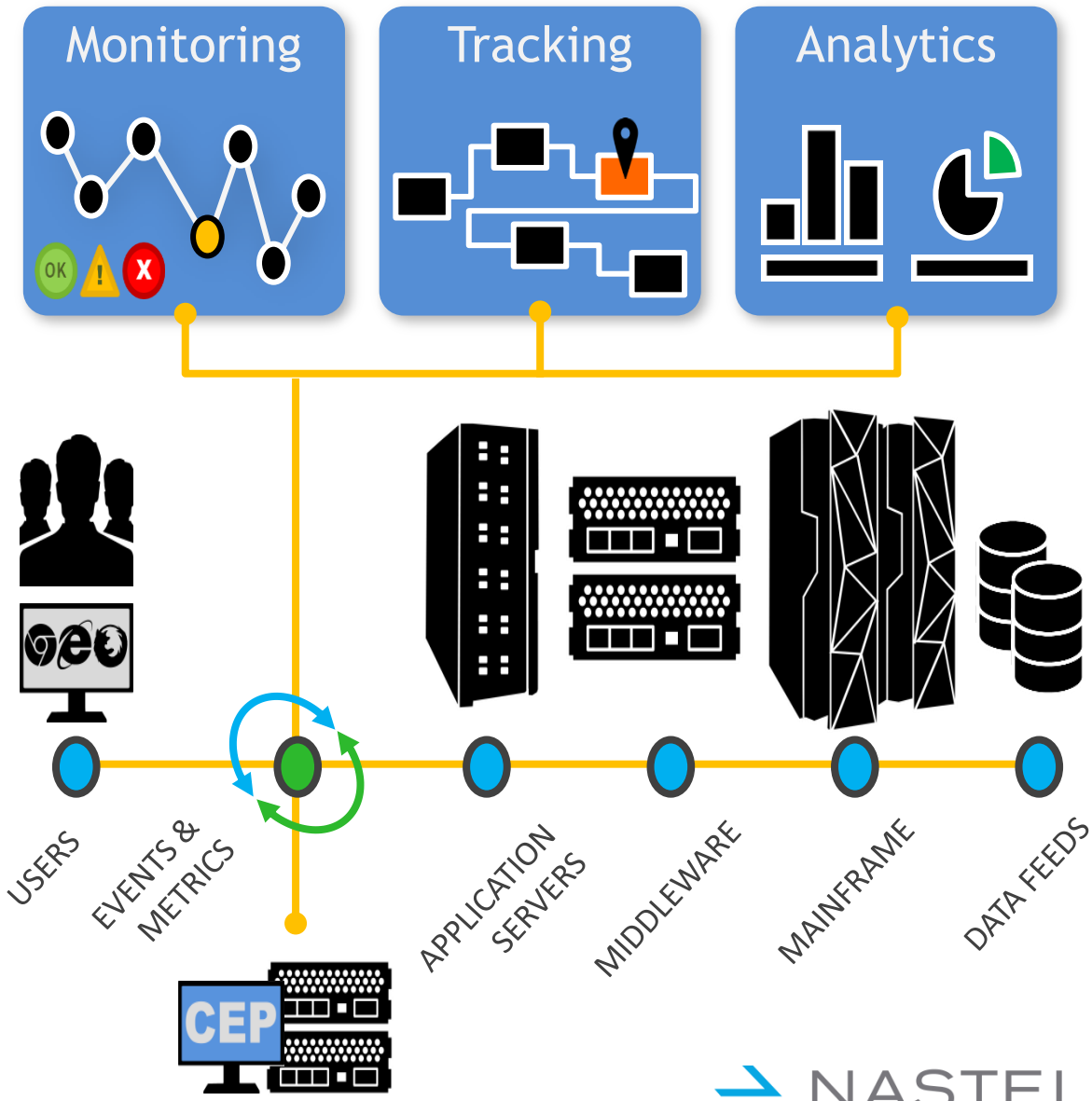
Nastel AutoPilot®: key takeaways

- 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



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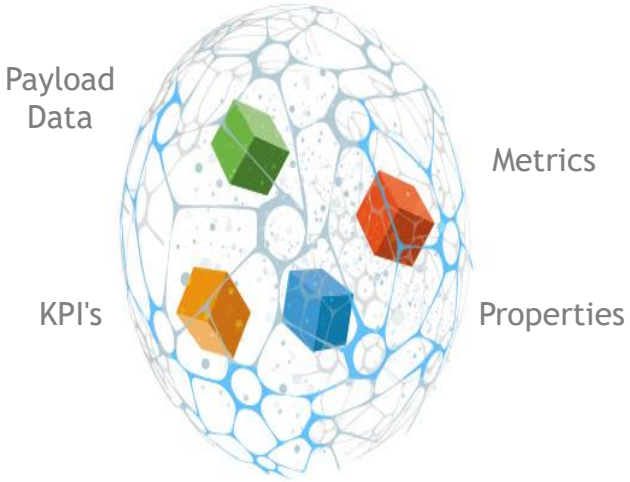
The AutoPilot® difference: making the complex simple

1

Logs, Metrics & Transactions From Multiple Sources

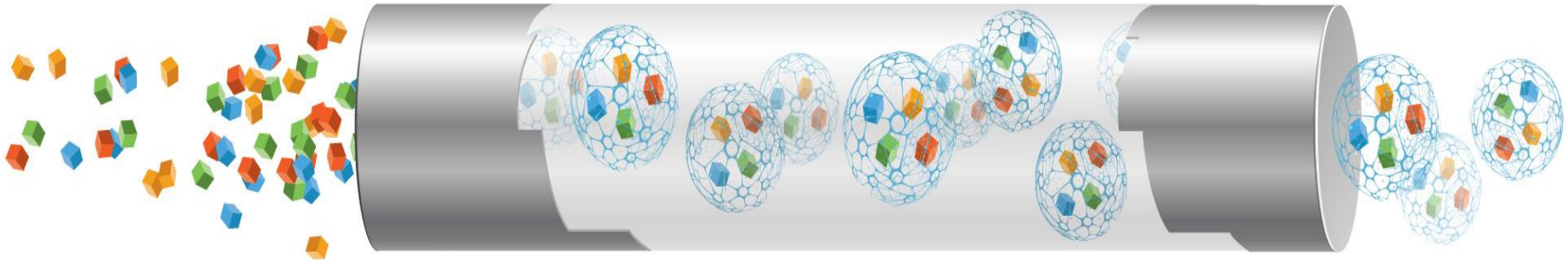
2

Event/Transaction Synthesis with Alerts and Notifications



3

Intuitive, Actionable Business Insights



Chaotic Complexity
Low-value Data

Data Enrichment & Business Milestones

Simplicity
High-value Data

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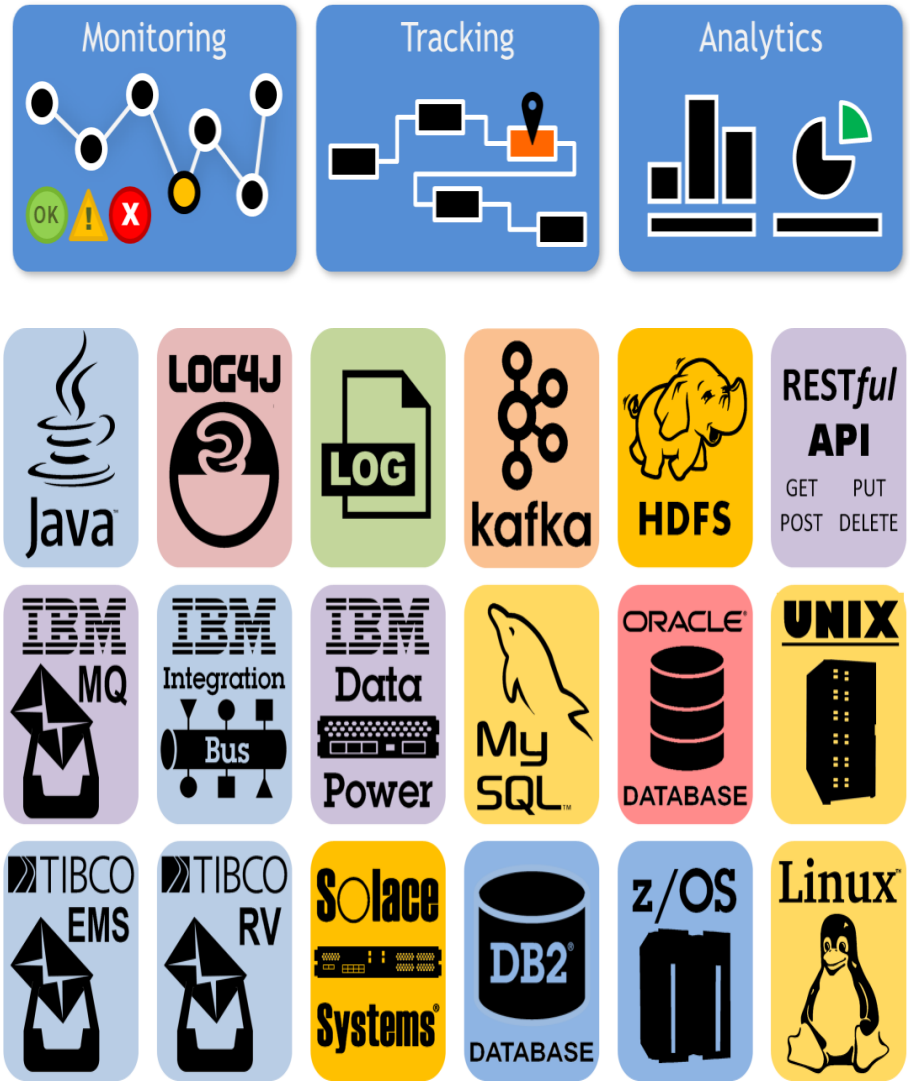
AutoPilot®: example data collectors

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

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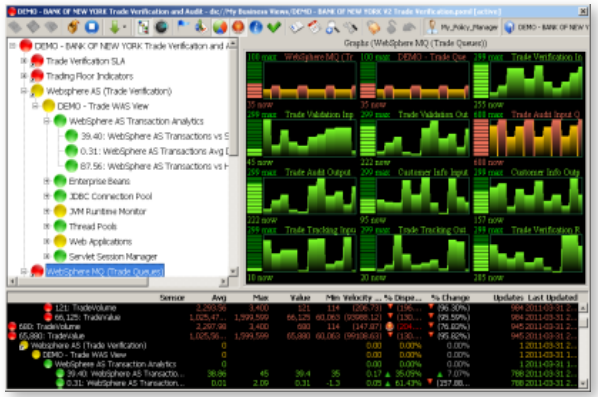
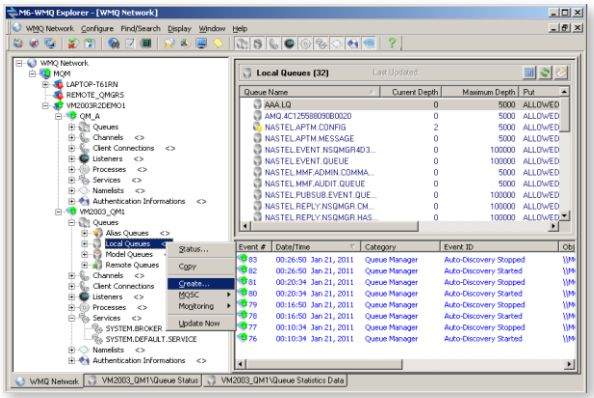
AutoPilot® for WebSphere MQ – 3 x "M"

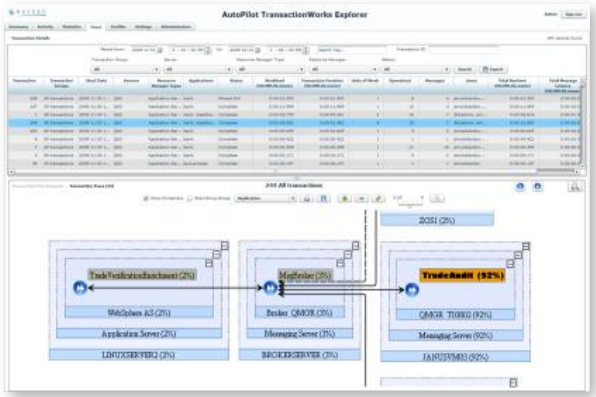
WebSphere® MQ
MONITORING



WebSphere® MQ
MANAGEMENT

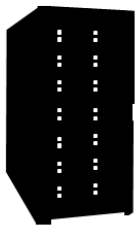


WebSphere® MQ
MESSAGE TRACKING

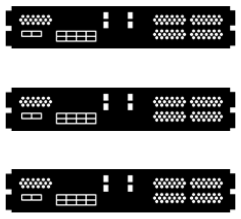


WebSphere® MQ

Z/OS



UNIX
LINUX



WINDOWS

+ Tandem, iSeries, VAX, …

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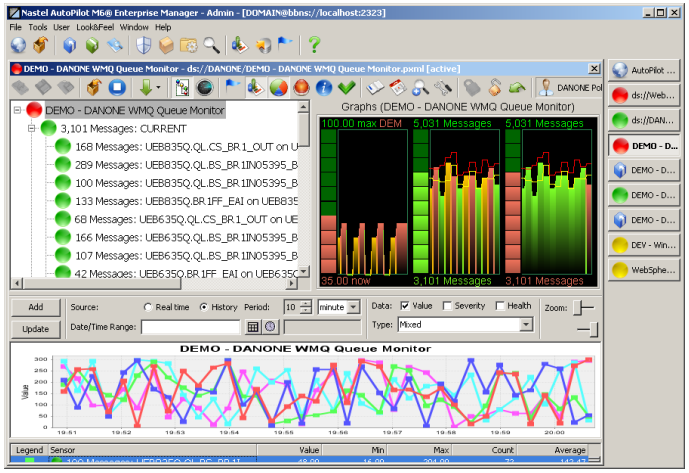
WebSphere MQ MONITORING

- 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



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AutoPilot® Insight: example dashboard

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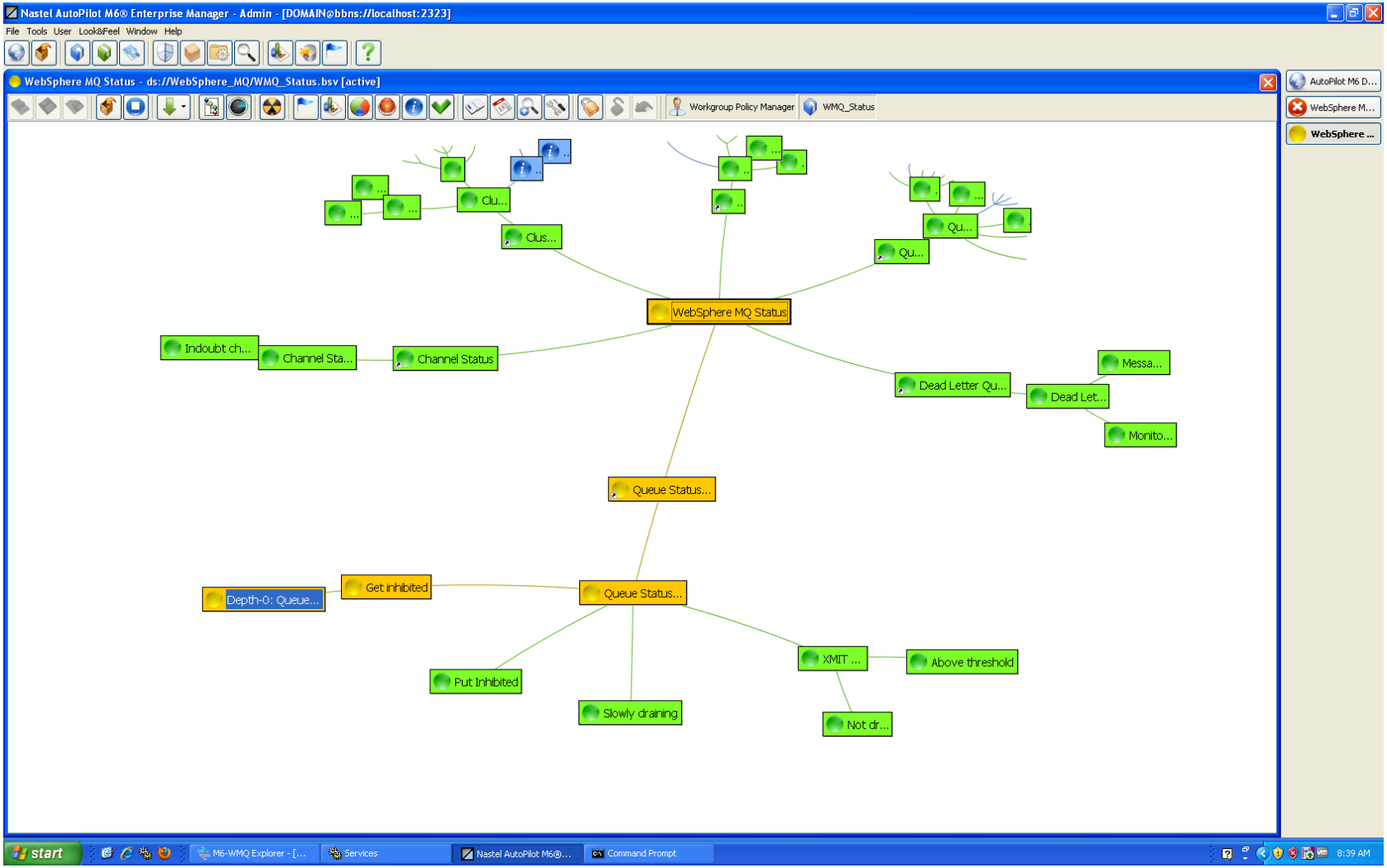
Single View of MQ Environment



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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

…

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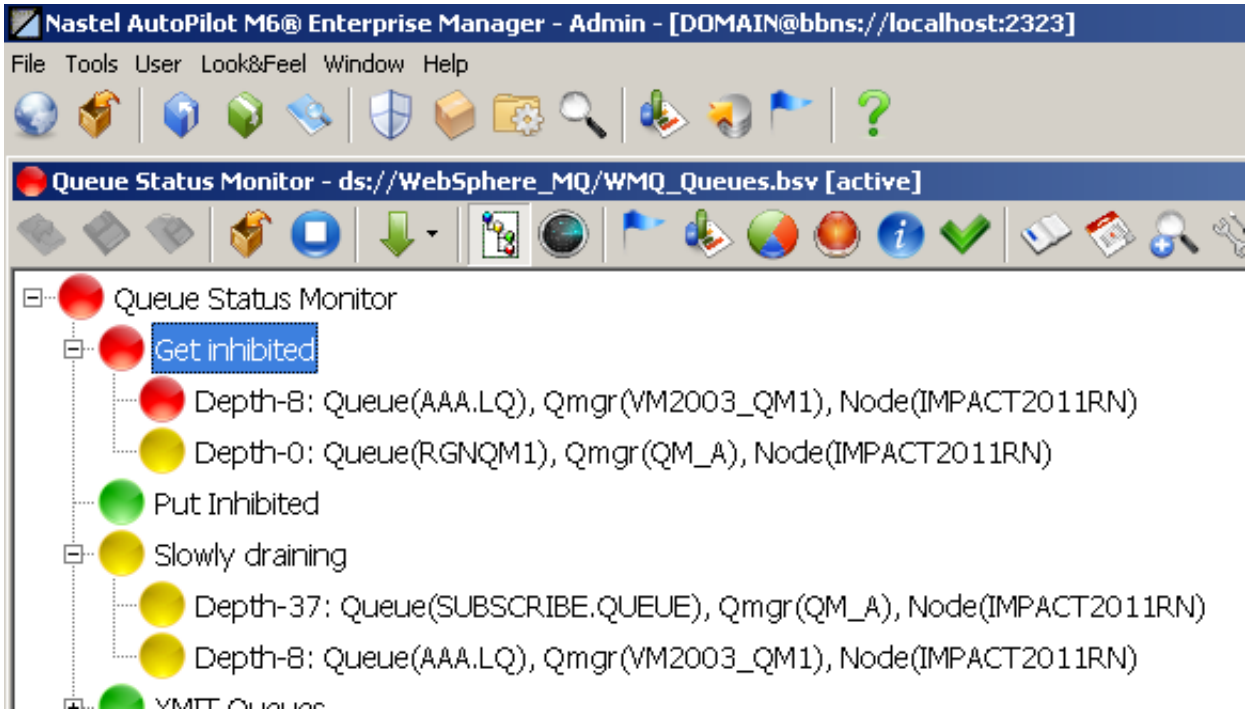
Policy – Identifying the problems



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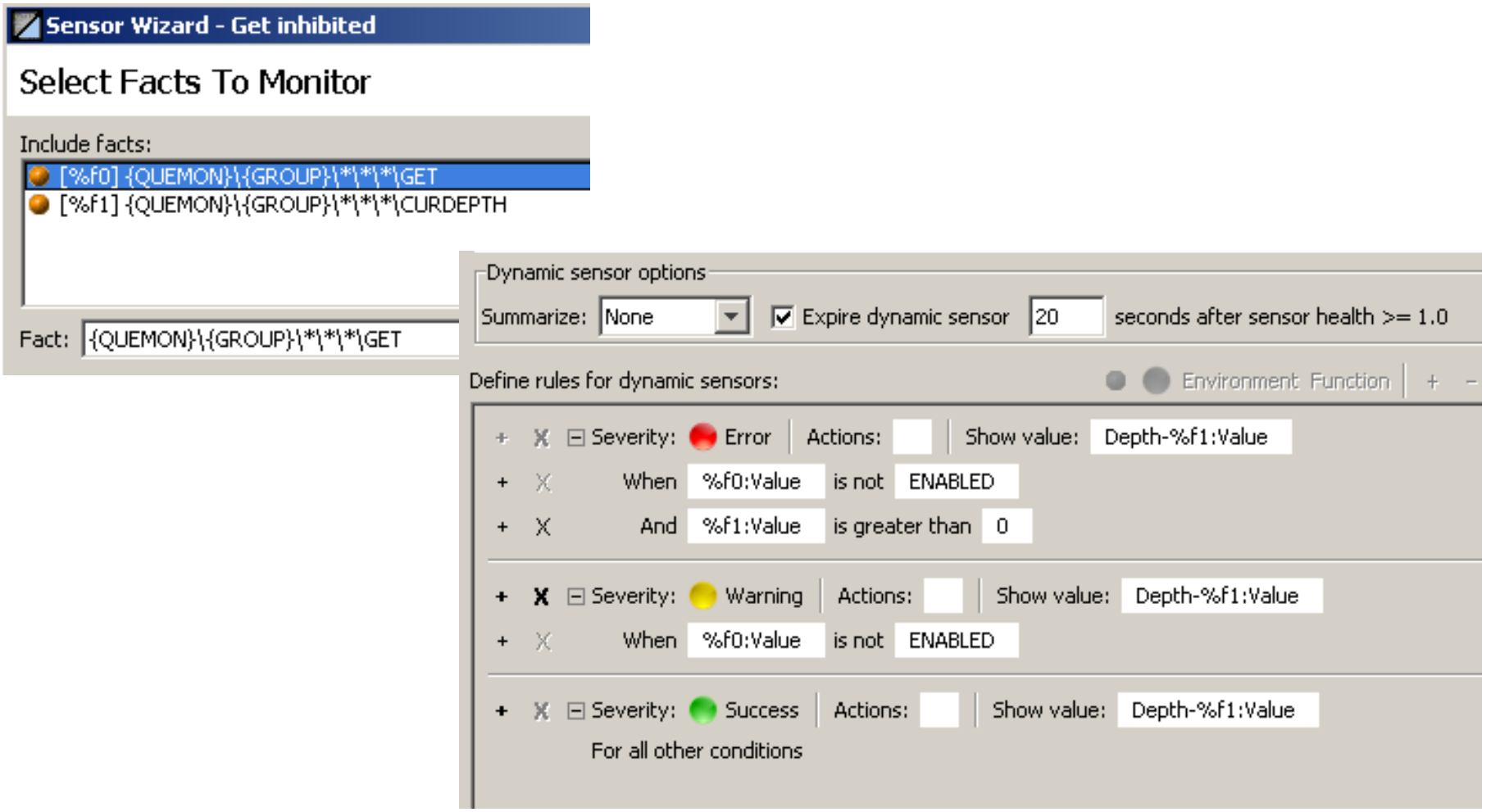
Policy Fundamentals



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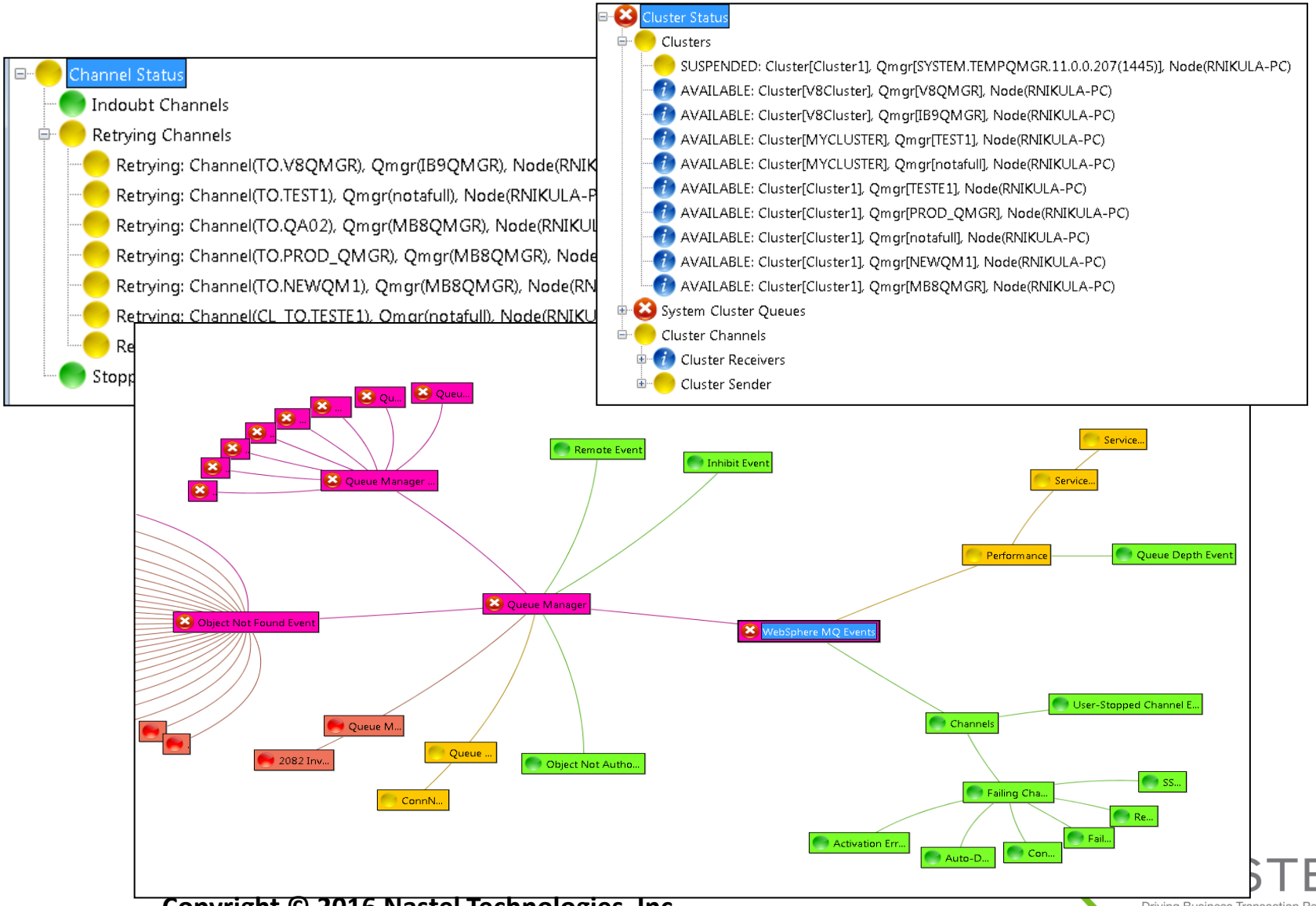
More Examples…



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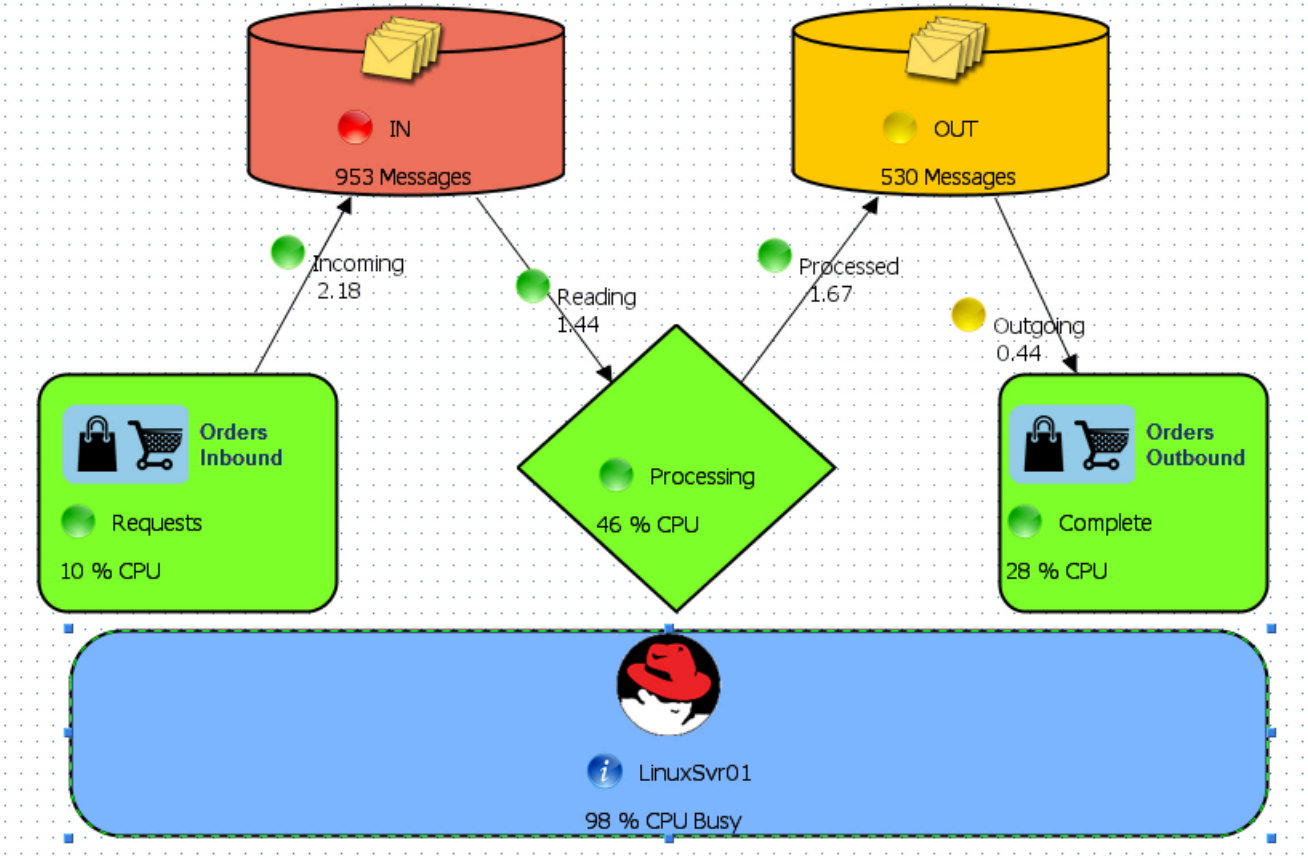
Using a Self Service Dashboard to Observe Behavior



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Management

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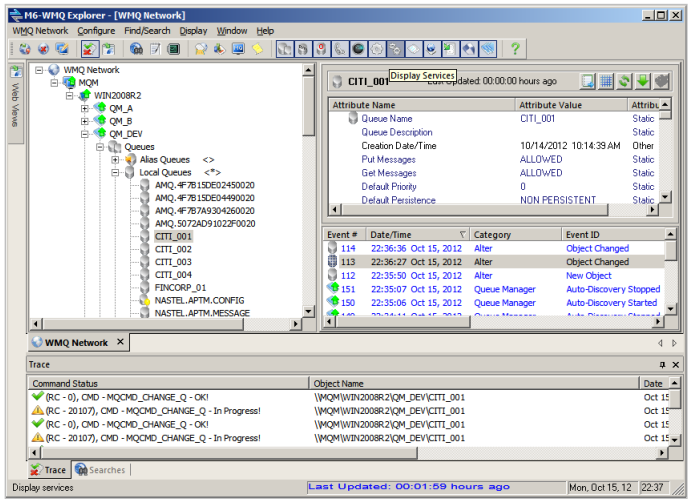
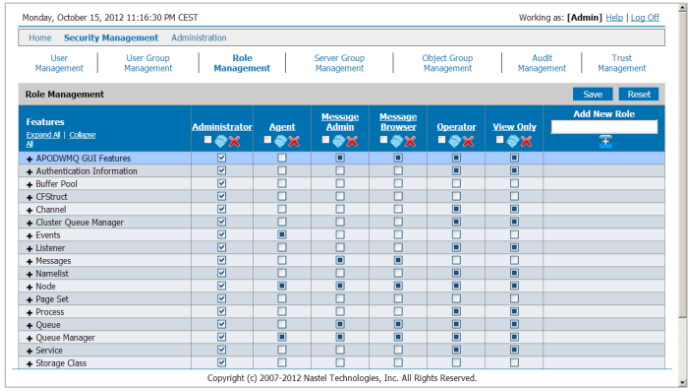
WebSphere® MQ MANAGEMENT

- 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





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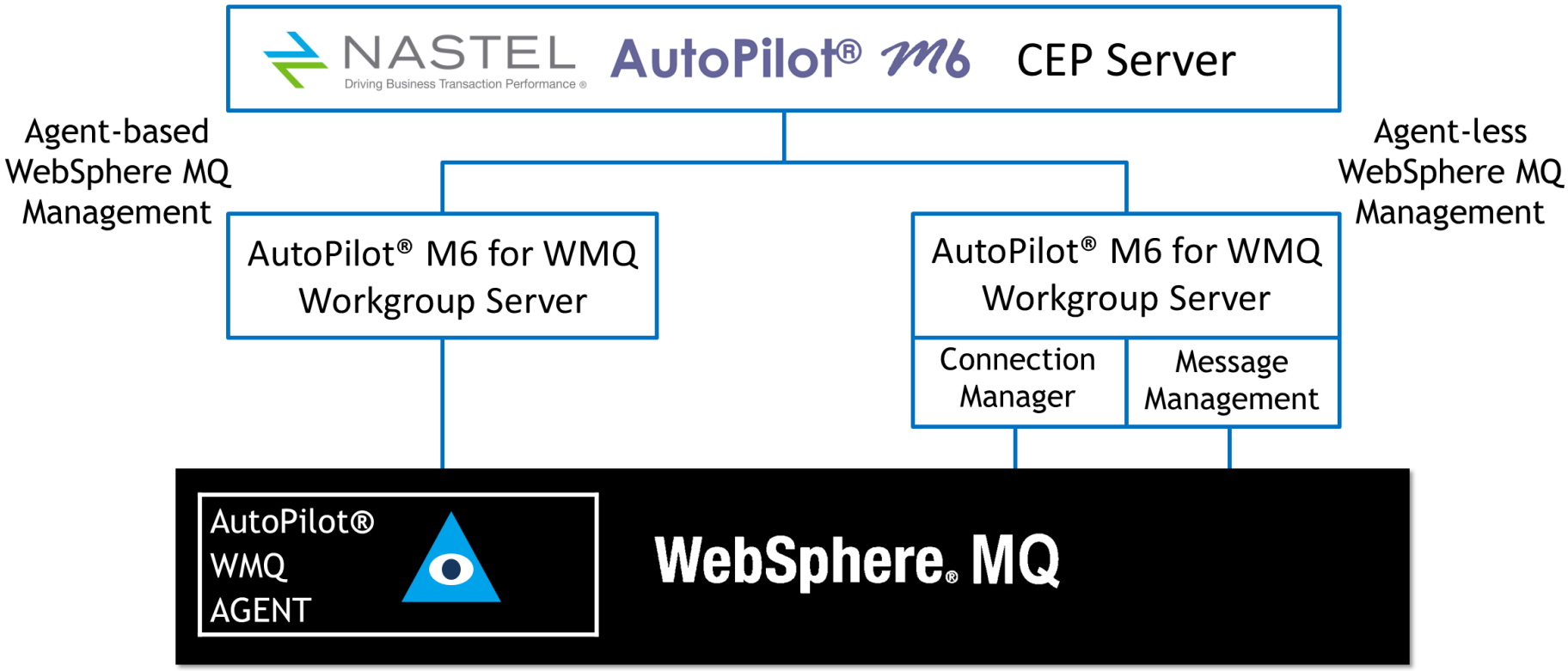
AutoPilot® M6 for WMQ - Agent or Agentless



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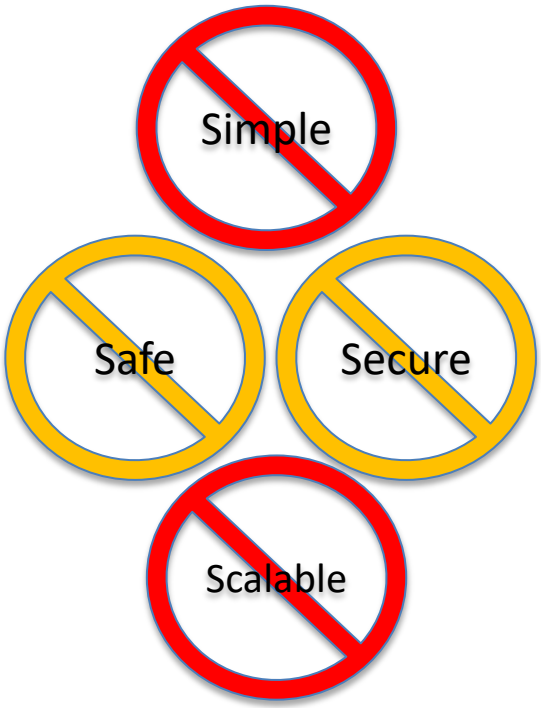
Using MQ Explorer for Self Service

- 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



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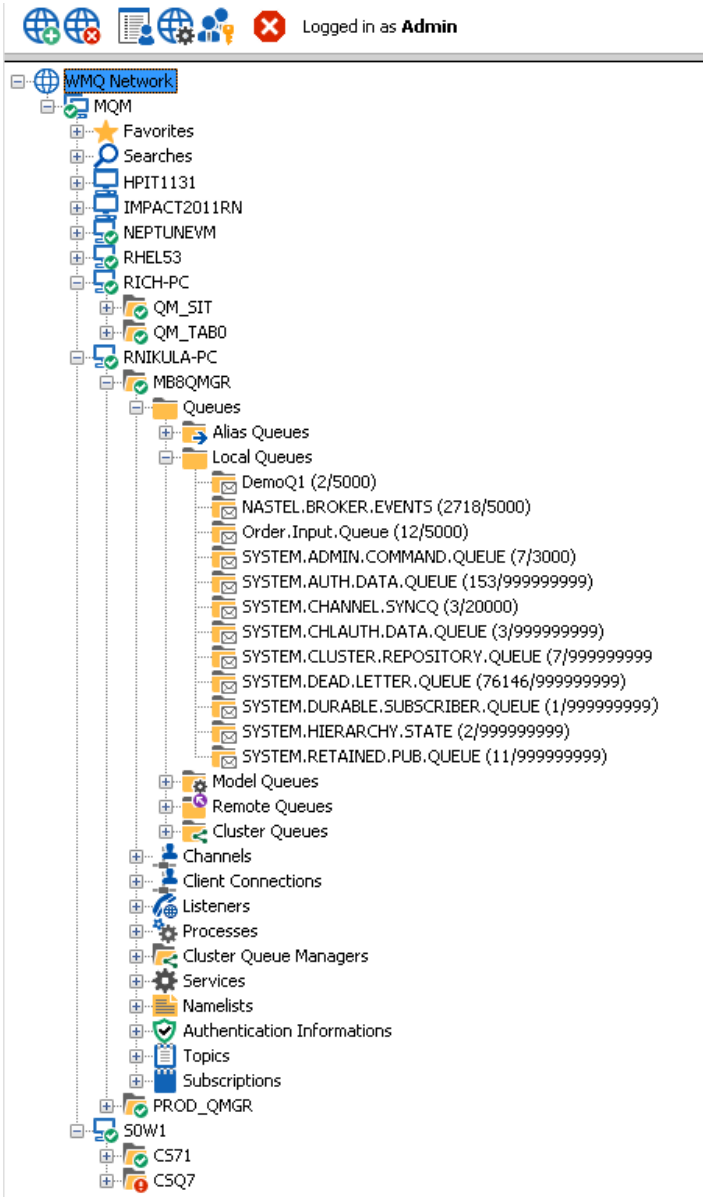
Access to all MQ Objects



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

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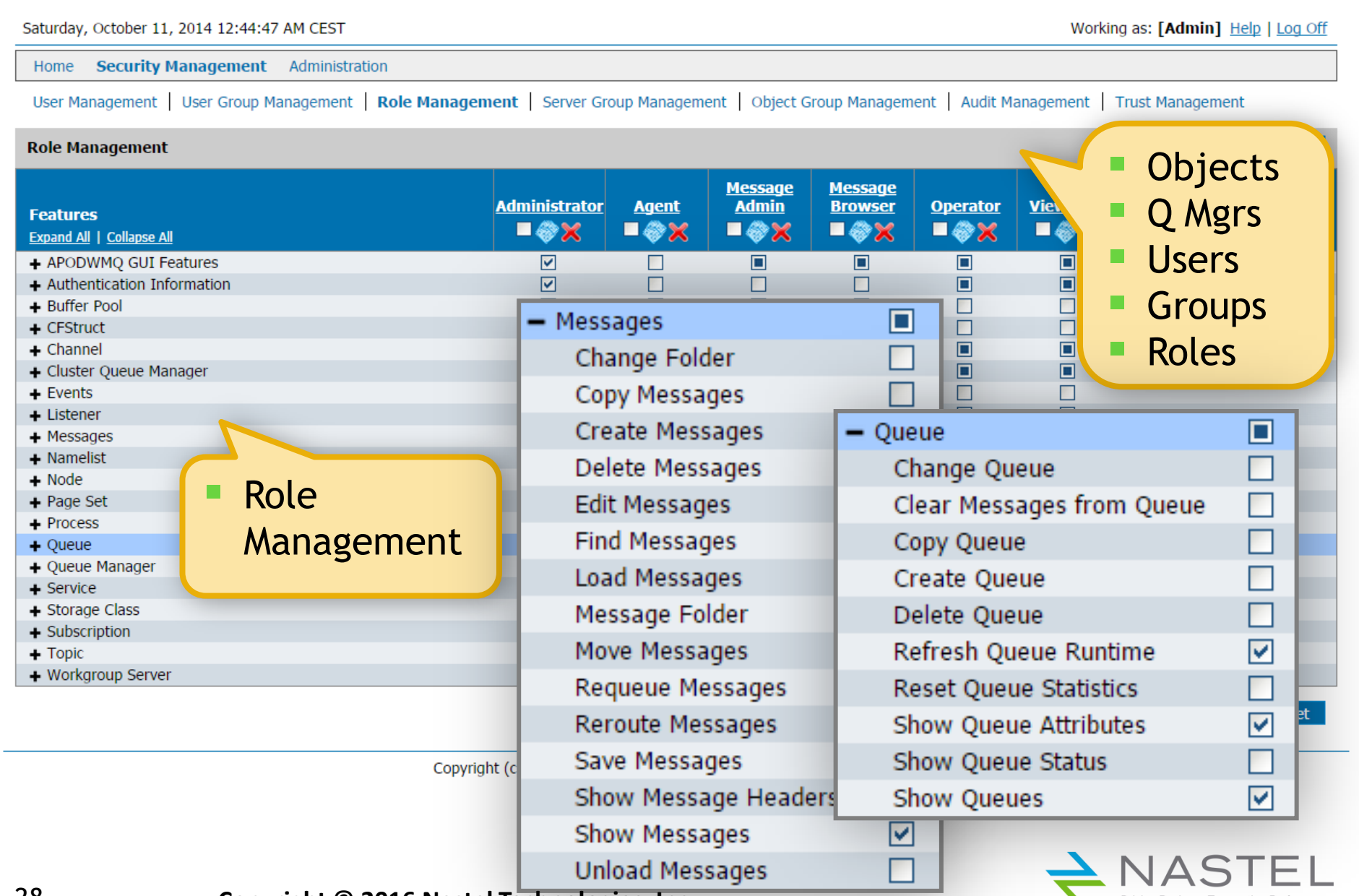
Security Management



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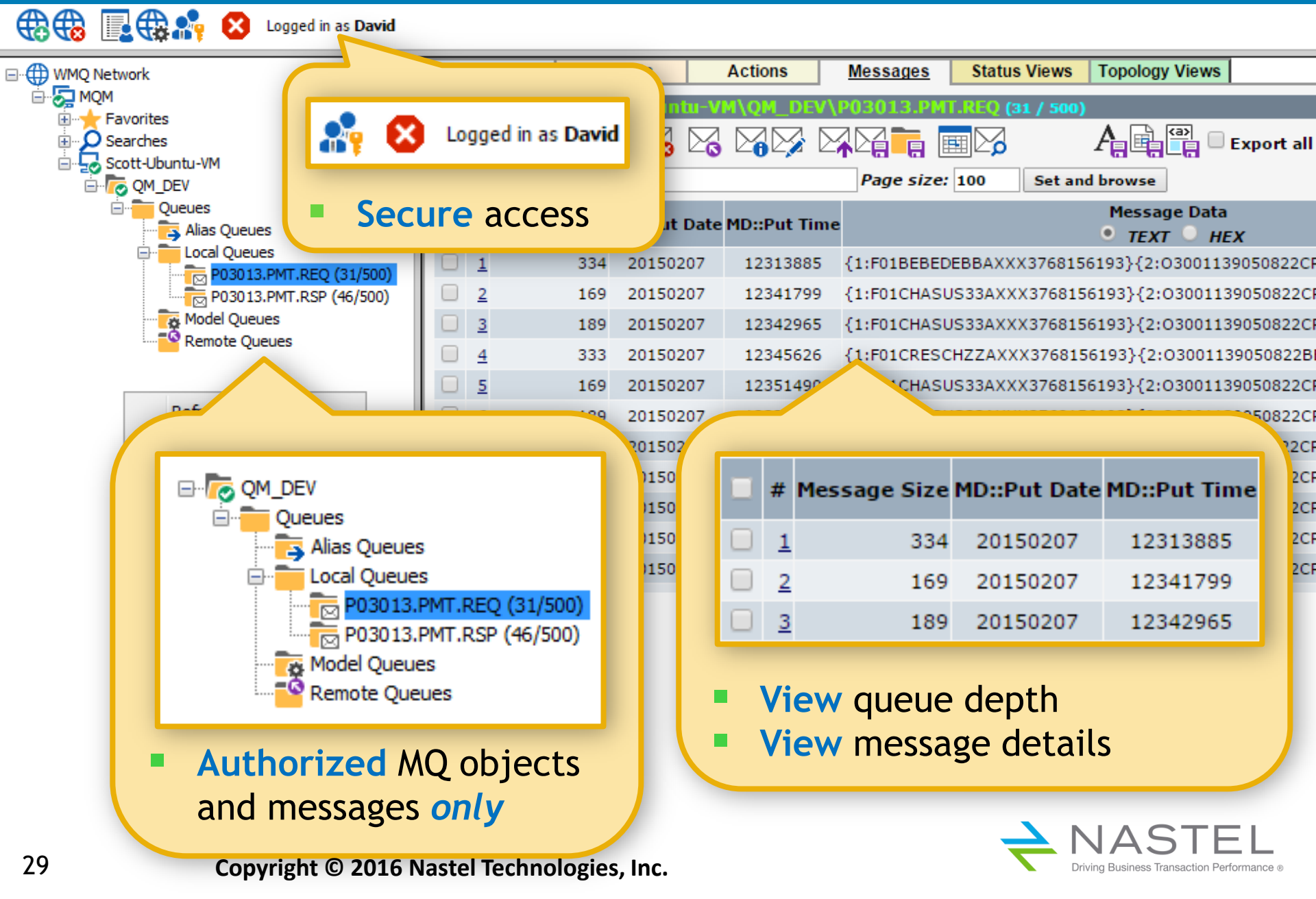
Secure access … for viewing authorized objects



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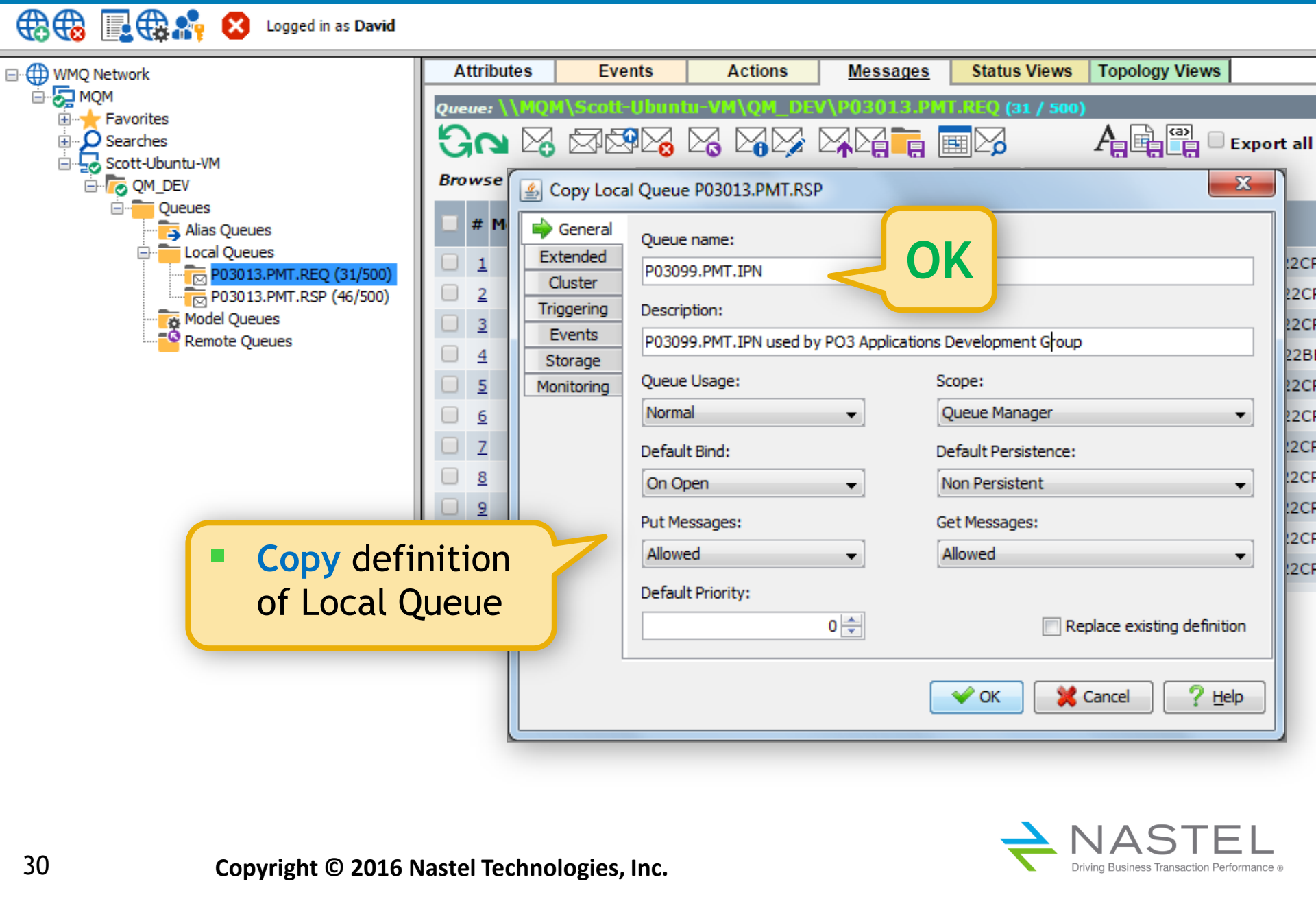
Secure access … for authorized actions



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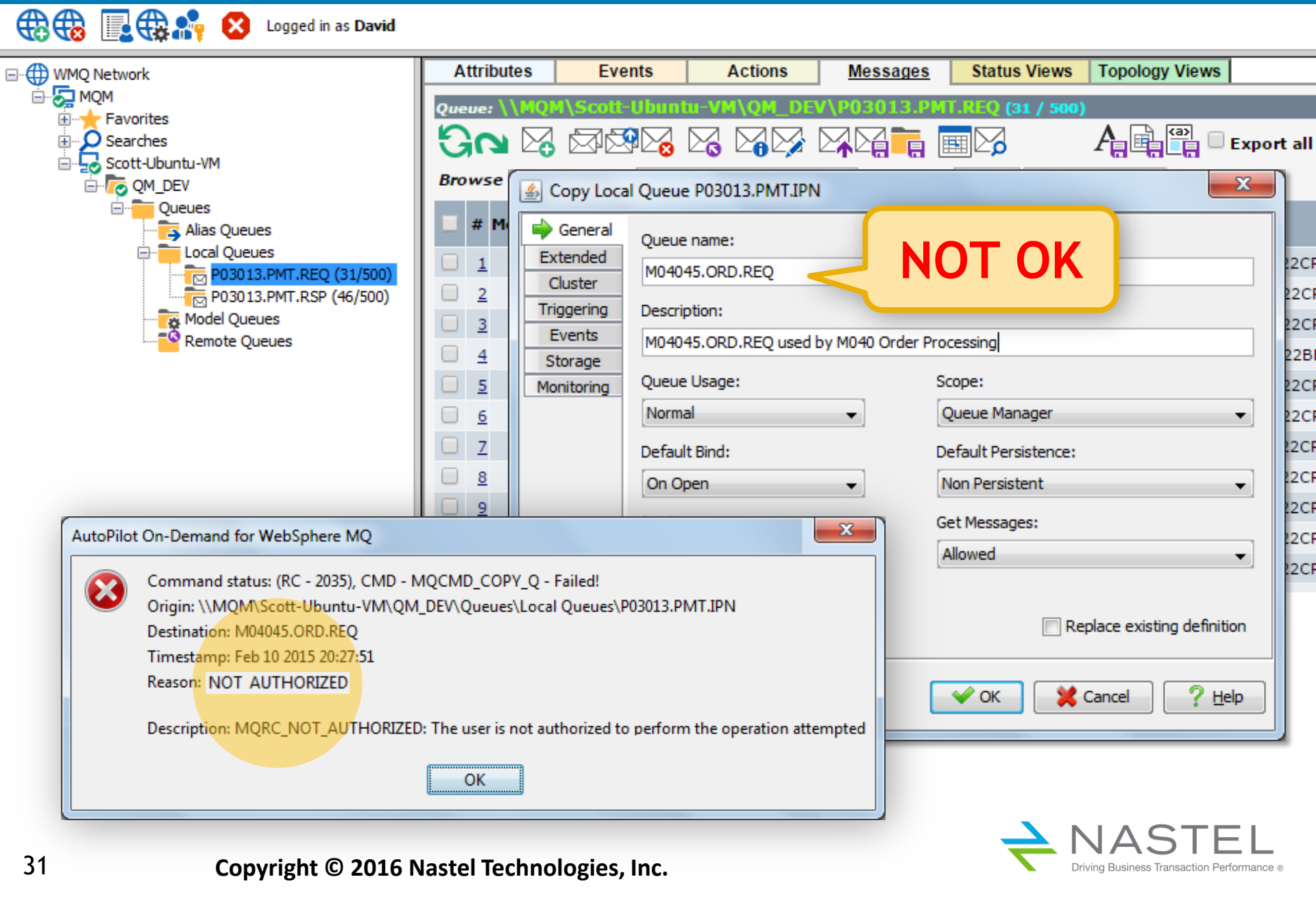
Secure access … for authorized actions



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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**

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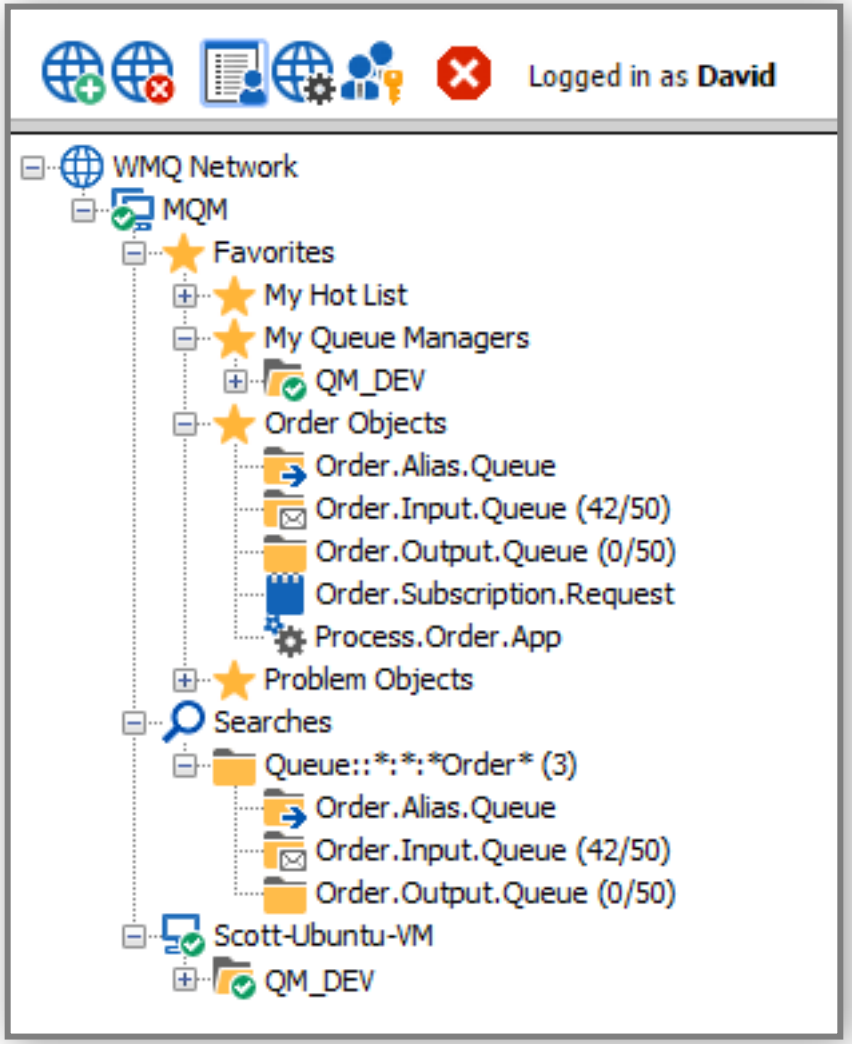
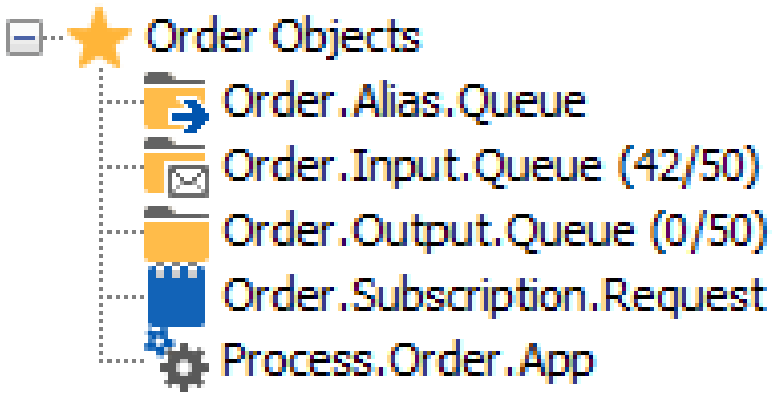
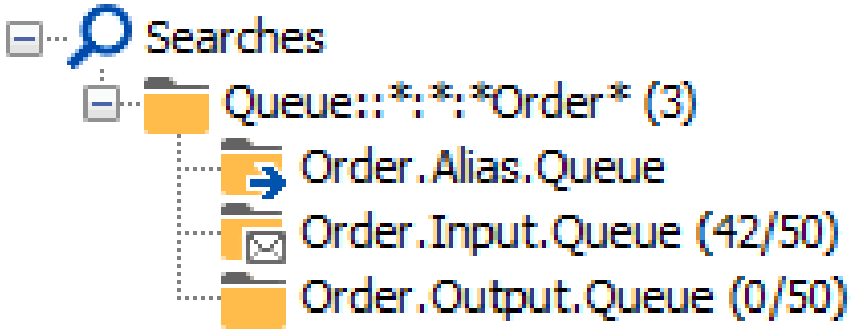
Favorites and Searches







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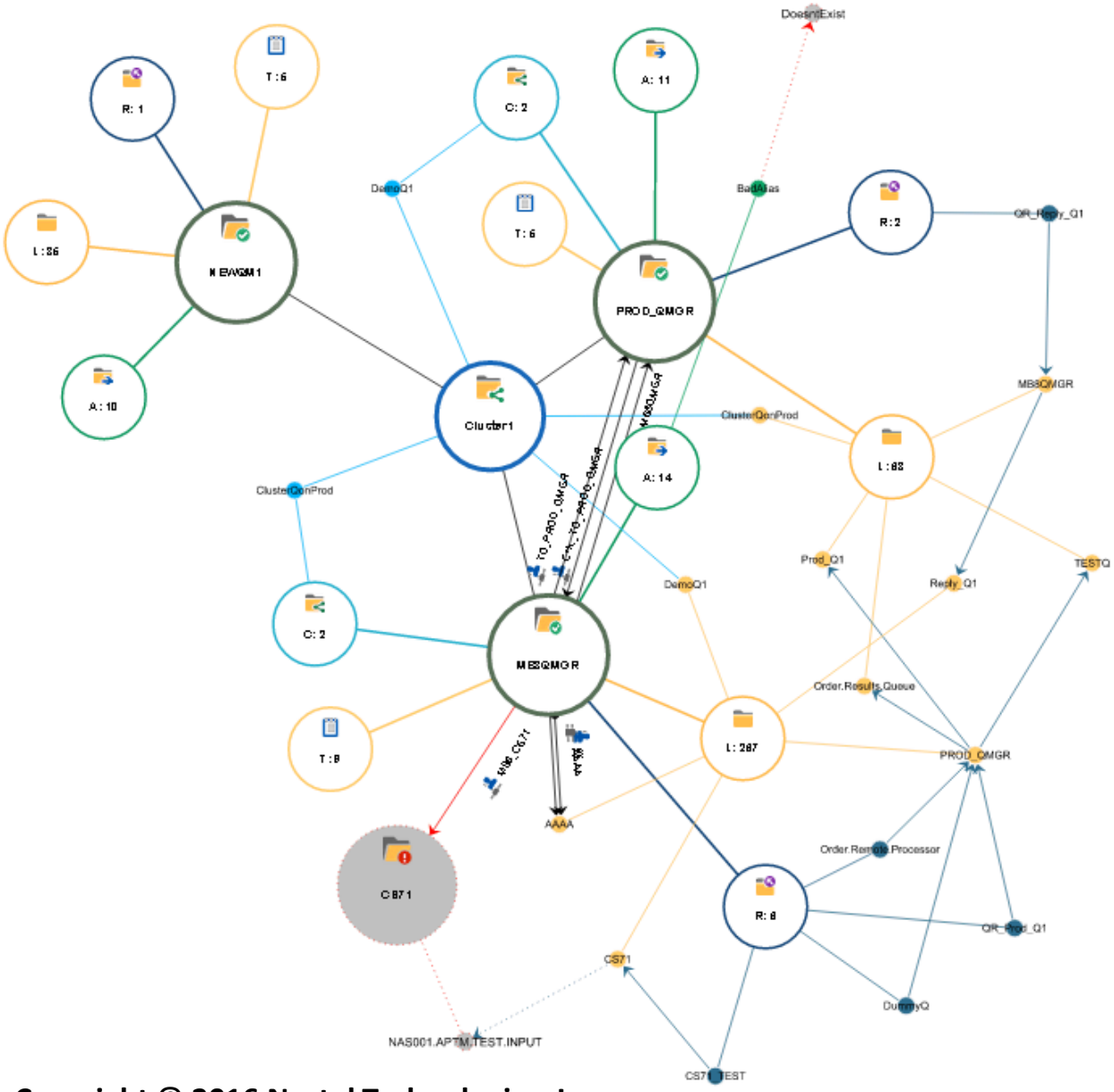
Queue Manager Topology



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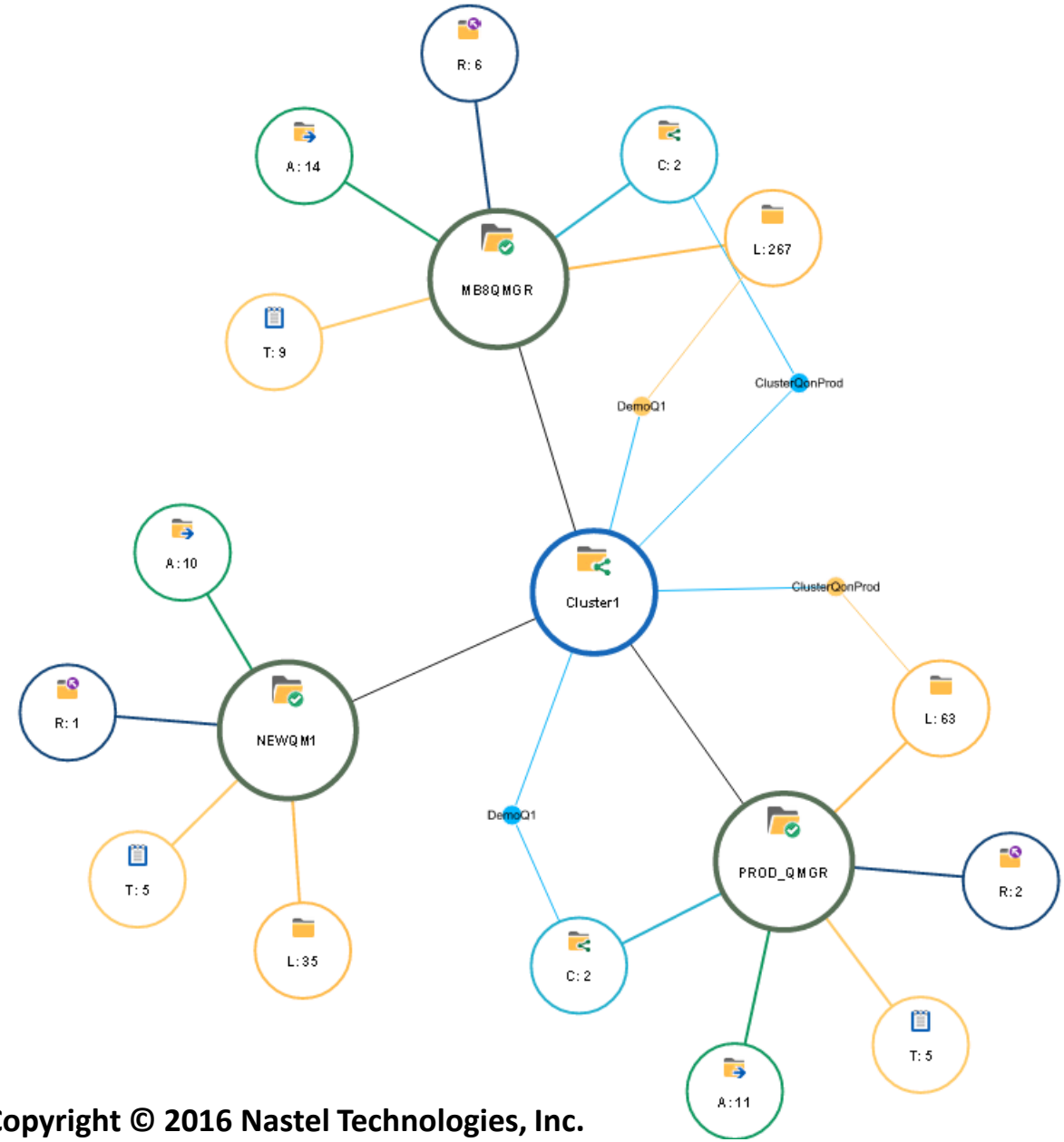
Cluster Topology



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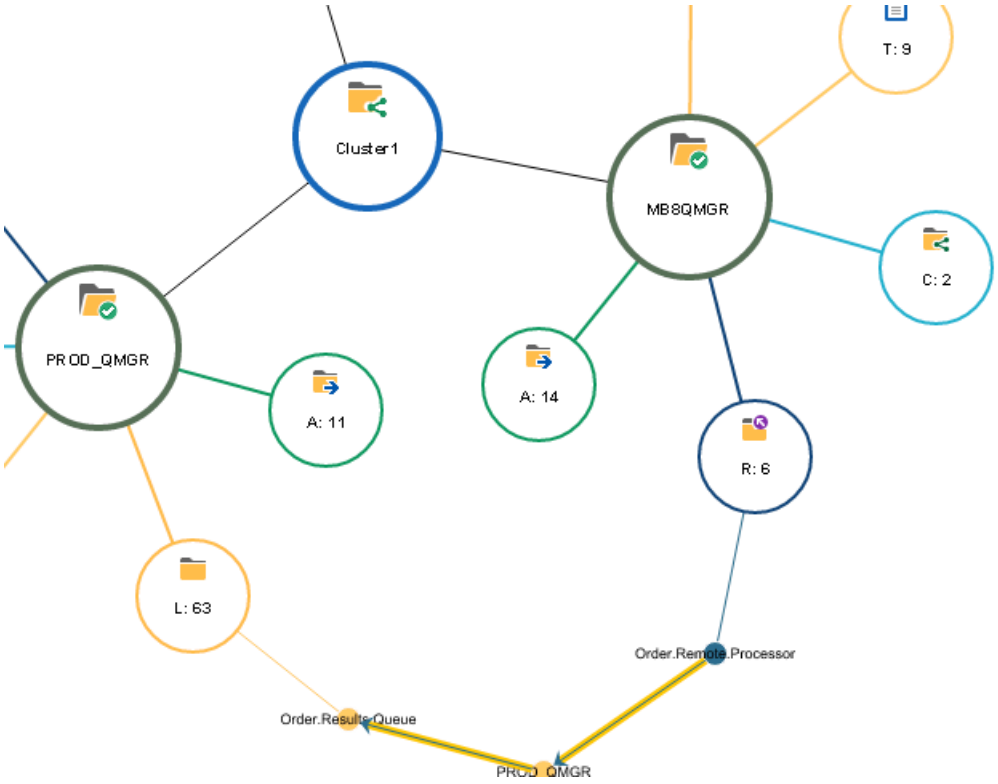
Invalid Definitions / Message Flow



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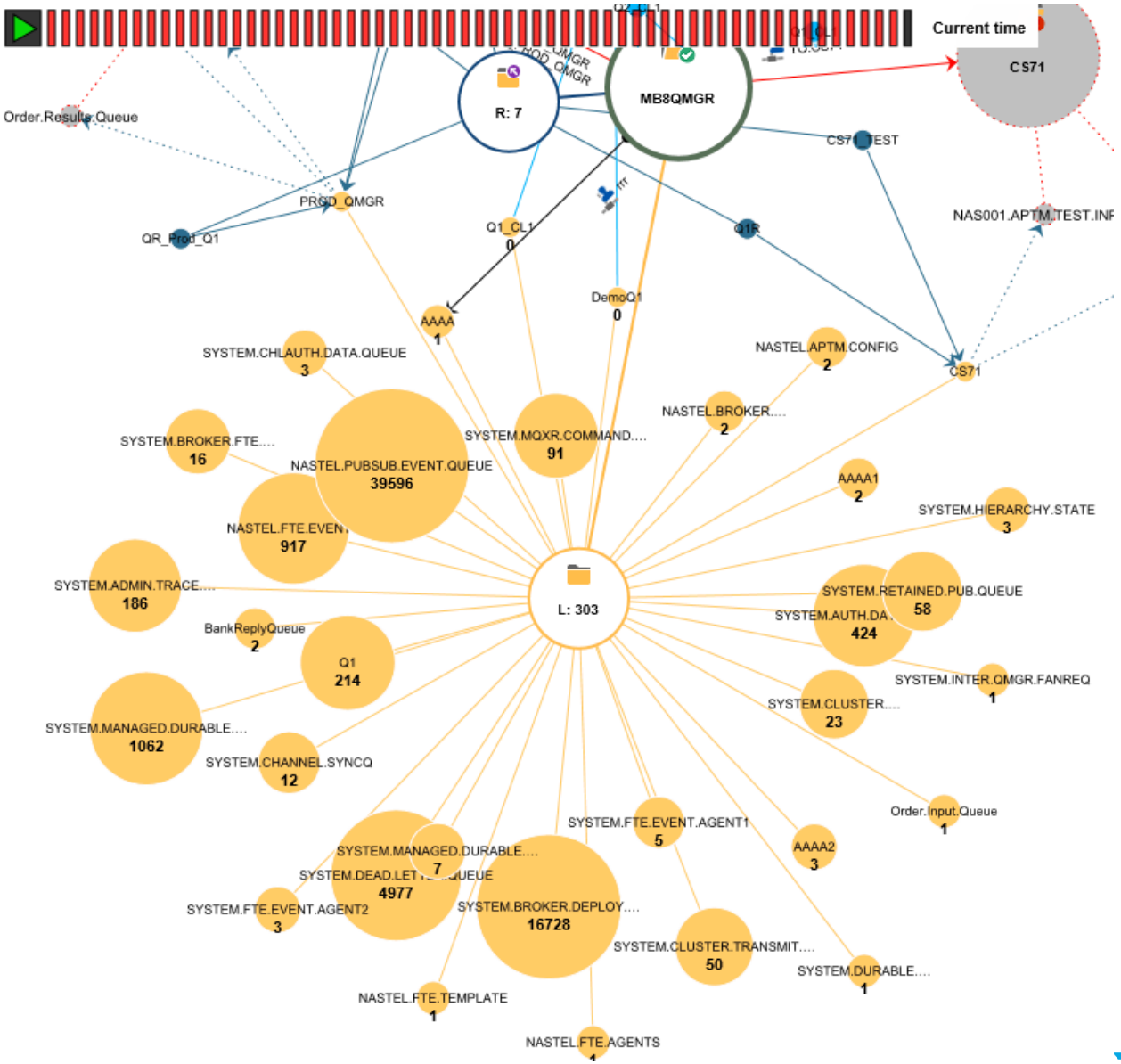
Topology Activity and Animation



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Message Tracking

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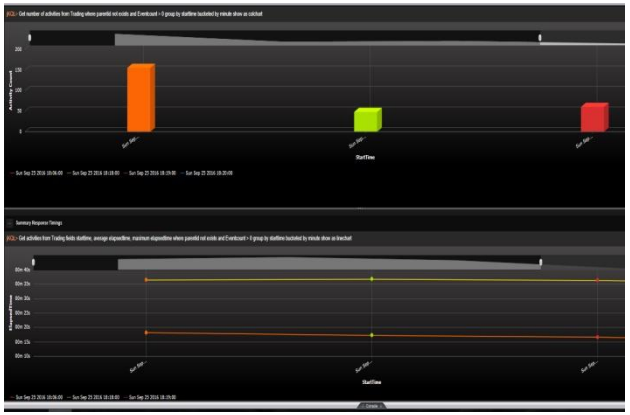
WebSphere® MQ MESSAGE TRACKING

- 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



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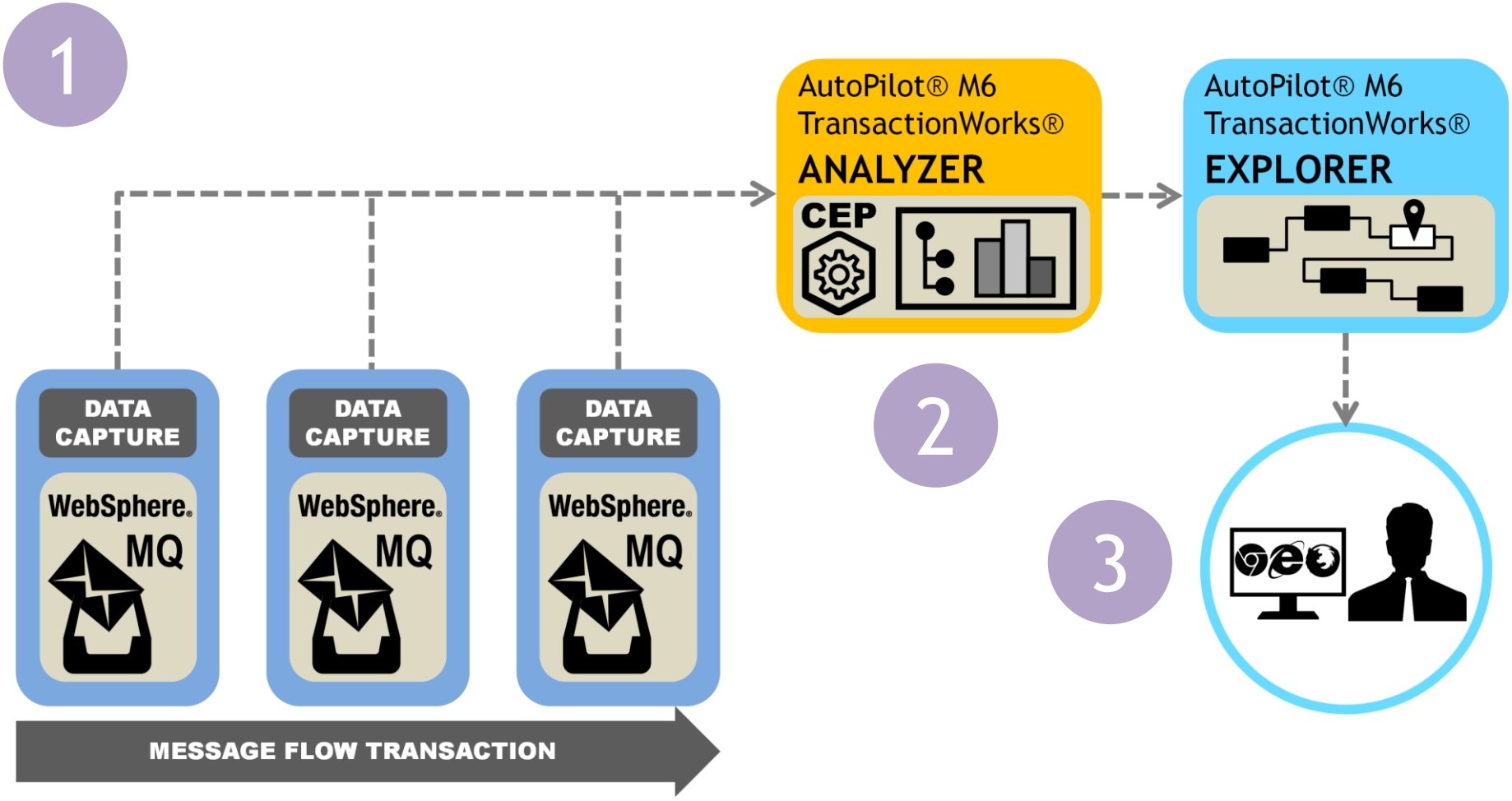
Message Flow Tracking



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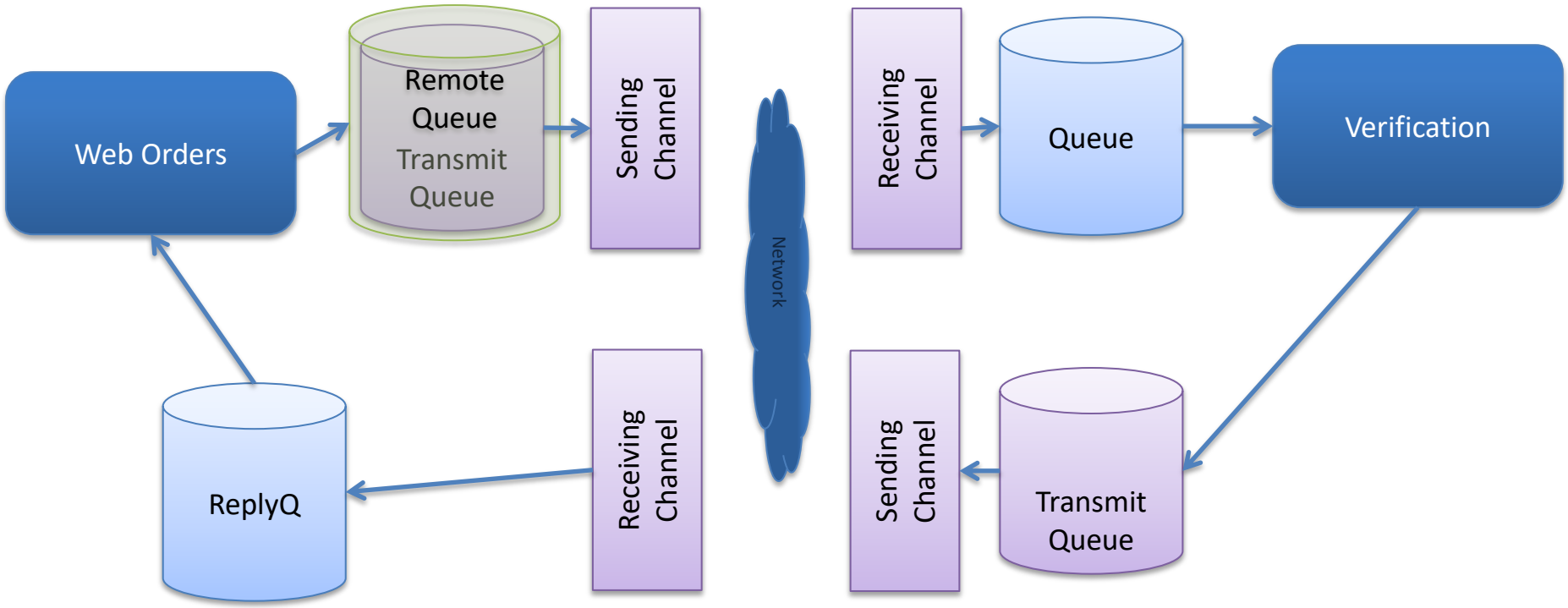
Simple WMQ Example



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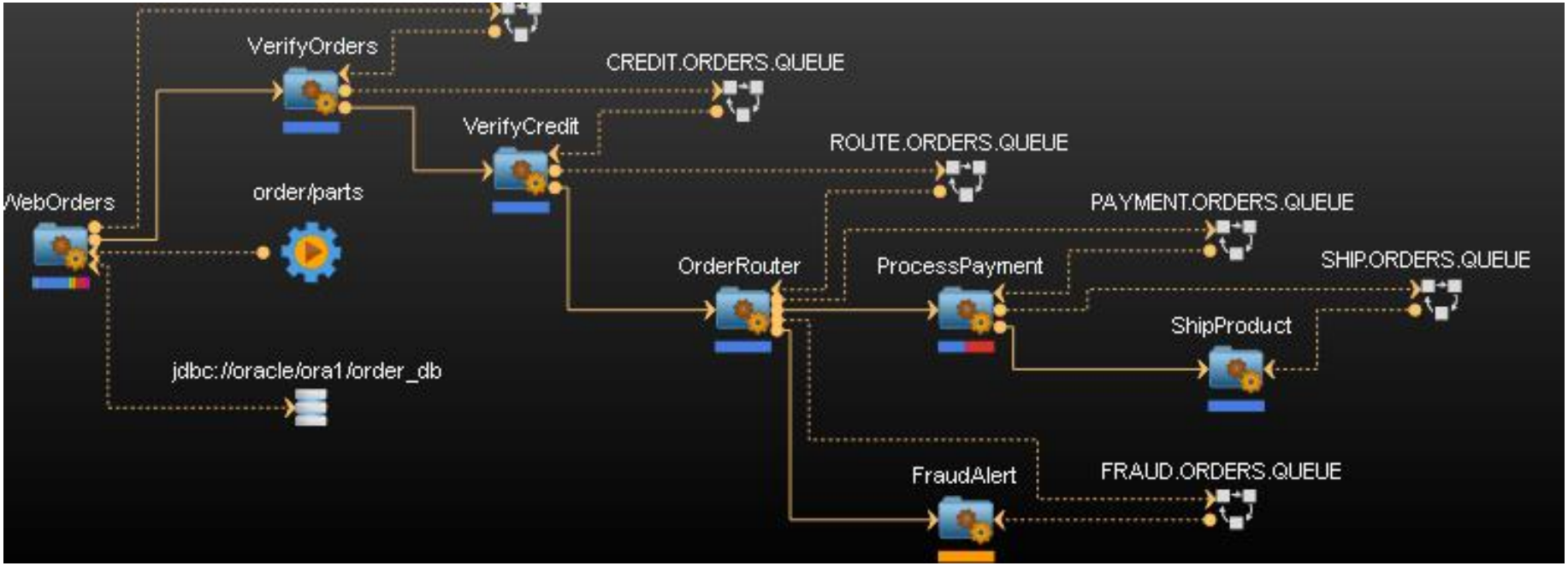
Message Tracking



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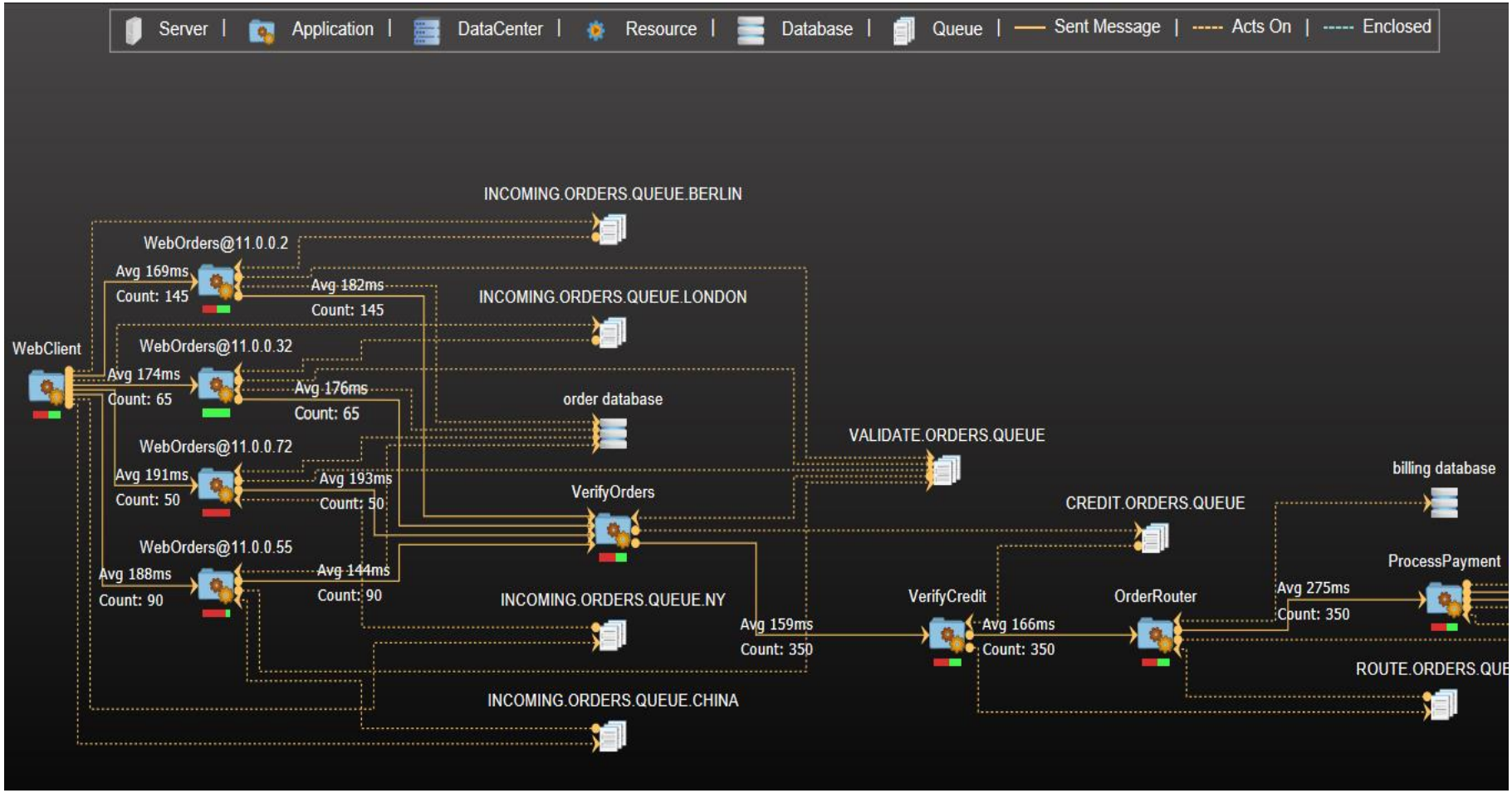
Message Flow Transaction Monitoring



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Another View of the Message Flow

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

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Tracking Application Activity

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

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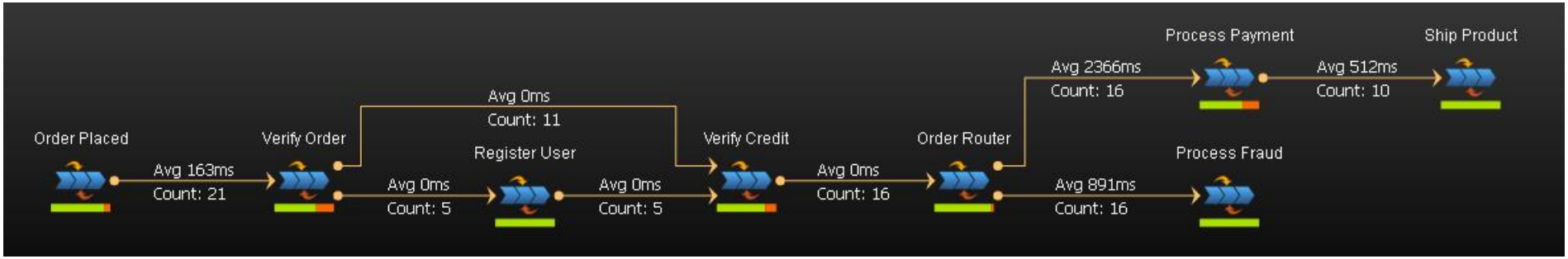
Taking a Business View



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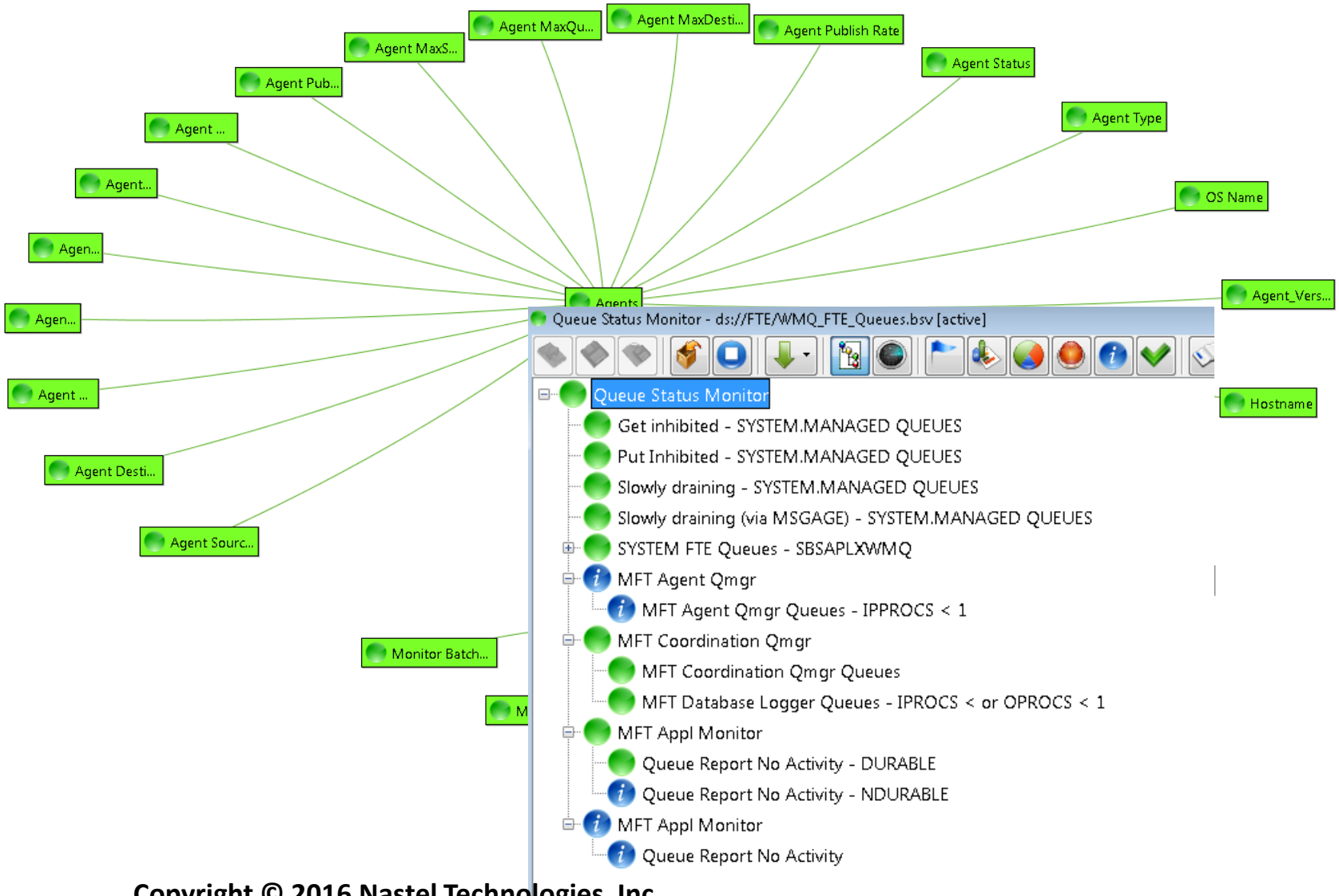
FTE / MFT



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Monitoring Message Broker Statistics

Message Flow Level (for the flow)

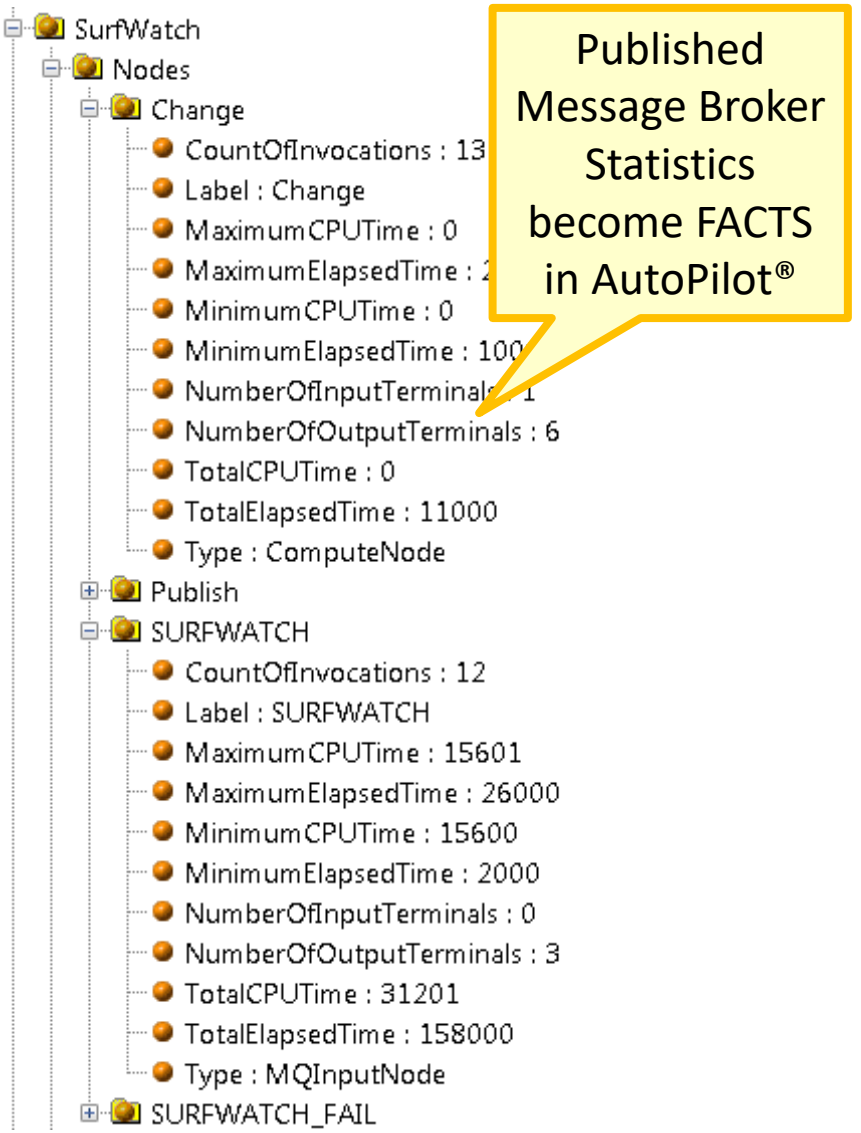
- Total Messages Processed
- Total Messages in Error
- CPU Time Spent
- Message Statistics

Node Level (for each processing node)

- Invocations
- CPU Time
- Information

Thread Level (for each thread)

- Messages Processed
- CPU Time Spent
- Message Statistics



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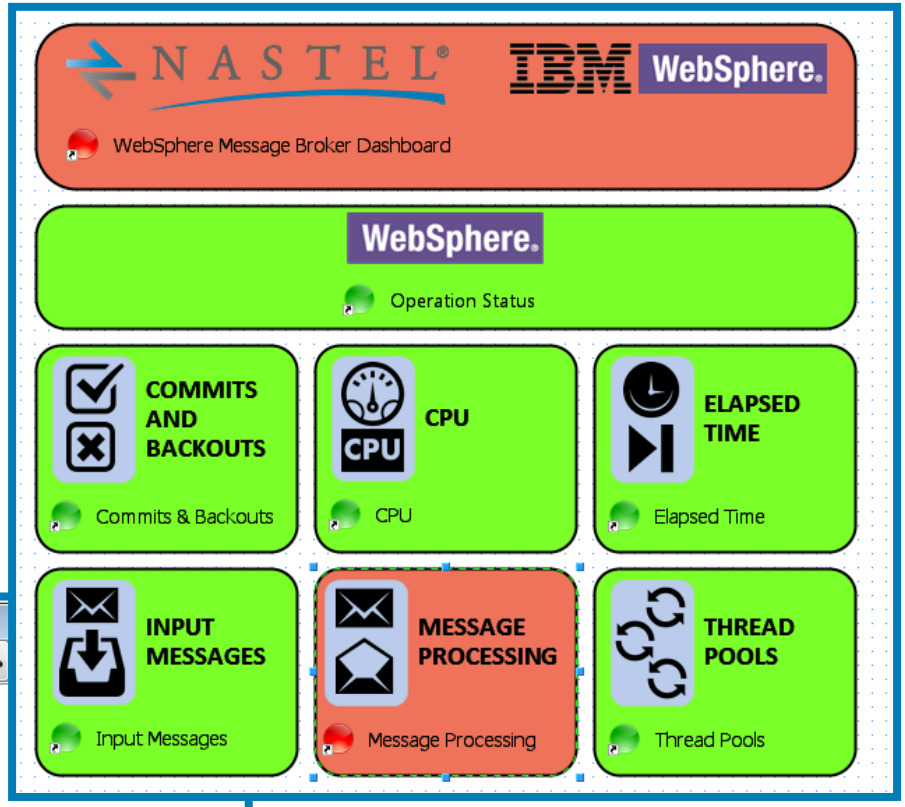
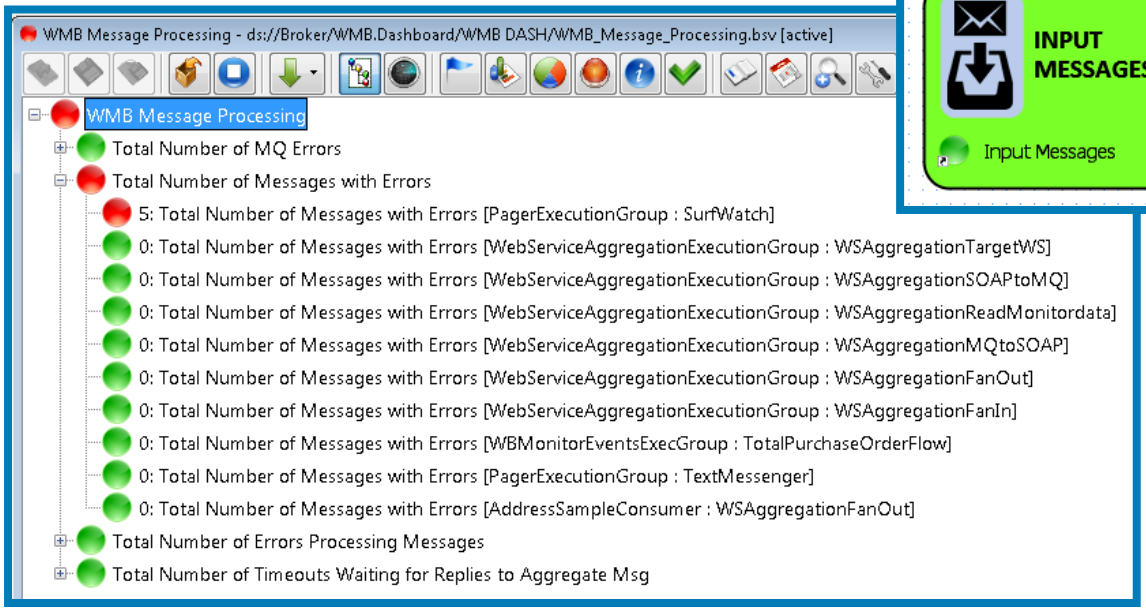
Monitoring Message Broker

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

  (Business Views)

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





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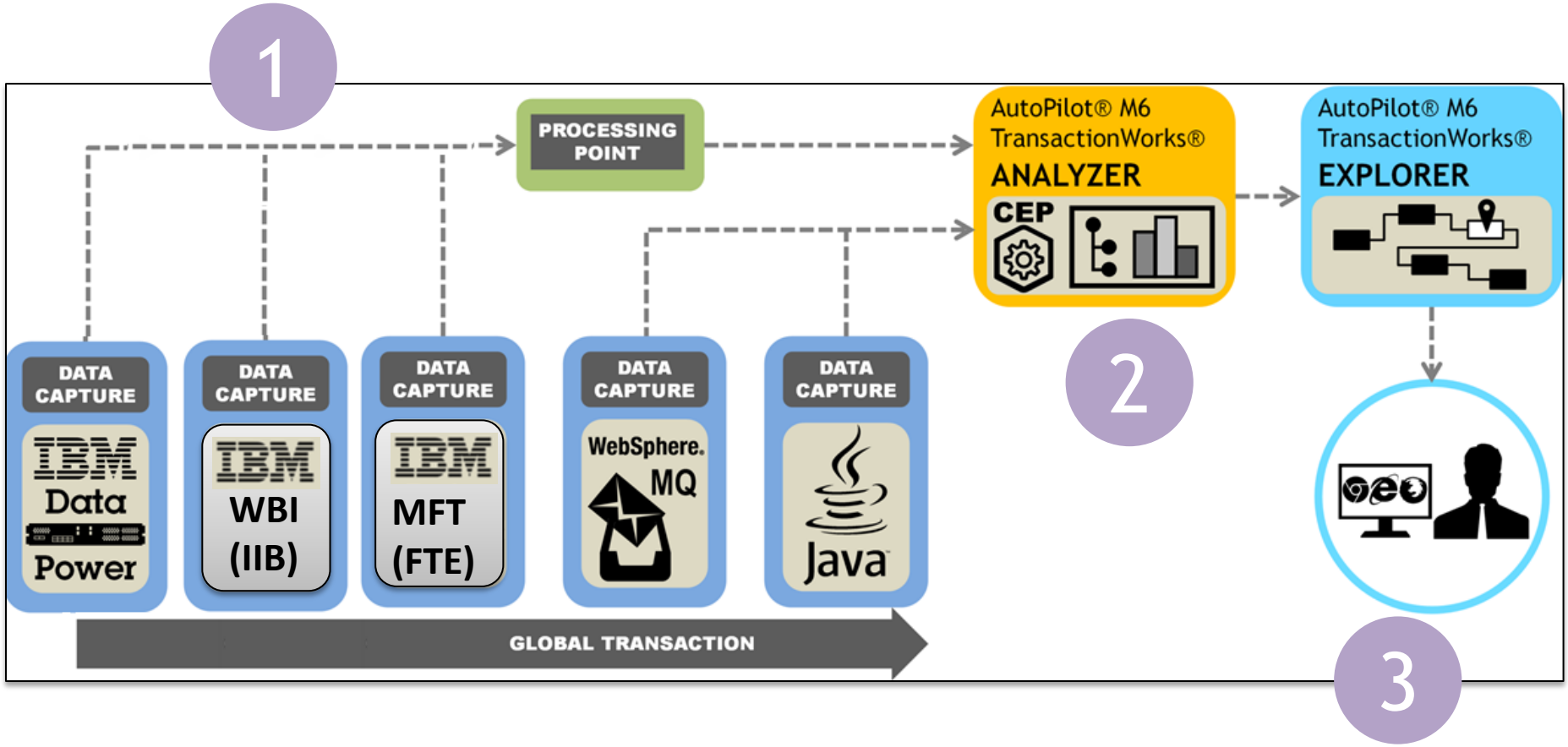
Other Transaction Monitoring



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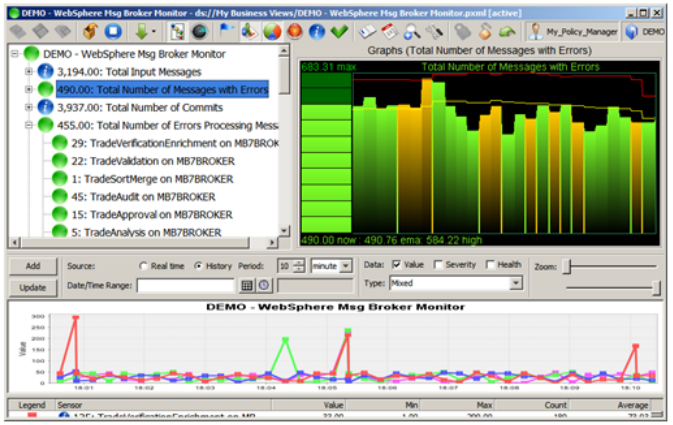
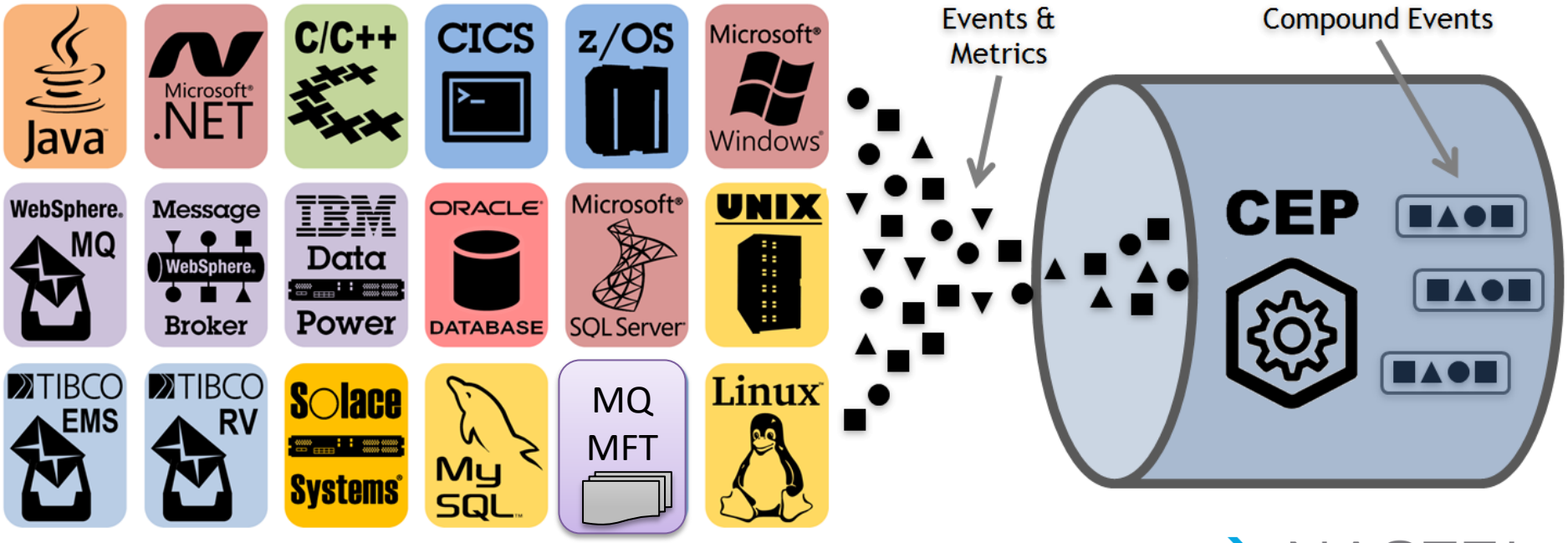
AutoPilot® M6 Proactive Performance Management

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





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