



Building an Enterprise Service Bus with WebSphere Message Broker for z/OS



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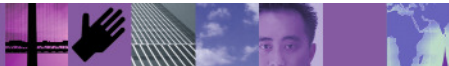
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Agenda

- WebSphere Message Broker Overview
- WebSphere Message Broker as an ESB
- What's new in WebSphere Message Broker for z/OS V6.1



SOA: Unlock business value.
→ New software and services.

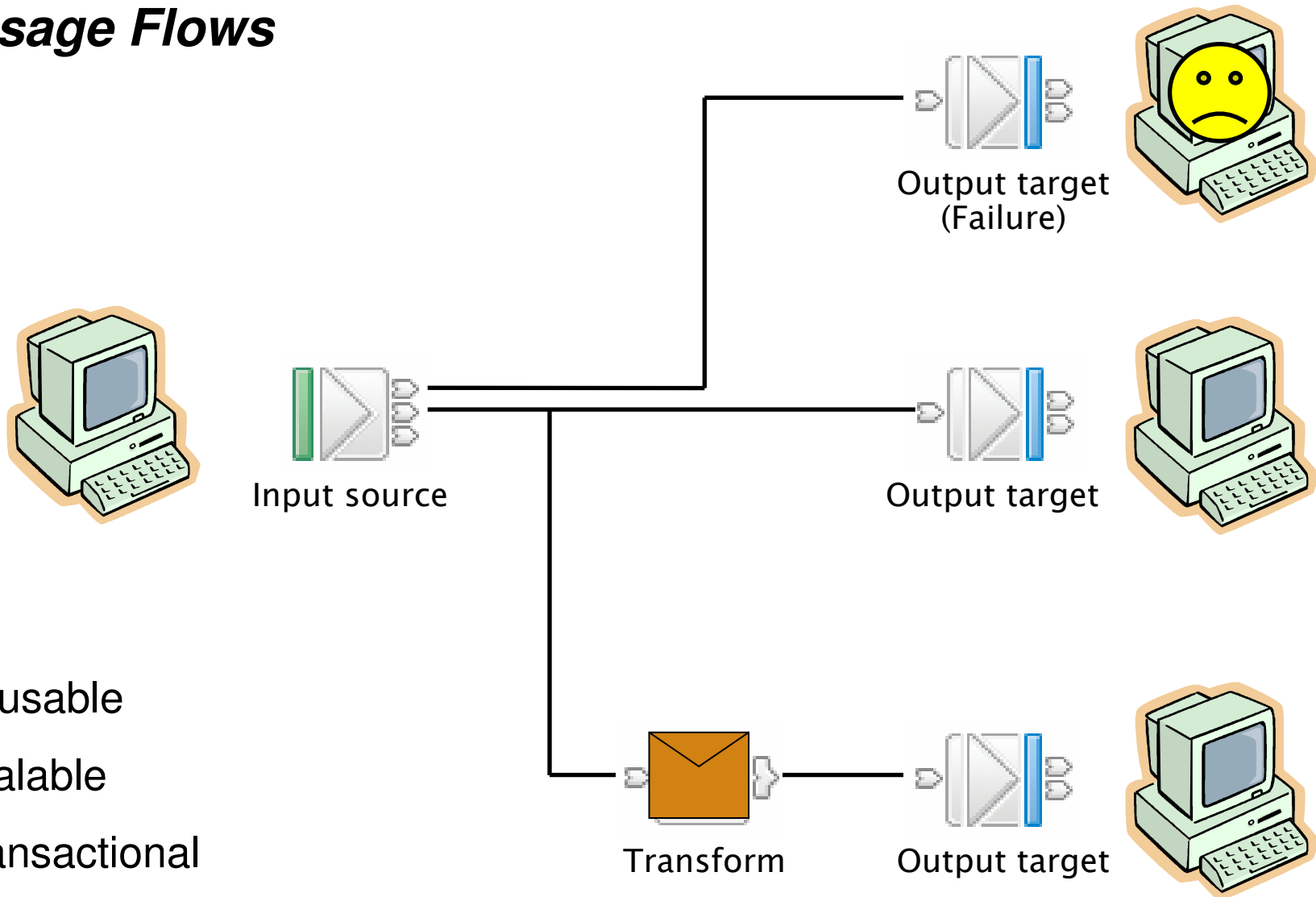


WebSphere Message Broker on System z at a glance

- Universal Connectivity
 - Simplify application connectivity to provide a flexible and dynamic infrastructure
- Routes and transforms messages **FROM** anywhere, **TO** anywhere
 - Supports a wide range of protocols
 - MQ, JMS 1.1, HTTP(S), Web Services, File, EIS (SAP, PeopleSoft...), TCP/IP, User Defined
 - Supports a broad range of data formats
 - Binary (C/COBOL), XML, Industry (SWIFT, EDI, HIPAA...), User Defined
 - Interactions and Operations
 - Route, Filter, Transform, Enrich, Monitor, Distribute, Decompose, Correlate, Detect...
- Simple programming
 - Message Flows to describe application connectivity comprising...
 - Message Nodes which encapsulate required integration logic which operate on...
 - Message Tree which describes the data in a format independent manner
 - Transformation options include Graphical mapping, Java, ESQL, XSL and WTX
- Operational Management and Performance
 - Extensive Administration and Systems Management facilities for developed solutions
 - z/OS and z/Linux natively supported
 - Offers performance of traditional transaction processing environments



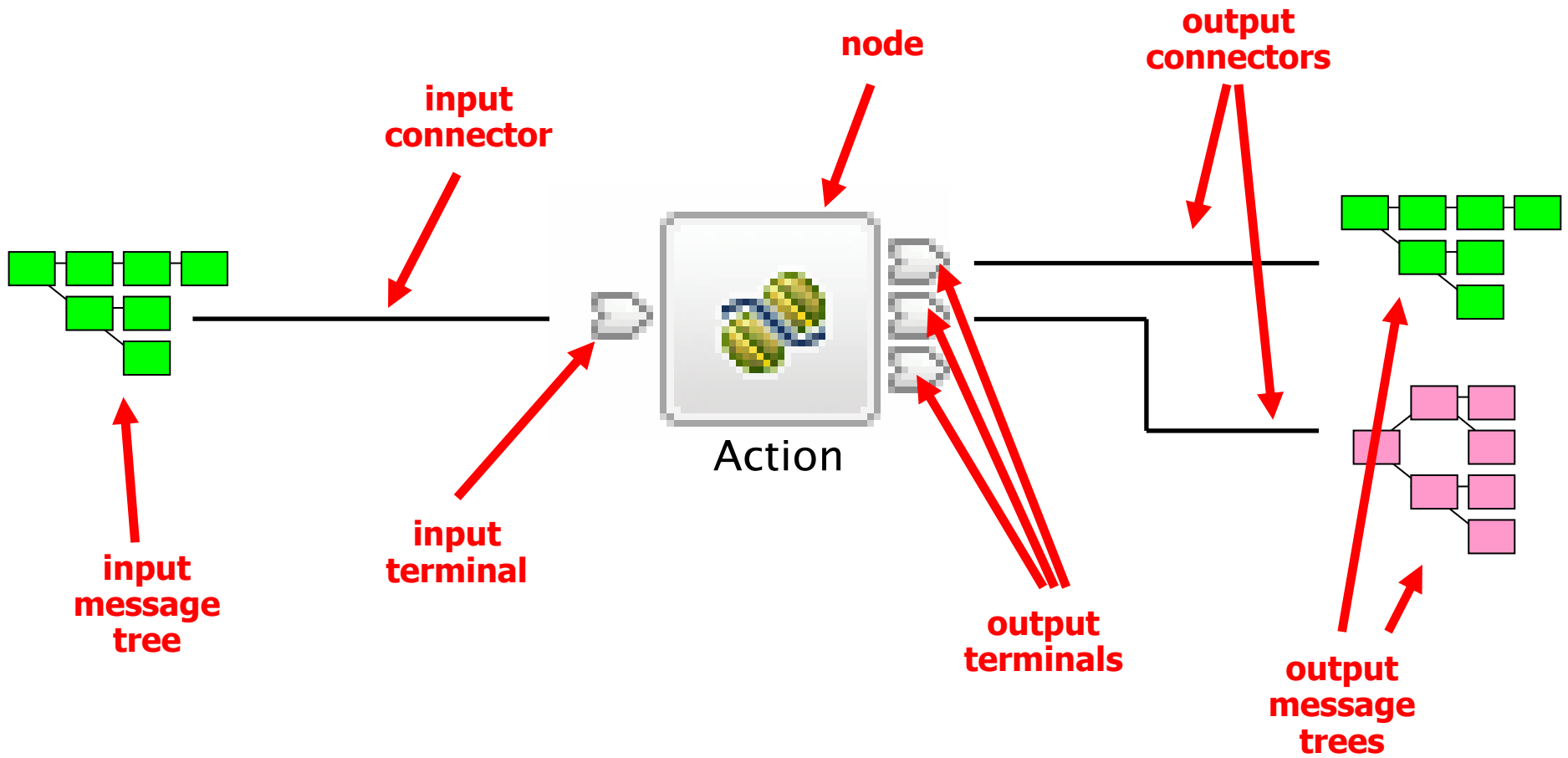
Message Flows



- Reusable
- Scalable
- Transactional

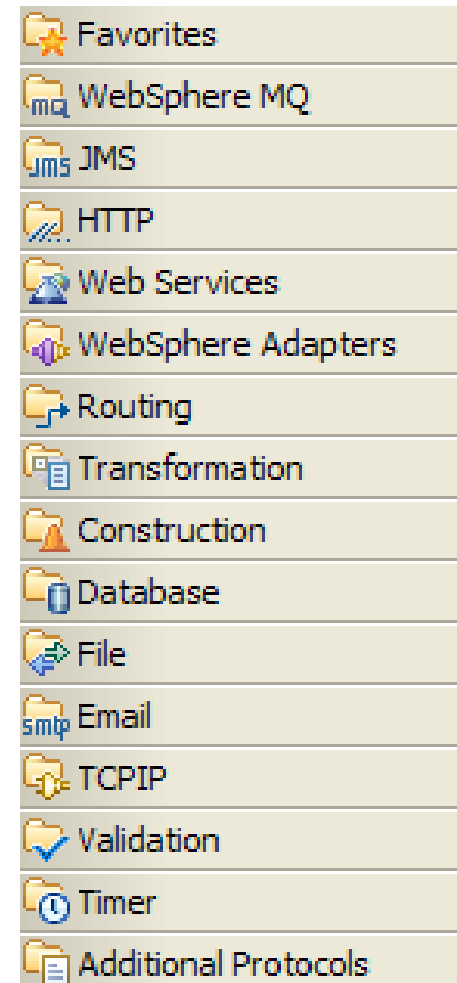


Message Nodes



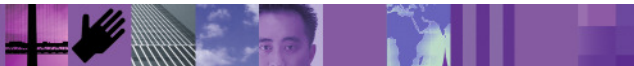
Nodes

- The building blocks of message flows
- Each node type performs a different (input, output or processing) action
- Many different node types
 - Grouped into logical categories in the message flow editor

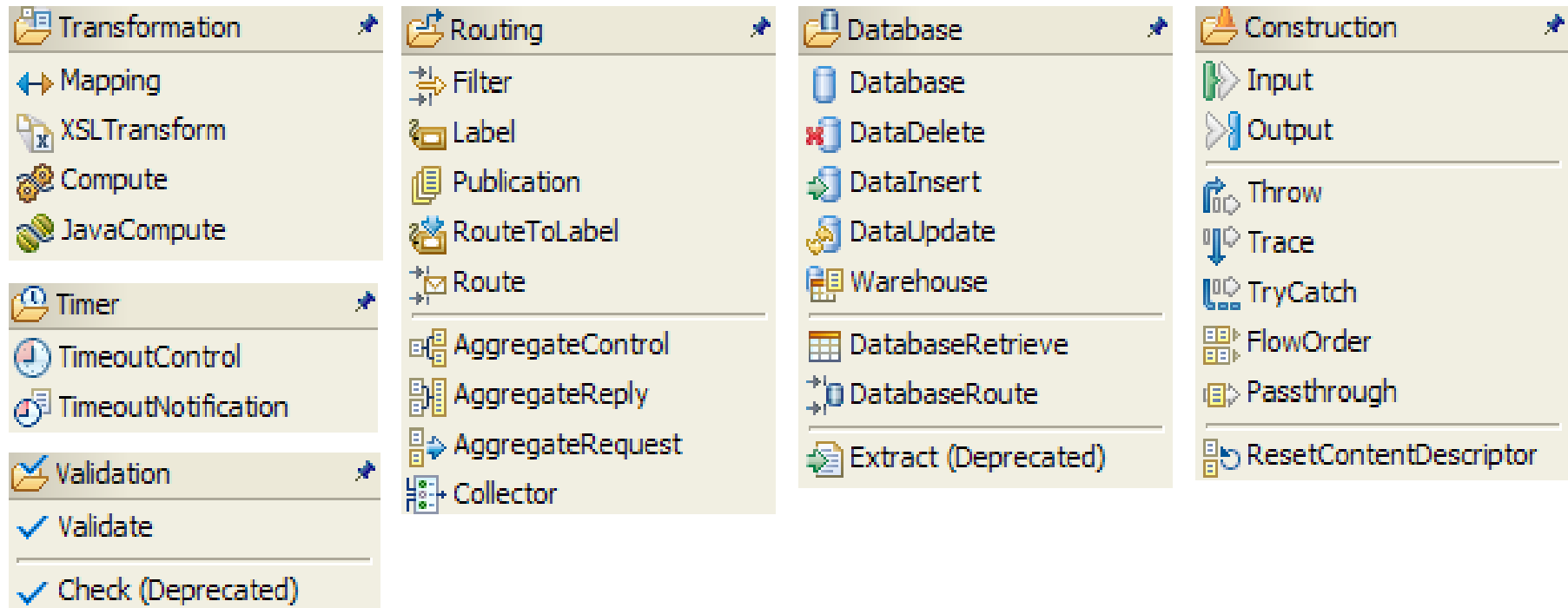


Lots of Nodes are Built in [1]

<p>WebSphere MQ</p> <ul style="list-style-type: none"> MQInput MQOutput MQReply MQGet MQHeader MQOptimizedFlow MQeInput (Deprecated) MQeOutput (Deprecated) 	<p>Web Services</p> <ul style="list-style-type: none"> SOAPInput SOAPReply SOAPRequest SOAPAsyncRequest SOAPAsyncResponse SOAPEnvelope SOAPExtract Registry Lookup Endpoint Lookup 	<p>JMS</p> <ul style="list-style-type: none"> JMSInput JMSOutput JMSReply JMSHeader JMSMQTransform MQJMSTransform 	<p>WebSphere Adapters</p> <ul style="list-style-type: none"> PeopleSoftInput PeopleSoftRequest SAPInput SAPRequest SiebelInput SiebelRequest TwineBallInput TwineBallRequest
<p>File</p> <ul style="list-style-type: none"> FileInput FileOutput 	<p>HTTP</p> <ul style="list-style-type: none"> HTTPInput HTTPReply HTTPRequest HTTPHeader 	<p>TCPIP</p> <ul style="list-style-type: none"> TCPIPClientInput TCPIPClientOutput TCPIPClientReceive TCPIPServerInput TCPIPServerOutput TCPIPServerReceive 	<p>Additional Protocols</p> <ul style="list-style-type: none"> SCADAInput SCADAOutput Real-timeInput Real-timeOptimizedFlow



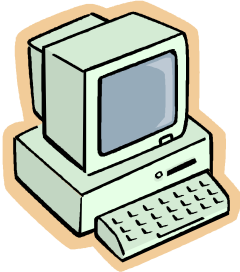
Lots of Nodes are Built In [2]



- Many other nodes available through product extensions and supportpacs
 - E.g. WebSphere TX, CICS, VSAM, QSAM
- Write your own User-Defined Nodes in C or Java



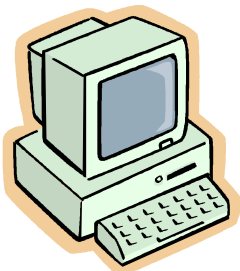
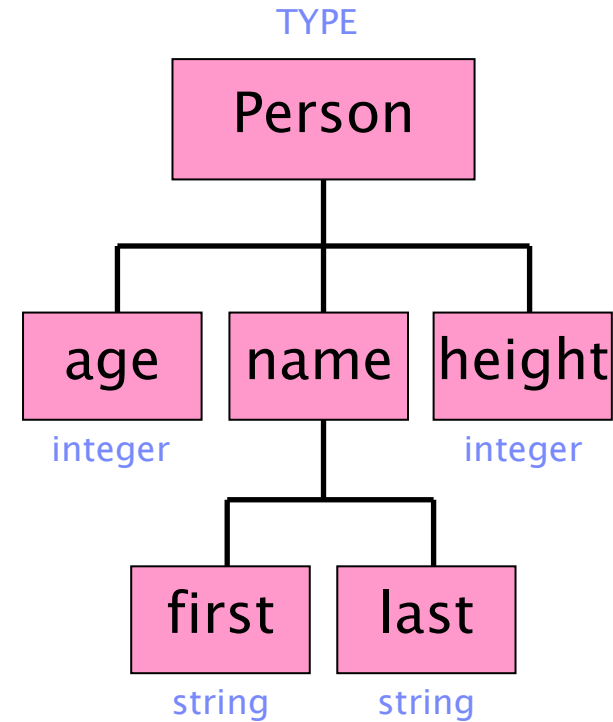
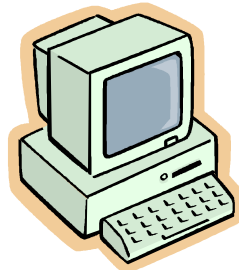
The Logical Message Model – Message Sets



```
<Person age='32' height='172'>
  <name>
    <first>Fred</first>
    <last>Smith</last>
  </name>
</Person>
```

```
struct {
  int height;
  int age;
  char firstname[24];
  char lastname[24];
} Person;
```

172	32	Fred	Smith
-----	----	------	-------



PER + 172 + 32 + Fred Smith

Message Processing Examples



DatInsert

```
IF Body.Person.height > 183 THEN
  INSERT INTO Database.TallPeople
    (Name, Height, Age)
  VALUES (Body.Person.Name,
    Body.Person.height,
    Body.Person.age);
ENDIF;
```



Compute

```
IF (XML format required) THEN
  OutputRoot.Properties.MessageFormat = 'XML';
ELSE IF (custom format)
  OutputRoot.Properties.MessageFormat = 'CWF';
ELSE IF (SWIFT format)
  OutputRoot.Properties.MessageFormat = 'TDS';
ENDIF;
```



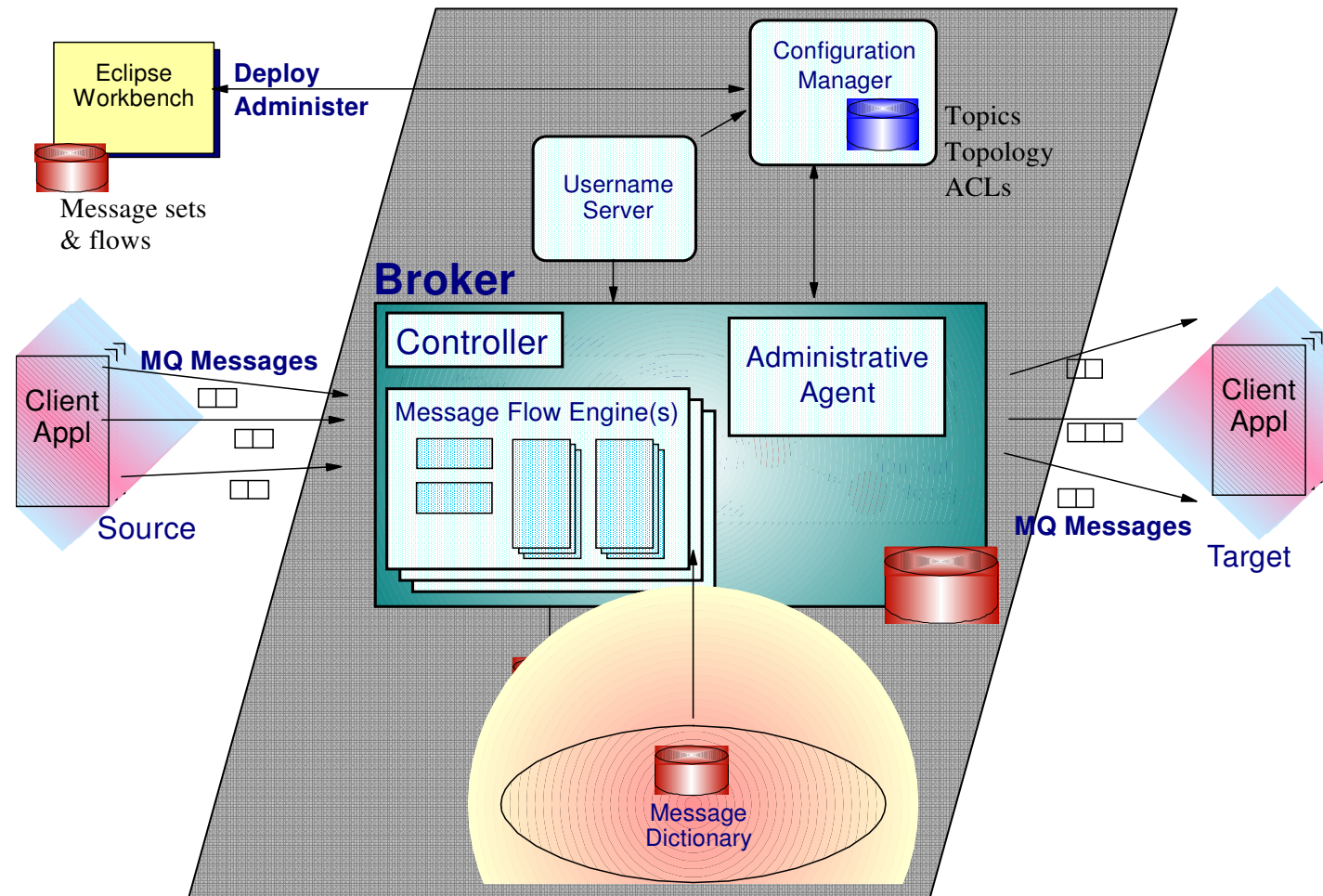
Java Compute

```
public class jcn extends MbJavaComputeNode {
  public void evaluate(MbMessageAssembly assembly)
    throws MbException
  {
    ...
    String personAge =
    (String)assembly.getMessage().evaluateXPath("/Body/Person/Age");
    ...
  }
}
```

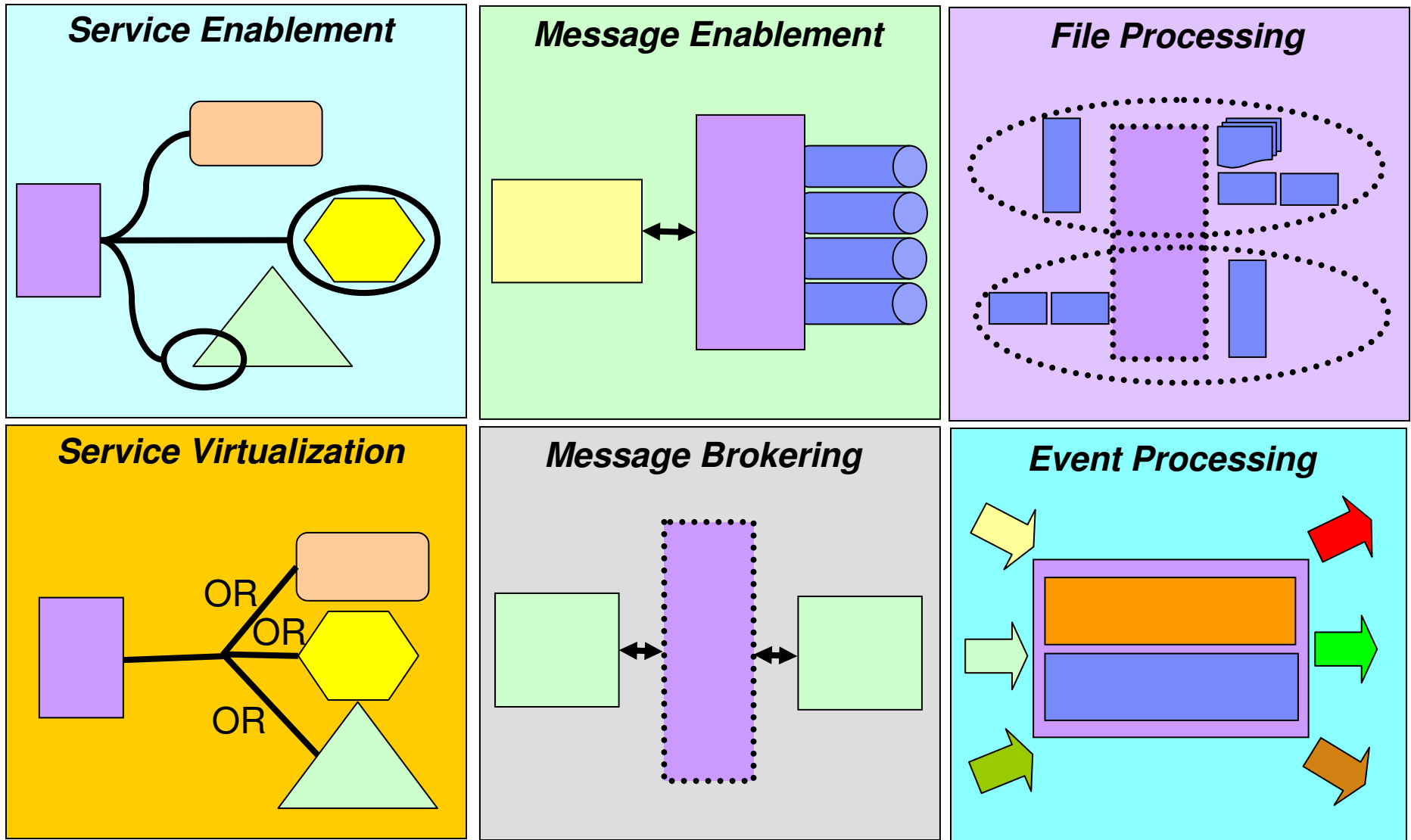


Message Broker Overview

Message Sets and flows are built in Eclipse and deployed to the runtime broker. The user name server sends principals to the Config Manager and broker. The z/OS Broker and Config Manager have full family capabilities, as well some z/OS specific features.



Usage Patterns with Message Broker



Agenda

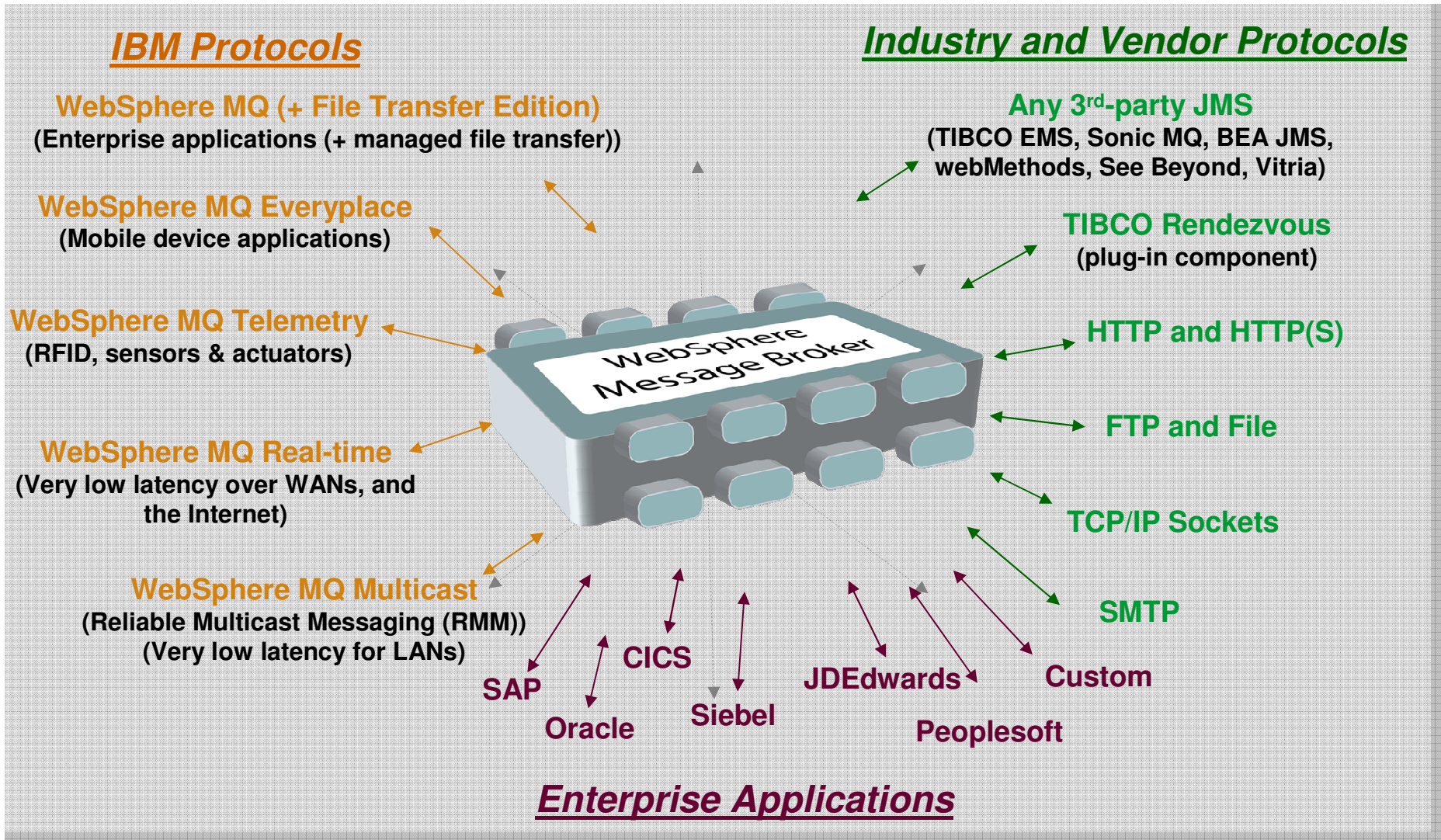
- WebSphere Message Broker Overview
- WebSphere Message Broker as an ESB
- What's new in WebSphere Message Broker for z/OS V6.1



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→ New software and services.

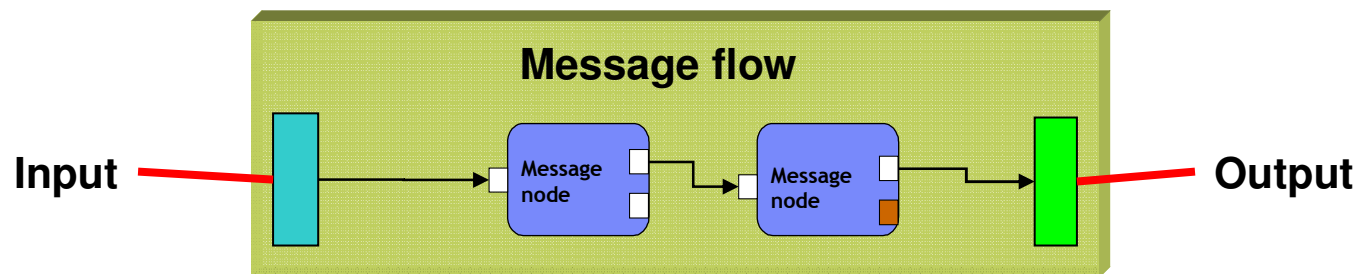


WebSphere Message Broker – Protocols and Applications



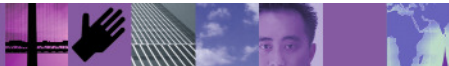
Concepts

- Broker = “container” for message flows
- Message flow = deployable unit of mediation, definition of ‘one-way’ mediation
 - Input = means of getting message into message flow
 - Output = means of getting message out of message flow
- Message node = atomic unit of message processing



Message Broker ESB Functions - Routing

- Ability to change or filter destination of messages
 - Support for one-way and request-response interaction patterns
 - Database, queue and in-memory caches for persisting transient state
 - Comprehensive composition and flow-of control capabilities
 - Branching, ordering, exception processing, tracing
 - Support for creation of new messages during processing
- Full range of messages can be routed and filtered
 - XML – for XML payloads (full schema support)
 - Record based – for COBOL, C payloads
 - Industry standard – SWIFT, EDI...
 - User defined – RYO formats
- Different routing and filtering rules
 - Message based
 - Message Header and Body routing are supported
 - External reference
 - Database lookup, PLUS in-memory cache for infrequently changing data
 - User algorithm
- Partial Parsing for efficient routing of large messages



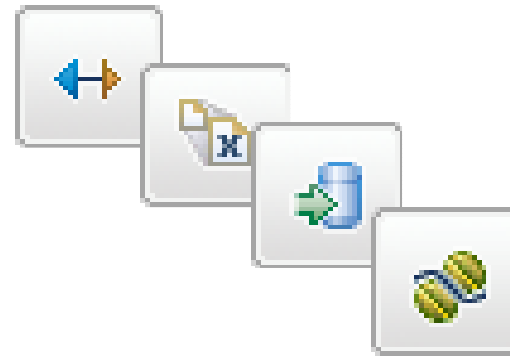
Message Broker ESB Functions - Protocol Support

- de facto Standard protocols
 - MQ, HTTP, JMS, TCP/IP
 - Native input nodes provides
- “Standards” protocols
 - Web Services via SOAP/HTTP, SOAP/JMS
 - Native HTTP(S), Any JMS 1.1 connectivity
 - SOAP and MIME parsers provided
- Technology interactions
 - Files, VSAM, QSAM, CICS to access traditional data sources
- Industry protocols
 - SCADA, MQe for mobile devices and sensors
- User Defined protocols
 - For User ISV provided extensions, full user defined node interface.



Message Broker ESB Functions - Transformation

- Message Broker models all data via “Message Tree”
 - All data formats (XML and non-XML) understood natively by message broker
 - Message Tree created by native parser from source input message format
 - Transformed using appropriate transformation language
 - Output tree used to generate required target output message format
 - ...leads to high performance
 - Native formats means data is only transformed when it necessary
 - Partial parsing only reads required fields
- Use transformation languages to match skill set
 - Graphical mapping for non-programmers
 - XSLT for XML orientation
 - SQL for database and declarative orientation
 - Java for widely available skill set benefits
 - ESQL
 - WTX to leverage existing maps –
 - **WebSphere Transformation Extender for Message Broker**
 - Transformation languages can be mixed and matched within same message flow



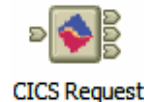
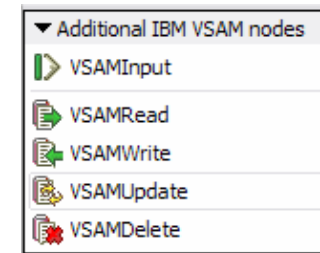
Message Broker ESB Functions – Event Handling

- Processing external events
 - From simple message exchange to message pattern detection
 - Ability to distribute information to interested parties
 - Publish Subscribe and more complex event processing (CEP)
- Timer based processing
 - Processing triggered by timed event
 - Fixed or variable timers
 - Ability to generate new timer events from current processing
- Message Validation
 - Confirm that messages are well formed as they enter and leave the bus
 - e.g. SWIFT validation, XML schema validation



Why run WMB on z/OS?

- WMB on z/OS takes full advantage of the z/OS Sysplex
 - The only platform supporting MQ Shared Queues for high-availability and optimized “pull” load-balancing with the very best in scalability
- WMB on z/OS utilizes many of the other inherent features of z/OS
 - RACF security
 - WLM resource optimisation
 - SMP/E installation control
 - SMF performance recording
 - RRS transaction management for speed and reliability
 - ARM restart
- WMB on z/OS offers several specific interfaces to the z/OS platform
 - CICSRequest, QSAM and VSAM nodes
 - Using WMB on z/OS will typically be much more efficient if some of the interfaced applications are co-located on z/OS
- Running on the z/OS and System z platform brings all the security and robustness of the the mainframe platform
 - Looking for the highest scalability and high-availability for a strategic corporate ESB



CICS Request



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z/OS Improvements for Version 6

- Configuration Manager
- JES SPOOL for ALL output
- Audit Trail Messages for all broker and configuration manager operations
- 50 % Performance improvement in message throughput
- CICS Node for access to CICS via EXCI
- VSAM Nodes to input, read, write, update and delete records from VSAM files
- MQ Shared queues Serialized Application support
- All Commands, and all in JCL
- Unicode database support
- Restart broker without DB2 restart
- zAAP offload for Java Compute, XSLT, Realtime & multicast, Config Manager
- XML Toolkit for consistent XML processing
- MVS Dumps rather than coredumps in USS ;)



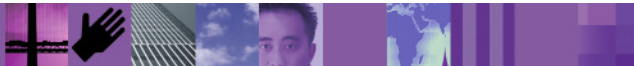
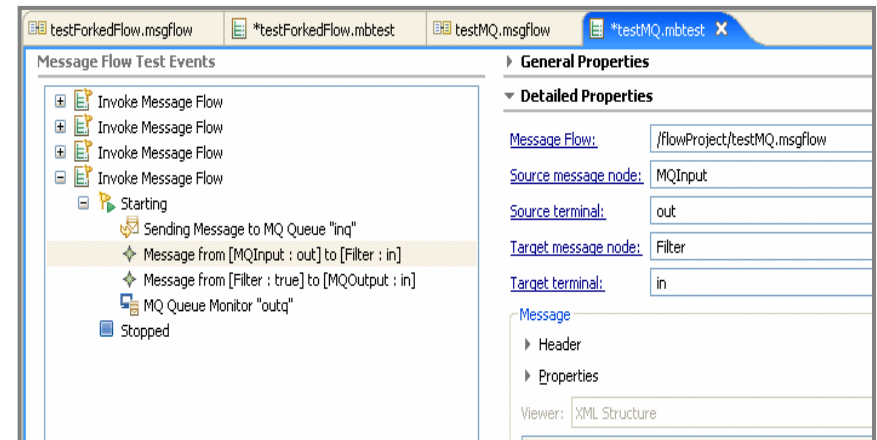
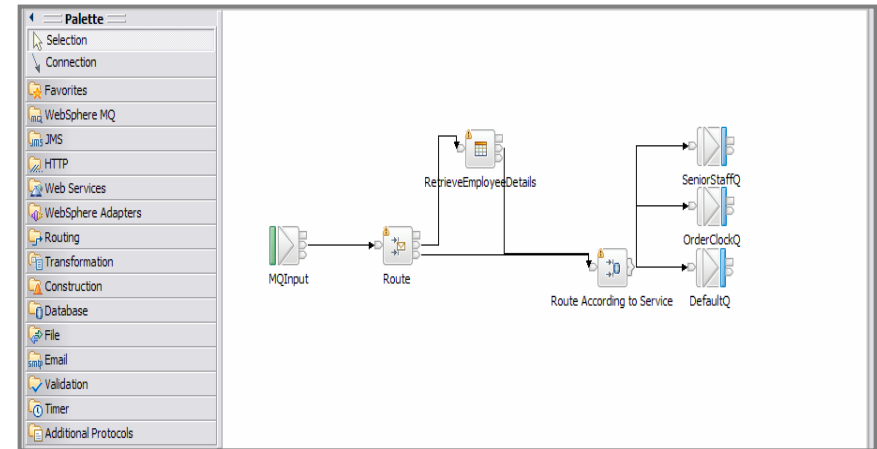
Key Supportpacs

- Broker Explorer (IS02)
- CICS/VSAM Nodes (IA12/IA13)
- SOAP Envelope/SOAPExtract Nodes (IA9O)
- Message Broker Client for WSRR (IA9Q)
- Importer for formatted text message models (IA7D)
- Complex Event Processing Nodes (IA0S)



Version 6.1 Feature Overview for System z

- **Ease of Use and Productivity**
 - Reducing the time to get started with Message Broker
 - Simplifying development tasks including debug; reducing the time to create working solutions
- **Enhanced SOA support**
 - Supporting Web Services natively with WS-Security and WS-Addressing
 - DataPower SOA appliance for WS-Security
 - Integration and enhancement of WSRR support
- **Extended Connectivity**
 - Built-in nodes for EIS access
 - SAP for z/OS, SAP and PeopleSoft for zLinux
 - WebSphere Adapters delivered “out of the box” as built-in nodes
 - Native support for very large file processing, including FTP
 - New SMTP and TCP nodes
- **Administration & Systems Management**
 - Enterprise-wide identity, authentication and authorization with Tivoli and LDAP
 - MB Explorer Eclipse administration
 - Numerous manageability improvements
- **Platform Support and Performance**
 - 64 bit zLinux; Java 5
 - Ultra High Performance XML parser including schema validation
 - Compacted memory footprint; Real-time graphical performance analysis
 - Performance improvements and platform coverage



High Performance

- Significant Performance improvements on ALL platforms
 - Major throughout improvement across a broad range of scenarios
 - Builds on real world, customer-verified, scenarios on version 6 usage
 - No need to change flows or assets to receive gains – “for free”

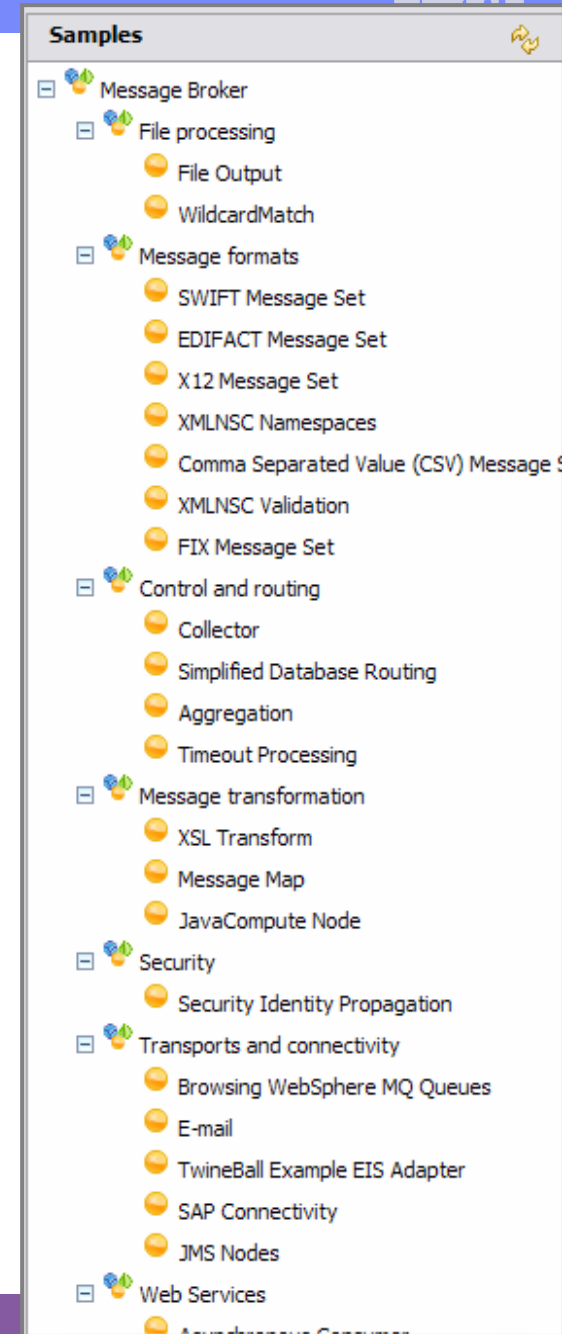
- Highlights
 - Significant XML performance
 - Up to 150% improvement processing more complex XML documents
 - XML validation performance
 - Up to 3 times improvement validating XML documents
 - Binary and String parsers improved
 - Industry and legacy message formats will benefit
 - XSLT performance
 - Solid improvements

- Storage reduction
 - Compacted runtime storage, significant reduction in runtime footprint

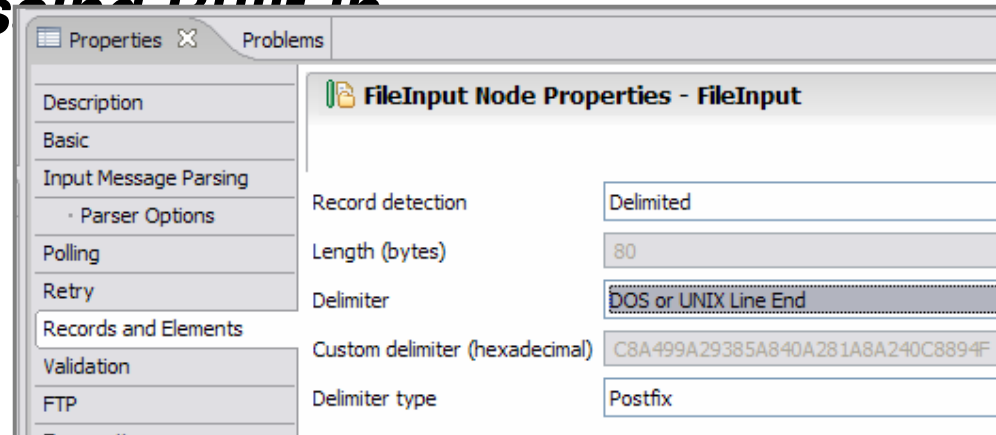


Get Started in Less Than 1 Hour

- **New users**
 - 1 hour for new user to install a working system and run a realistic sample
- **Install**
 - Simple packaging allows easy identification of appropriate install asset
 - Single install DVD for Windows and Linux desktops
 - ISMP installer for all platforms, SMP/E for z/OS
 - Quick start and full hardcopy install guide as necessary
- **Default configuration**
 - Allows you to understand broker components and configuration
 - Quickly create a working system for development
- **Samples gallery**
 - Comprehensive “Samples Gallery” for all new and existing function
 - Single click to install and run using default configuration
 - New sample message sets e.g. CSV
 - Learn how to use all 6.1 capabilities using realistic, working samples
- **Product Prerequisites**
 - MQ V6 or above
 - A database (Cloudscape provided for development and test systems, limited DB2 included in package)



File Processing Built in



FileInput



FileOutput

- Local and remote (FTP) files
- Advanced file processing
 - File input and File output nodes
 - Combine with other MB nodes
 - (e.g.) File to MQ, File to database, File record filtering
- Large file handling
 - Allows very large files (gigabyte) to be processed without using excessive storage
 - Appropriate broker parsers have been enhanced to request data on demand
- Comprehensive support for record detection
 - Simple: LF, EOL, CRLF, Fixed Length, Whole-file, User-defined
 - Parser: Use an existing message definition to identify record boundaries

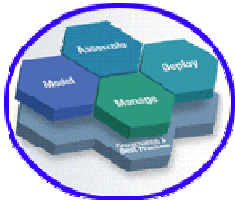




Version 6.1.0.2 Feature Overview

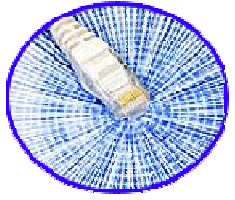


- Ease of Use and Productivity
 - Unit Test Client Enhancements
 - Mapping Node Enhancements for Stored Procedures
 - New Modes of Operation on distributed: Trial, Starter, Remote Adapter Host & Enterprise
 - Available on Linux for System z



- Getting Started Sub-capacity pricing on z/OS
(http://www.ibm.com/servers/eserver/zseries/library/swpriceinfo/ipla_exe.html)

- Enhanced SOA support
 - WS-Security Enhancements
 - WS-Addressing Enhancements



- Extended Connectivity
 - TCP/IP nodes
 - WebSphere Transformation Extender Launcher support
 - MQ, JMS and HTTP Transport header nodes, TLOG Sample



- Administration & Systems Management
 - Monitoring and Auditing Support
 - ITCAM for SOA support

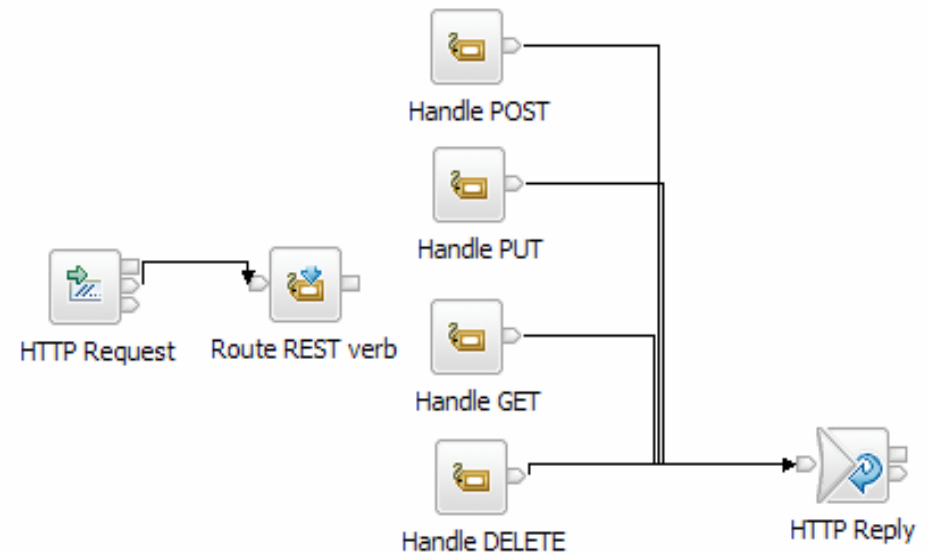


- Platform Support and Performance
 - CVP/IVP for ALL platforms
 - Citrix support for remote operations



Web 2.0 Support

- HTTP REST support
 - POST, PUT, GET DELETE verbs/methods now
- Inbound REST request
 - Handled using HTTP Input/HTTP Reply nodes
 - REST verb captured in LocalEnvironment
 - RouterList also populated
 - enables easy discrimination between REST verbs in flow
 - URL declared on HTTP input node
 - Includes URL list and wildcard support for diverse noun support
 - `http://example.com/noun/object1,object2,object3` simply handled by one flow
- Outbound REST request
 - Static: URL and verbs declared on request node
 - Dynamic: URL and verbs set by in LocalEnvironment to override node settings
- Other HTTP request node enhancements
 - Increased LocalEnvironment overrides including HTTP request timeout, SSL parms...



WebSphere Service Registry and Repository



RegistryLookup

- MB can access MQ applications using WSRR MQ service definition
 - Invoke MQ applications based on MQ application/service description
 - e.g. MQ application moves to new queue manager, broker will reroute requests automatically
 - Message flows query and select MQ application/service entries based on input message

- New MQ Service Definition
 - WSDL based description of MQ application/service
 - Defines application location, message properties and interaction style
 - `wmq:/msg/queue/INS.QUOTE.REQUEST?connectQueueManager=MOTOR.INS`
 - `&replyTo=msg/queue/INS.QUOTE.REPLY`
 - `&format=MQSTR`
 - `&persistence=MQPER_NOT_PERSISTENT`

- Enhancements to existing nodes to retrieve MQ Service or Web Service information
 - RegistryLookup node retrieves MQ definitions matching specific criteria
 - EndpointLookup node selects MQ application location(s) matching specific criteria
 - Sets DestinationList ready for use by MQOutput node



Other Enhancements

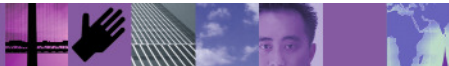
- Getting Started Sub-Capacity Pricing for z/OS
 - Current list of eligible products and applicable releases and service on the web:
http://www.ibm.com/servers/eserver/zseries/library/swpriceinfo/ipla_exe.html
 - Fairer pricing for low utilization brokers on large capacity LPARs
 - SMF 89 Subtype 1 records generated for use by SCRT

- CVP/IVP on all platforms
 - Checks broker and configuration manager are properly configured as part of startup
 - Same capability as existing z/OS brokers

- Extensive MQPCF support
 - Allows Broker to handle MQEVENT and MQADMIN message formats

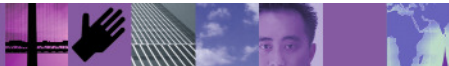
- JMS Node Enhancements
 - Full security support as per MQ, HTTP and SOAP nodes
 - BEA WebLogic JMS XA support
 - Exploitation BEA specific transaction verbs

- Citrix Remote Development and Operations
 - Supported for Toolkit and mqsi* broker commands



Message Broker 6.1.0.3 Overview

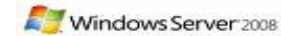
- **Simplicity and Productivity**
 - Enhanced WBM support: output node events, detailed data, simple administration
 - Mapping enhancements: Extra library functions, read-only database views, auto-map
 - Unit Test Client usability enhancements
- **Universal Connectivity for SOA**
 - IMS request node using the IMS TM Resource Adapter
 - SAP nodes enhancements: qRFC and tRFC support, operational enhancements
 - PHP node for dynamic scripting
 - Retail enhancements for TLOG processing
- **Dynamic Operational Management**
 - WSRR governed WS-SecurityPolicy support
 - Service Trace enhancements
- **Platforms, Environments and Performance**
 - Windows Vista and other Windows 64 bit platform toleration
 - MQ 7.0 support, including topic based publish subscribe support
 - Full MQPCF support including MQADMIN and MQEVENT
 - Database support: Oracle 11g, Sybase 15.0.2, Informix 10
 - ODBC Unicode support
 - Oracle RAC for database failover



Message Broker 6.1.0.3 Pictorial Overview



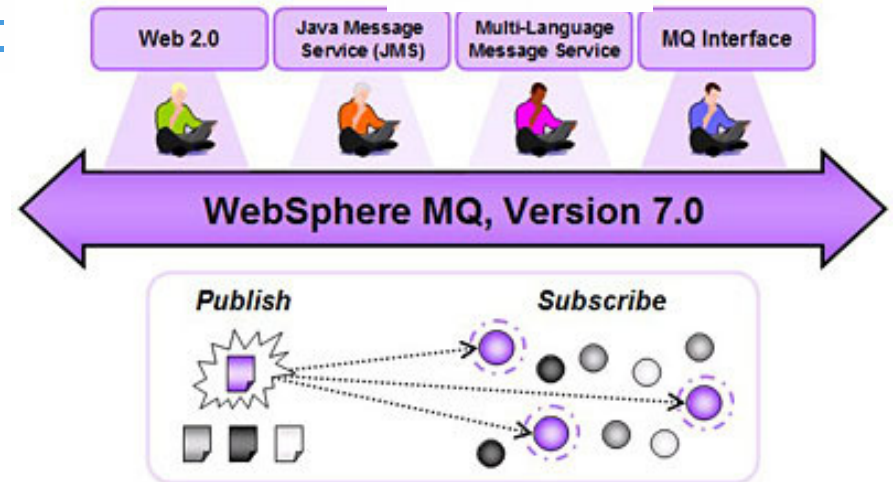
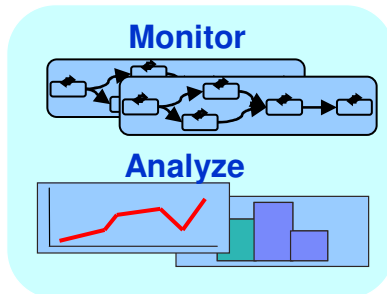
Windows Vista



Windows Server 2008

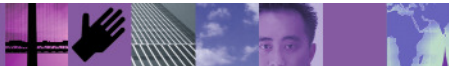


SAP Request SAP Input



MQInput Node Properties - MQInput			
Events			
Enabled	Event Source	Event Name	
<input checked="" type="checkbox"/>	Transaction start (transaction.Start)	MQInputTransactionStart	
<input checked="" type="checkbox"/>	Transaction end (transaction.End)	MQInputTransactionEnd	
<input checked="" type="checkbox"/>	Transaction rollback (transaction.Rollback)	MQInputTransactionRollback	
<input checked="" type="checkbox"/>	Out terminal (terminal.out)	MQInputOutTerminal	
<input checked="" type="checkbox"/>	Catch terminal (terminal.catch)	MQInputCatchTerminal	
<input checked="" type="checkbox"/>	Failure terminal (terminal.failure)	MQInputFailureTerminal	

Selectable Mapping Targets	Selectable Mapping Sources for Target
<input checked="" type="checkbox"/> @ orderDate	ORDER_DATE (SEELEMAN.INVENTORY)
<input type="checkbox"/> @ shipTo	
<input checked="" type="checkbox"/> @ country	SHIP_COUNTRY (SEELEMAN.CUSTOMER)
<input checked="" type="checkbox"/> @ first_name	CONTACT_FIRST_NAME (SEELEMAN.CUSTOMER)
<input checked="" type="checkbox"/> @ last_name	CONTACT_LAST_NAME (SEELEMAN.CUSTOMER)
<input checked="" type="checkbox"/> @ street	SHIP_STREET (SEELEMAN.CUSTOMER), BILL_STREET (SEELEMAN.CUSTOMER)
<input checked="" type="checkbox"/> @ city	SHIP_CITY (SEELEMAN.CUSTOMER), BILL_CITY (SEELEMAN.CUSTOMER)
<input checked="" type="checkbox"/> @ state	SHIP_STATE (SEELEMAN.CUSTOMER), BILL_STATE (SEELEMAN.CUSTOMER)
<input type="checkbox"/> @ billTo	
<input checked="" type="checkbox"/> @ country	BILL_COUNTRY (SEELEMAN.CUSTOMER)
<input checked="" type="checkbox"/> @ first_name	CONTACT_FIRST_NAME (SEELEMAN.CUSTOMER)



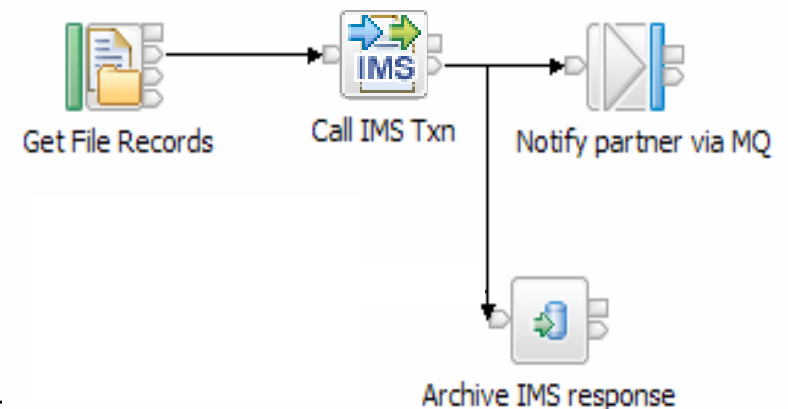
IMS Node for Message Broker



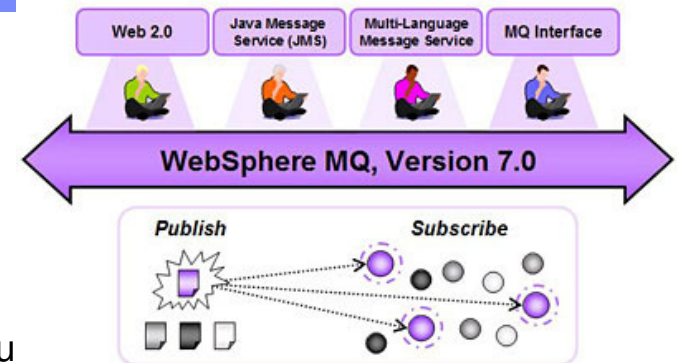
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 - MB will add subscriber filter processing (`<publish> if msg.Price>100`)
 - Augmented Publish Subscribe
 - MQ will handle Publications
 - MB executes user message flow during publication phase (Log, transform...)



WebSphere Message Broker Summary

- Message Broker is a key IBM integration technology
 - Industry leading performance in a broad range of scenarios
 - Unparalleled range of integration options and capabilities
 - Supports users' range of experience and needs

- Five key themes satisfying a broad range of customer requirements
 - Ease of Use and Productivity
 - Enhanced SOA support
 - Administration & Systems Management
 - Extended Connectivity
 - Platform Support and Performance

- Builds on success of Version 6
 - Introduces significant new opportunities for high performance integration



Resources

- Articles
 - Connecting System z applications with IBM WebSphere MQ on z/OS <http://www-306.ibm.com/software/tivoli/features/ccr2/ccr2-2007-12/connecting.html>
 - Message Broker for z/OS V6.1.0.2 article <http://www-01.ibm.com/software/tivoli/features/ccr2/ccr2-2008-09/message-broker-6102.html>
 - The Value of WebSphere Message Broker Version 6 on z/OS http://www.ibm.com/developerworks/websphere/library/techarticles/0604_odowd/0604_odowd.html
- Redbooks
 - Redbook: Developing Web Services Using CICS, WMQ, and WMB <http://w3.itso.ibm.com/abstracts/sg247425.html?Open>
 - Redpaper: IBM Connectivity Reviewer's Guide <http://www.redbooks.ibm.com/redpapers/pdfs/redp4434.pdf>
 - RedBook: Implementing an ESB using IBM WebSphere Message Broker V6 and WebSphere ESB V6 on z/OS <http://www.redbooks.ibm.com/abstracts/sg247335.html?Open>
- Analyst paper
 - Choosing the right SOA platform on System z ftp://ftp.software.ibm.com/software/websphere/pdf/SOA_on_System_z.pdf
- Teleconference:
 - Which ESB on System z? Selection Guidelines for WebSphere Message Broker, WESB and DataPower XI50 <http://www.ibm.com/software/os/systemz/telecon/30jul/>
 - Real life use cases for Message Broker on z/OS and Linux for System z <http://www-01.ibm.com/software/os/systemz/telecon/19nov/index.html>



Thank
YOU





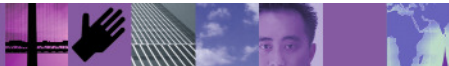
Additional Information: Details of Message Broker V6.1.0.3

WebSphere software



Message Broker 6.1.0.3 Overview

- **Simplicity and Productivity**
 - Enhanced WBM support: output node events, detailed data, simple administration
 - Mapping enhancements: Extra library functions, read-only database views, auto-map
 - Unit Test Client usability enhancements
- **Universal Connectivity for SOA**
 - IMS request node using the IMS TM Resource Adapter
 - SAP nodes enhancements: qRFC and tRFC support, operational enhancements
 - PHP node for dynamic scripting
 - Retail enhancements for TLOG processing
- **Dynamic Operational Management**
 - WSRR governed WS-SecurityPolicy support
 - Service Trace enhancements
- **Platforms, Environments and Performance**
 - Windows Vista and other Windows 64 bit platform toleration
 - MQ 7.0 support, including topic based publish subscribe support
 - Full MQPCF support including MQADMIN and MQEVENT
 - Database support: Oracle 11g, Sybase 15.0.2, Informix 10
 - ODBC Unicode support
 - Oracle RAC for database failover



Message Broker 6.1.0.3 Pictorial Overview



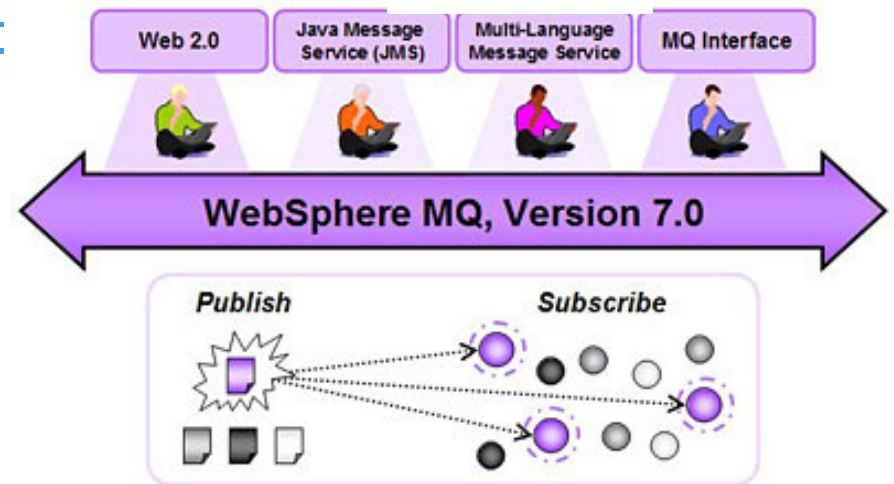
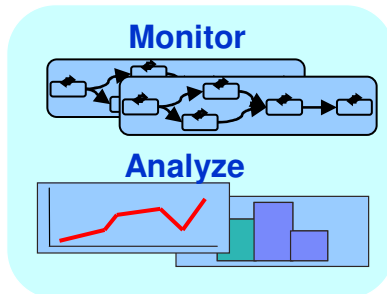
Windows Vista



Windows Server 2008



SAP Request SAP Input



MQInput Node Properties - MQInput			
Events			
Enabled	Event Source	Event Name	
<input checked="" type="checkbox"/>	Transaction start (transaction.Start)	MQInputTransactionStart	
<input checked="" type="checkbox"/>	Transaction end (transaction.End)	MQInputTransactionEnd	
<input checked="" type="checkbox"/>	Transaction rollback (transaction.Rollback)	MQInputTransactionRollback	
<input checked="" type="checkbox"/>	Out terminal (terminal.out)	MQInputOutTerminal	
<input checked="" type="checkbox"/>	Catch terminal (terminal.catch)	MQInputCatchTerminal	
<input checked="" type="checkbox"/>	Failure terminal (terminal.failure)	MQInputFailureTerminal	

Selectable Mapping Targets	Selectable Mapping Sources for Target
<input checked="" type="checkbox"/> @ orderDate	ORDER_DATE (SEELEMAN.INVENTORY)
<input type="checkbox"/> @ shipTo	
<input checked="" type="checkbox"/> @ country	SHIP_COUNTRY (SEELEMAN.CUSTOMER)
<input checked="" type="checkbox"/> @ first_name	CONTACT_FIRST_NAME (SEELEMAN.CUSTOMER)
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<input checked="" type="checkbox"/> @ state	SHIP_STATE (SEELEMAN.CUSTOMER), BILL_STATE (SEELEMAN.CUSTOMER)
<input type="checkbox"/> @ billTo	
<input checked="" type="checkbox"/> @ country	BILL_COUNTRY (SEELEMAN.CUSTOMER)
<input checked="" type="checkbox"/> @ first_name	CONTACT_FIRST_NAME (SEELEMAN.CUSTOMER)



php Compute Node



- **What is PHP?**

- PHP is a dynamic scripting language well suited to message transformation
- Large base of PHP skills and assets can now be used in Message Broker
- Excellent complement to existing ESQL, Java, Mapping, XSLT and WTX options

- **PHPCompute node**

- Allows users to quickly and naturally express message transformation with scripting

```
$message->a->b->c = $input_body->Message;
```

```
for ($index = 0; $index < $output_root->Menu->Food->count; $index++) {  
    $item = $output_root->Menu->Food[$index];  
}
```

- Exploits IBM P8 Runtime for PHP; a fully compliant with PHP version 5.2
- Many advanced features: XPath 1.0, dynamic output terminals, arrays, extension library...

- **Integrated Development and Deployment**

- Eclipse based tooling and hot deployment as other MB nodes

- **Platform Support and Performance**

- Windows platform initially, others will follow
- Good performance characteristics



IMS Node for Message Broker

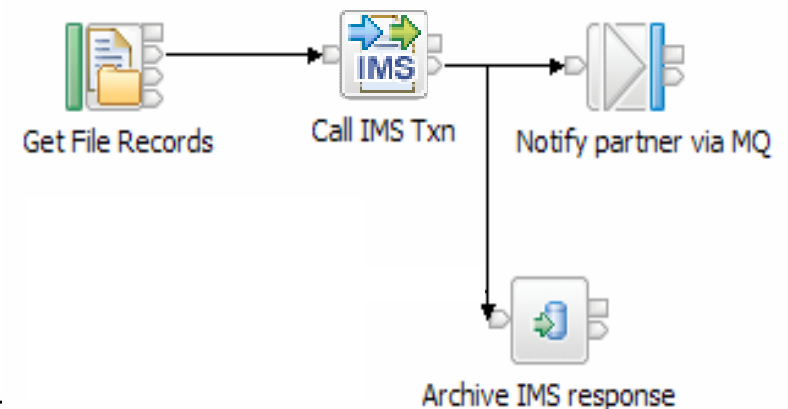


■ IMS Request node

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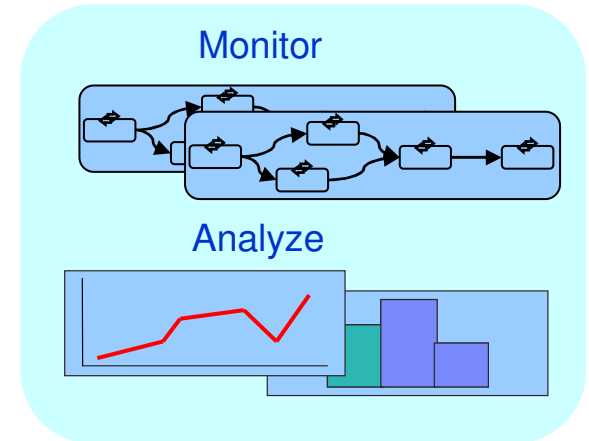


Monitoring and Auditing

- **Generate Monitoring and Audit Events from Message Flow**
 - Easily gain insight into application and service connectivity
 - Business Monitoring & Intelligence and audit scenarios

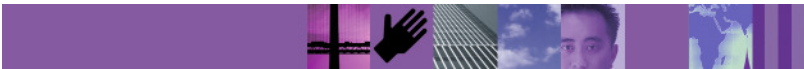
- **Administration and Development time Configuration**
 - Every MB nodes includes a ‘Monitor’ tab to generate events
 - **Transaction**: Start, End, Rollback issued from input nodes
 - **Terminal**: from any terminal on any node
 - Configure payload data, content style, identity, correlation & sequencing data
 - Non-invasive nature allows monitoring profile to be applied to existing flows

- **Operational Control**
 - Operationally enable, disable, change event production: `mqsichangeflowmonitoring` command
 - Events are published on well known topic over MQ transport for multiple concurrent consumers
 - ‘Lazy’ notification provides excellent performance characteristics



- **Integration with other products**
 - WebSphere Business Monitor
 - Monitor and analyze KPIs
 - Comprehensive sample built-in
 - WBMTM
 - Audit, repair and replay

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Windows Vista and Server 2008



- **Windows Vista & Windows Server 2008 supported**
 - A new Broker platform to complement Windows XP and Server 2003
 - Requires MB 6.1.0.3; manufacturing refresh of physical media is available

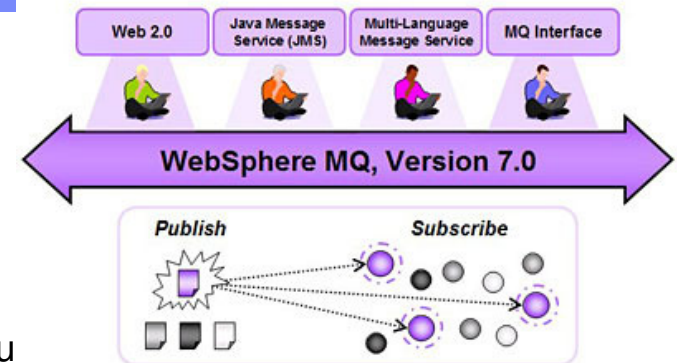
- **Fully Functional**
 - All components available: Broker, Toolkit, Configuration Manager, User Name Server
 - All functions available as Windows XP and Server 2003
 - Digitally signed libraries to satisfy new security requirements

- **64 bit Toleration**
 - All broker components remain 32 bit but tolerate 64bit platforms
 - Includes XP, 2003, 2003 R2, 2008 and Vista 64 flavours

- **MB6.1 System Requirements**
 - www.ibm.com/software/integration/wbimessagebroker/requirements/



Support for MQ 7.0



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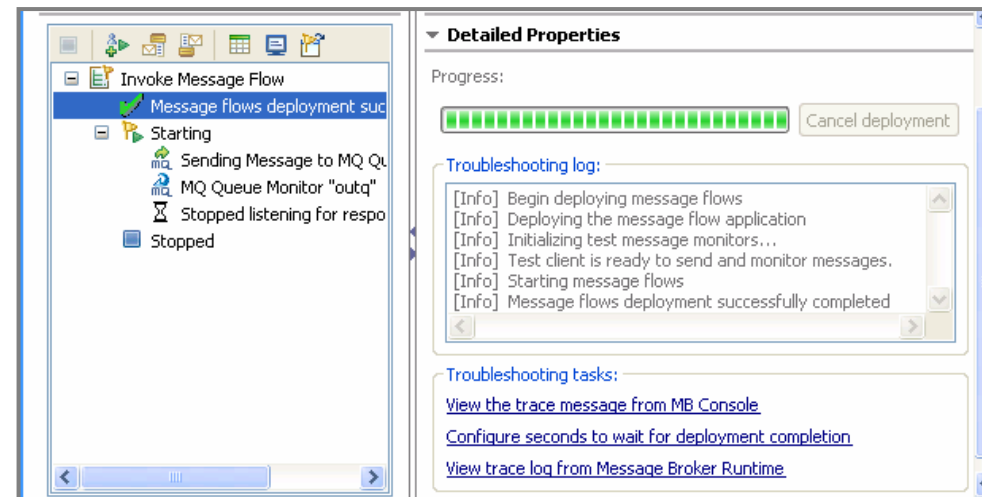
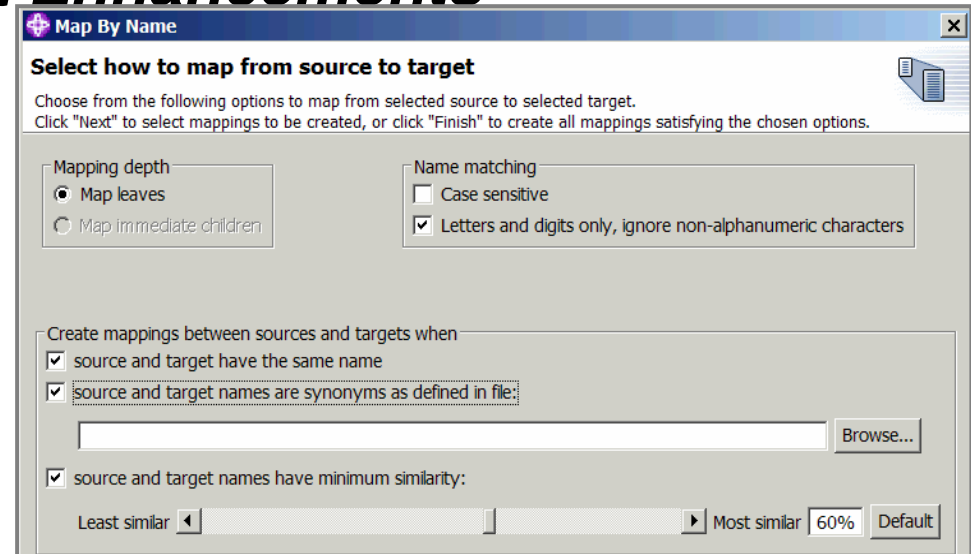
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Mapping and Unit Test Client Enhancements

- Auto-map
 - Simplifies mapping with pre-defined rules
 - Criteria include name similarity, synonyms
 - Plus name matching options
 - Targets include child fields & whole leaves
- Read-only database views
 - Allows database views to be mapped
- Extra library functions
 - XPath predicates, string functions & 'FOR's
 - Allows more sophisticated transformations
- Unit Test Client enhancements
 - Deployment state and listener status
 - Troubleshooting/help tips for specific tasks

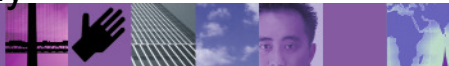


BAR File Editor Enhancements

- Building and customizing BAR files is easier than ever
 - Navigate message flows and their properties using a single tree view
 - Apply overrides more intuitively, using standard message flow property editors
 - Improved filtering for larger deployments
 - Filter by text
 - Show built resources
 - Show built resources that have source available
 - Show configurable resources only

The screenshot displays the 'Manage' view of the BAR File Editor. The main area shows a table of message flows with columns for Name, Type, Modified, Size, Path, and Comment. The 'HTTP Request' resource is selected and highlighted in blue. Below the table, the 'Configure' panel for the 'HTTP Request' resource is visible, showing various properties such as 'Allowed SSL ciphers', 'Enable HTTP/1.1 keep-alive' (checked), 'HTTP version' (set to 1.0), and 'HTTP(S) proxy location'.

Name	Type	Modified	Size	Path	Comment
MyFlow.cmf	Compiled message flow	15 Oct 2008 14:50:54	8943		
MyFlow					
Respond to queue					
Generate Request					
HTTP Request					
Read Response					
Get From Queue					
UDPTest.cmf	Compiled message flow	15 Oct 2008 14:50:54	4494		



SAP and Retail Enhancements

- **Extra SAP interfaces available to SAP adapter no**

- Transactional and Queued RFC Support



SAP Input



SAP Request

- **SAP Operational Reconfiguration Enhancements**

- Helps promotion of SAP message flows through Test, QA, Production lifecycle
- New SAP configurable service provides reconfiguration of key SAP properties
 - Hostname, Client ID, System number, Userid, Password
- Also supports wholesale replacement of adapter connection

- **Expanded TLOG support**

- Added PosLog 2.1.2 and 2.2.1 to existing TLOG and PosLog 1.0 and 2.1 support
- Built-in IBM extended PosLog schemas for improved validation
- Significant performance improvement using XMLNSC parser



Other Enhancements our Users Requested

- **Policy based governance of ESB security**
 - WSRR to assign specific WS-SecurityPolicy to individual brokers
 - Delivered as SupportPac for WSRR 6.2
 - WSRR administers WS-Security Policy using MB management API
 - Transformation between WS-SecurityPolicy and PolicySets performed by WSRR
 - Physical binding information (i.e. not policy related) managed by MB administrator

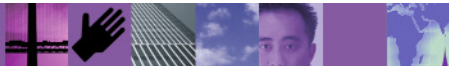
- **Lifecycle Currency**
 - Oracle 11g, Informix 10, Sybase 15.0.2
 - www.ibm.com/software/integration/wbimessagebroker/requirements/

- **Oracle RAC**
 - Multiple listener failover including XA

- **Unicode**
 - Unicode databases now fully supported from ODBC

- **Dynamic XMLNSC parser trace for improved serviceability**

- **More MQPCF support**
 - Comprehensive reading and writing of MQADMIN and MQEVENT message formats





Additional Information: Details of Message Broker V6.1.0.2



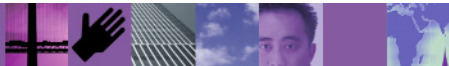
Message Broker 6.1.0.2 Review

- Consumability and Productivity
 - Unit Test Client Enhancements
- Enhanced SOA support
 - WS-Security and WS-Addressing Enhancements
 - Web 2.0 REST support for HTTP nodes
 - MQ Service definition exploitation in WSRR nodes
- Extended Connectivity
 - TCP/IP nodes
 - WebSphere Transformation Extender Launcher support
 - MQ, JMS and HTTP Transport header nodes, TLOG Sample
 - MQ 7.0 Support
 - Support for BEA WebLogic JMS XA
- Administration & Systems Management
 - Support for WebSphere Business Monitor
 - ITCAM for SOA support
 - Full MQPCF support including MQEVENT and MQADMIN formats
- Platform Support and Performance
 - New Modes of Operation: Trial, Get Started, Remote Adapter Host & Enterprise
 - Get Started pricing for z/OS
 - CVP/IVP for ALL platforms
 - Citrix support for remote operations



Consumability and Productivity Enhancements

- Mapping node enhancements
 - Stored procedures support, especially relevant for Oracle database users
 - Support for BLOB domain, particularly helpful for file node scenarios
- SAP, Siebel and PeopleSoft Nodes
 - Reduced message definition reduces Eclipse artefact count for adapter nodes
- Node Usability
 - Present list of valid domains only for a node gives strong hint on correct parser to use for task
 - Increased cross attribute validation ensures nodes apply maximum intelligence to user's input
 - Content assist for ESQL on relevant node properties ensures syntax is correct before deployment
- Unit Test Client
 - Many small usability improvements to increase capabilities
 - SOAP 1.2 binding support for Web services testing
- Citrix Support
 - For remote operations, including development



New Modes of Operation

- Allows users to progressively adopt Message Broker in intuitive increments
 - New options for capacity and functionality, priced accordingly

- 4 New Modes of Operation
 - Trial: Experience the product with free usage for 90 days
 - Get Started: Initial deployment allowing 1 execution group with 10 flows
 - Getting Started Sub-capacity pricing on z/OS
 - Remote Adapter Host: Facilitates collocation with SAP, SEBL, PeopleSoft EIS'
 - Adapter & transport nodes in 2 execution groups with Java for transformation
 - Enterprise: Established deployment with all features and unrestricted capacity

- Simple Lifecycle Upgrade
 - Single package enables movement between modes via mqsimode command
 - e.g. Trial->Get Started->Message Broker, Trial->Remote Adapter Host
 - Same toolkit for all modes of operation, same service package for simple maintenance

- Licensed, Policed and Visible
 - Separate ITLM file for each mode enables compliance check
 - Deployment/Change to unlicensed mode will fail gracefully, reporting reason
 - Administration tooling icons and start-up messages for operational clarity

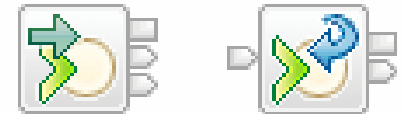


WS-Security and WS-Addressing Enhancements

- WS-Security
 - WS-Security X509 Asymmetric key support for .NET servers
 - WS-Security X509 Certificate enhancements
 - Fully support SOAP Actor “Roles”
 - New Sample in Samples Gallery

- WS-Addressing
 - WS-Addressing headers in Local Environment
 - Outbound MTOM Support

- Miscellaneous
 - Support `?wsdl` requests to return WSDL to WS client
 - IE01 Support Pac to support SOAP nodes
 - Display Execution Group SOAP Connector Port in Admin tooling



SOAP Input SOAP Reply



SOAP Request SOAP Asynchronous Request

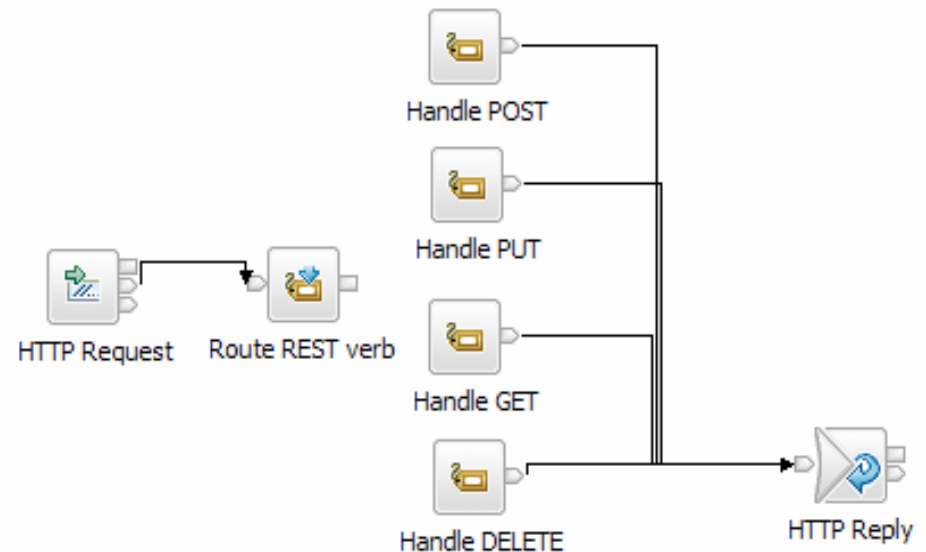


SOAP Asynchronous Response



Web 2.0 Support

- HTTP REST support
 - POST, PUT, GET DELETE verbs/methods now
- Inbound REST request
 - Handled using HTTP Input/HTTP Reply nodes
 - REST verb captured in LocalEnvironment
 - RouterList also populated
 - enables easy discrimination between REST verbs in flow
 - URL declared on HTTP input node
 - Includes URL list and wildcard support for diverse noun support
 - `http://example.com/noun/object1,object2,object3` simply handled by one flow
- Outbound REST request
 - Static: URL and verbs declared on request node
 - Dynamic: URL and verbs set by in LocalEnvironment to override node settings
- Other HTTP request node enhancements
 - Increased LocalEnvironment overrides including HTTP request timeout, SSL parms...



WebSphere Service Registry and Repository



RegistryLookup

- MB can access MQ applications using WSRR MQ service definition
 - Invoke MQ applications based on MQ application/service description
 - e.g. MQ application moves to new queue manager, broker will reroute requests automatically
 - Message flows query and select MQ application/service entries based on input message

- New MQ Service Definition
 - WSDL based description of MQ application/service
 - Defines application location, message properties and interaction style

```
wmq: /msg/queue/INS.QUOTE.REQUEST?connectQueueManager=MOTOR.INS  
&replyTo=msg/queue/INS.QUOTE.REPLY  
&format=MQSTR  
&persistence=MQPER_NOT_PERSISTENT
```

- Enhancements to existing nodes to retrieve MQ Service or Web Service information
 - RegistryLookup node retrieves MQ definitions matching specific criteria
 - EndpointLookup node selects MQ application location(s) matching specific criteria
 - Sets **DestinationList** ready for use by MQOutput node



WebSphere Transformation Extender Launcher

- New Message Broker offering approaches full TX Launcher capabilities
 - Allows TX maps to run natively inside Message Broker
 - WTX Extender 8.2 will run on MB6.1 GA

- Integrated development and deployment
 - Eclipse based Type Designer and Map Designer integrate with MB Toolkit
 - Integrated deployment of TX assets deployed in Broker Archive

- New WTX node
 - Identifies TX map to be used in Message flow which can be configured dynamically
 - Each map's card is visible as dynamic node property
 - Collector node trigger correlates multiple inputs ready for downstream WTX node
 - If necessary, can use existing TX adapters

- Message Broker supports unparalleled range of transformation technologies
 - ESQL, Java, Graphical Mapping, XSLT and WTX

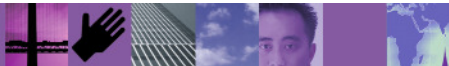


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TCP/IP Nodes



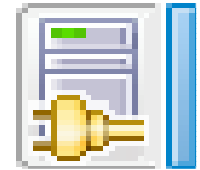
- Typical scenarios
 - Connect existing sockets based client application with MQ messaging infrastructure
 - Connect existing applications to server based sockets programs

- Broker as TCP/IP client or server program
 - TCPIPClientInput, TCPIPClientRequest, TCPIPClientOutput nodes
 - TCPIPServerInput, TCPIPServerRequest, TCPIPServerOutput nodes

- Highly customizable
 - Full protocol supporting including handshakes, request-reply...
 - Change TCP/IP operational characteristics without flow redeploy
 - Modify TCP/IP ports and addresses
 - Modify socket characteristics, e.g. **SO_KEEPALIVE**, **SO_LINGER...**

- Exploits stream based parsing to interpret stream data as messages
 - Simple: LF, EOL, CRLF, Fixed Length, Whole-file, User-defined
 - Parser: Use an existing message definition to identify record boundaries

- Mature, proven technology
 - Based on IA98 Support Pac
 - Established technology with many user deployments



Transport Header Nodes

- Simplify manipulation of transport headers
 - MQMD, MQDLH
 - HTTPInput, HTTPResponse, HTTPRequest, HTTPReply
 - JMS header, JMS application properties, JMS provider properties



MQHeader



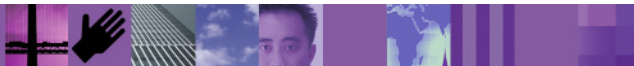
HTTPHeader



JMSHeader

- Header creation and modification
 - Set header properties with meaningful constant
 - **MQEI_INLIMITED, MQFMT_NONE**
 - Set header properties from message
 - Set MQ correld to **`$Root/MQMD/MsgId`**
- Delete operations with single radio button
 - Delete header
 - Clear fields

The screenshot shows the 'MQHeader Node Properties - MQHeader' dialog box. The 'MQMD' tab is selected. Under 'MQMD header options', there are three radio buttons: 'Carry forward header' (unselected), 'Add or modify header' (selected), and 'Delete header' (unselected). The 'CodedCharSetId' is set to 'MQCCSI_UNICODE_1208'. The 'Format' is set to 'MQFMT_STRING', which is highlighted with a red box. The 'Version' is set to 'MQMD_VERSION_1'. The 'Report' is set to 'MORO_PAN'. The 'MsgType' is 'MQMT_DATAGRAM'. The 'Expiry' is 'MQEI_UNLIMITED'. The 'Feedback' is 'MQFB_NONE'. The 'Priority' is 'MQPRI_PRIORITY_AS_Q_DEF'. The 'Persistence' is 'MQPER_PERSISTENCE_AS_Q_DEF'. The 'MsgId' is set to '\$Root/MQMD/MsgId', which is also highlighted with a red box. The 'CorrelId' is 'MQCI_NONE'. The 'ReplyToQ' and 'ReplyToQMgr' are both set to 'Inherit'.





Additional Information: Details of Message Broker V6.1 2007 enhancements



Easy to Move to Version 6.1

- **Migration**

- Support migration from V5 and V6
 - Event Broker V5 and V6 migrated to Message Broker 6.1
- Compatibility
 - Message flows, message sets, ESQL, Java, Maps and XSLT run without change
 - Including 64 bit execution groups
- Rollback support
 - Migrate back to previous release with single command if necessary

- **Coexistence**

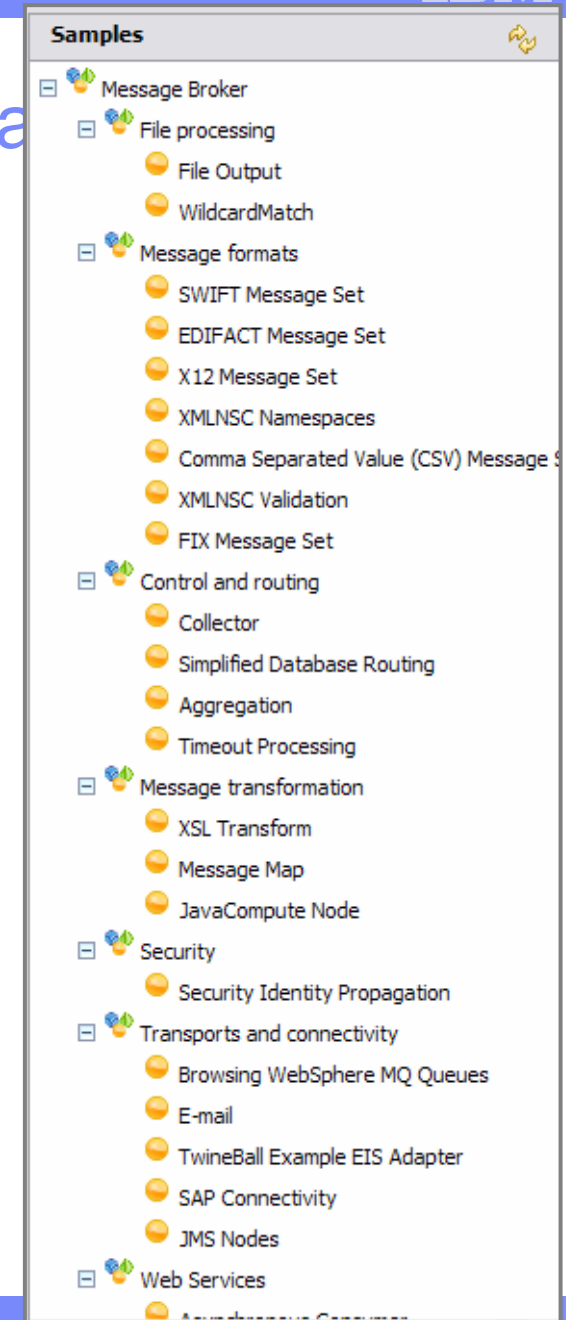
- V6.1 will co-exist with V5 and V6
- Enables incremental migration

- **Production ready at GA (Nov 2007)**

- Less defects than any existing version of Message Broker
- Fewer regressions
- Longer Mean Time To Fail

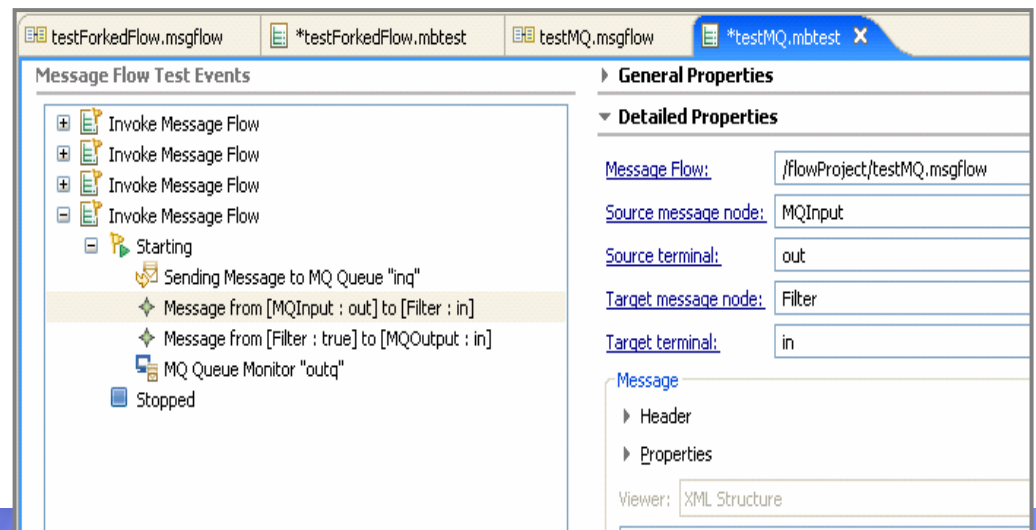
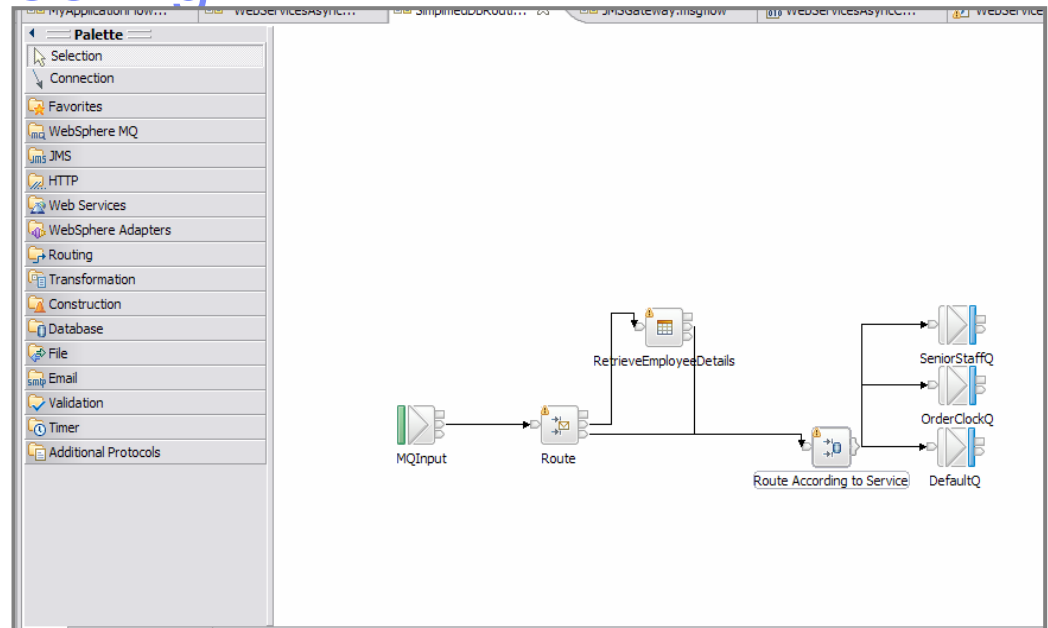
Platform Support and Product Simplification

- **Simplified Offering**
 - Single Message Broker Offering focussing on Advanced ESB functionality
 - Event Broker version 6 customers entitled to Message Broker 6.1
 - Rules and Formatter available for existing users only
- **64 bit Support**
 - zLinux has 64 bit capability
 - Default execution group size is 64 bit & commands are all 64 bit
 - z/OS remains 31 bit for V6.1
- **Databases**
 - DB2 for z/OS, DB2 and Oracle for zLinux as broker databases
- **Java**
 - JDBC XA for z/Linux
 - z/OS RRS for JDBC XA to follow in future release
 - Java 5 on all platforms
- **Removal of RAC prerequisite – native debug**
- **ISMP installer for zLinux, SMP/E for z/OS**
- **Default configuration**
 - Allows you to understand broker components and configuration
 - Quickly create a working system for development
- **Samples gallery**
 - Comprehensive “Samples Gallery” for all new and existing function
 - Single click to install and run using default configuration
 - New sample message sets e.g. CSV
 - Learn how to use all 6.1 capabilities using realistic, working samples
- **Product Prerequisites**
 - MQ V6 or above
 - A production database
 - Cloudscape provided for development and test
 - DB2 supplied as production database



Powerful, Easy to Use Tooling

- **Full function Toolkit in smallest ever install**
- **Builds on advances in Toolkit 6.0.2**
- **Wizards**
 - Guides you through solution creation
 - Novice and expert modes
- **WSDL Drag Drop**
 - Quickly create Web Services solutions
- **Drag and Drop Mapping**
 - Now includes calling Java from map
- **Many new ease of use features**
 - “Message Viewer” visualizes expressions
 - Discovery wizards for SAP and PeopleSoft
 - BAR file rebuild
- **Integrated Test Facility**
 - Unit Test License included
 - Test Client to test flows
 - Direct debug using Java Debug Protocol
 - “Component Trace” to follow message path



Support for Web Services

- **Support provider and consumer scenarios**

- Provider:
 - SOAP input & SOAP reply
- Consumer:
 - Synchronous SOAP request
 - Asynchronous SOAP request and reply
- Can be combined to provide Web Service intermediaries
- SOAP Extract and SOAP Envelope nodes
 - Simplify processing of SOAP payload and headers



SOAP Input SOAP Reply



SOAP Request SOAP Asynchronous Request



SOAP Asynchronous Response

- **Support WS-Security and WS-Addressing “out of the box”**

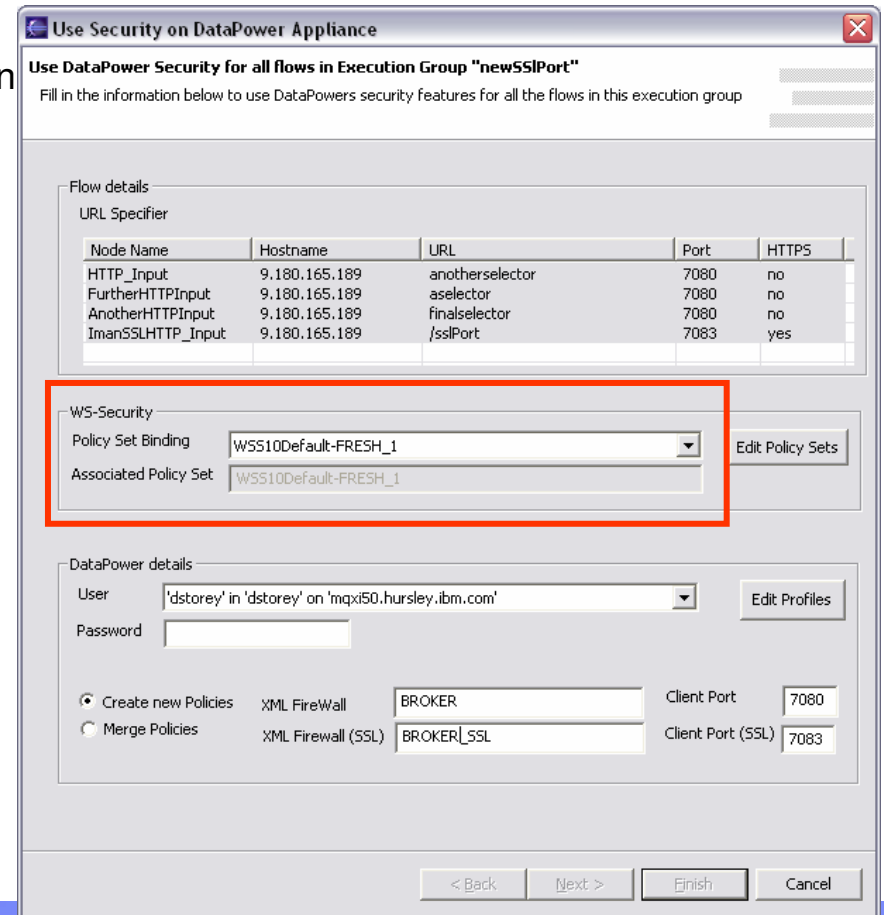
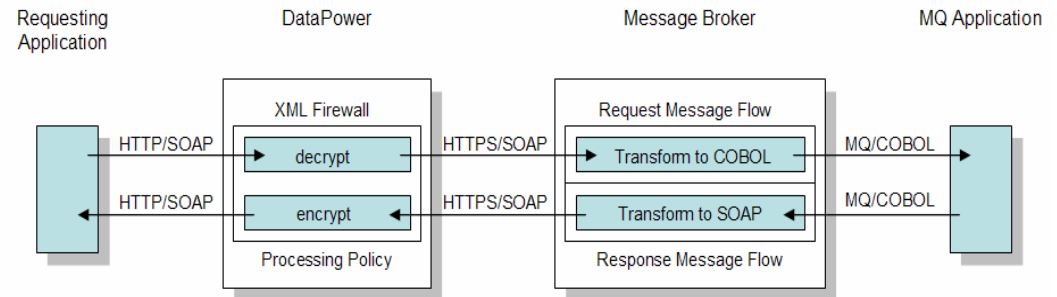
- Support for WS-Addressing Endpoint References and Message addressing properties
- Support for WS-Security authentication, encryption and signing
 - Username password, X509 certificates for authentication
 - Comprehensive encryption and signing algorithms (from JSSE/JCE)
 - Configuration using Policy Sets
 - Policy Set editor enables declaration of WS-Security capabilities

DataPower Appliance

- **Exploit DataPower for Web Services security**
 - Single tool and security policy description
 - Security best practices
 - WS-Security at appropriate point in topology
 - Built-in XML threat protection; Hardened device
 - Built-in service level management
 - Manage traffic using policy; WSDM and WS-Man
 - Scale as volumes increase
 - Enhanced performance with SOA appliance
 - Add capacity when necessary

- **Administration User Experience**
 - Operational reconfiguration only
 - Applications and Message Flows unchanged
 - Right click on flow and select “Use DataPower”
 - DataPower performs WS-Security processing
 - Forwards processed request to MB

- **Initial focus is on XML and WS-Security processing**
 - June 2007 preview
 - Other functions may follow



WebSphere Service Registry and Repository

■ Integrated support for WSRR

- Registry contains variety of “entities” (documents) such as WSDL, XSD...
 - Includes entity category, its relationships and its associated user properties
- True governance achieved through registry determining MB processing
- Development and runtime usage aspects which can be used together



RegistryLookup

■ Development Activity

- Use WSRR AD plug-in to search registry for particular entity
- Entity can “kick start” message flow and message set creation
 - E.g. Retrieve WSDL and drag-drop to configure external Web Service call

■ Runtime interactions

- Message flows can query and/or select specific registry entities
 - Information cached for high performance access
 - Registry changes result in cache refresh via built-in PubSub mechanism
- 2 new nodes to support most popular processing scenarios
 - Query – retrieve entity details; other nodes can act on this
 - Select – choose a specific service instance via node matching criteria
- WSRR interactions can be overridden dynamically based on message content
 - Expanded expression support to include literals and variables



EndpointLookup

File Processing Built-in

- **Local and remote (FTP) files**

- **Advanced file processing within ESB**

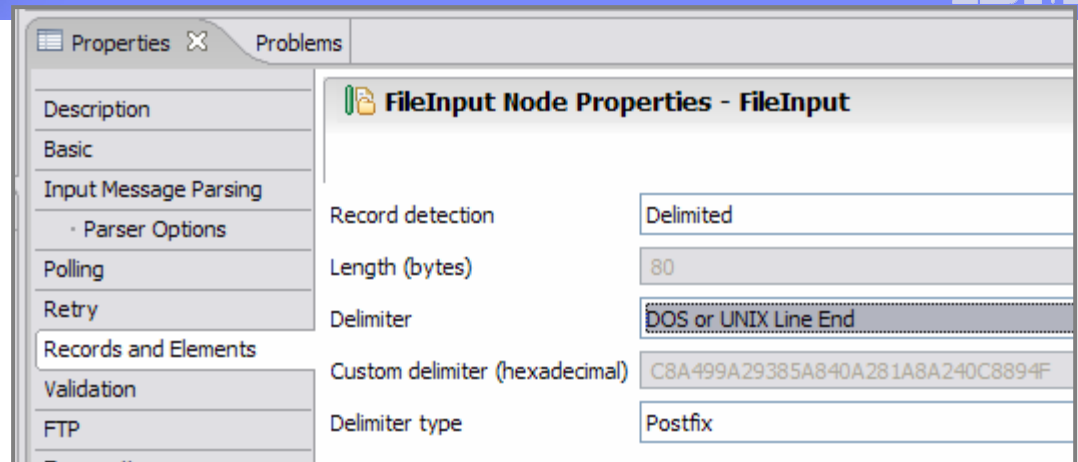
- File input and File output nodes
- Combine with other MB nodes
 - (e.g.) File to MQ, File to database, File record filtering

- **Large file handling**

- Allows very large files (gigabyte) to be processed without using excessive storage
- Appropriate broker parsers have been enhanced to request data on demand

- **Comprehensive support for record detection**

- Simple: LF, EOL, CRLF, Fixed Length, Whole-file, User-defined
- Parser: Use an existing message definition to identify record boundaries



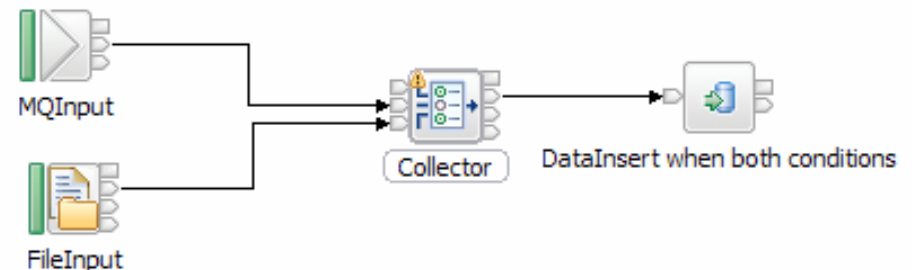
Transport Headers and Triggering

- **Process Transport headers without programming (6102)**
 - Shows most common transport header properties for MQ, JMS and HTTP
 - New users can easily understand and modify common transport properties

- **SMTP node for email generation**
 - e.g. “operator” notification of alert conditions

- **TCPIP nodes for legacy integration (6102)**
 - Client and server side sockets support, inbound and outbound

- **Collector node for more advanced triggering scenarios**
 - Coordinate message from multiple, disjoint sources
 - Wait for multiple input conditions
 - Process when all satisfied



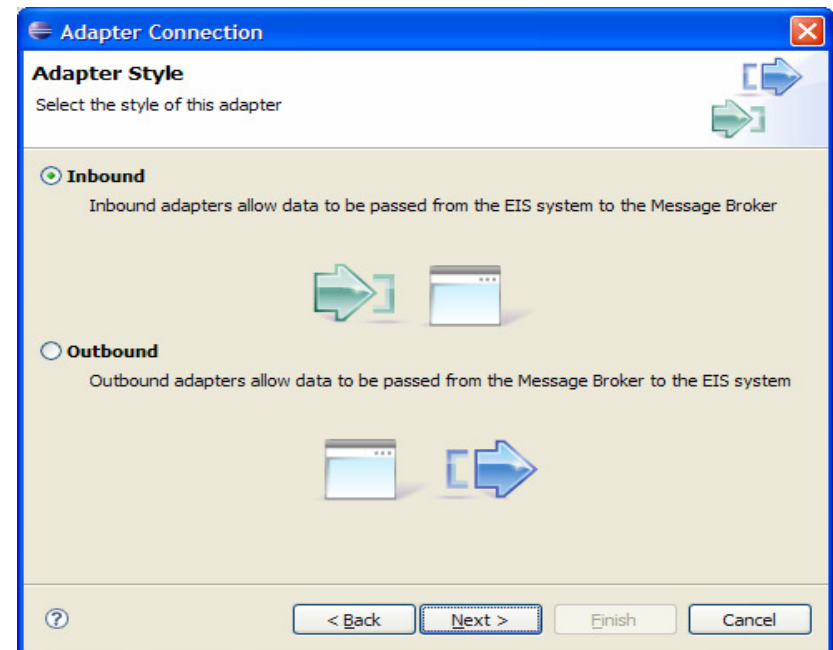
Collector Node Properties - Collector					
Collection definition					
	Terminal	Quantity	Timeout	Correlation path	Correlation pattern
	MQInput	1	0	\$Root/MQMD/CorrelId	
	FileInput	1	0	\$LocalEnvironment/File/Name	

Integrated Support for Major EIS Systems

- SAP for z/OS, SAP and PeopleSoft for zLinux
- WebSphere Adapters delivered “out of the box” as built-in nodes
 - Simplifies management and improves performance for key integration scenarios
 - These are the JCA based WebSphere adapters
 - Adapter license still required
- Support for inbound and outbound scenarios
 - Message-to-EIS and EIS-to-message scenarios
 - Adapter nodes integrate with all built-in MB nodes
- Enterprise Metadata Discovery (EMD)
 - Significant tooling support
 - Simplify for key data structure discovery
 - Accelerates generation of message sets
- High Performance access
 - Adapters access native message broker tree



SAP Input

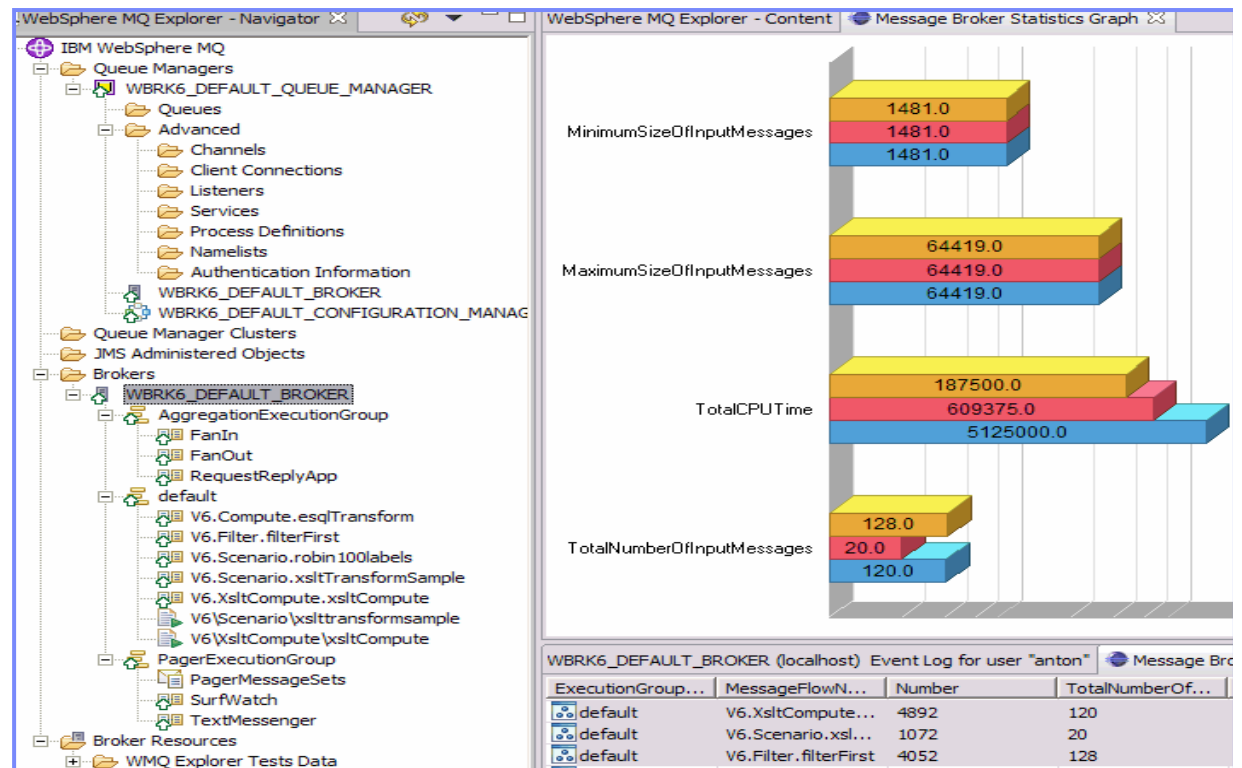


PeopleSoft Request



MB Explorer Eclipse Administration

- **Alternative MQ Explorer based administration**
 - Simplifies administration of MQ,MB networks in single Explorer console
 - Uses MQ Eclipse 'extension points' to provide seamless experience
- **Comprehensive administration facilities**
 - All features in Broker Administration
 - Also includes new features such as multi Execution Group deploy
- **IS02 Cat 3 support Pac**
 - Fully supported in production
 - Initial release July 2006
- **Performance Monitor**
 - Easily view CPU, IO and other metrics in Eclipse
 - Available March 2007



Advanced Security Features

- Message Broker now has powerful runtime security model
 - Supports cross domains security processing
 - Identity, Authentication and Authorization are native capabilities
 - MQ, HTTP, JMS, Web Services transports can all provide identity
 - Attributes on input and output nodes
 - Eclipse editor for security profile administration
- Policy decision points technologies: LDAP, TFIM

	TFIM	LDAP
Authorization	Yes	Yes
Authentication	Yes	Yes
Identity mapping	Yes	No

- Rich identity context supported
 - Type can be Username/password or X509 certificates
 - Token from default or user defined message location
 - e.g. {type=USERNAME, token=user, issuedBy=org, appliesTo=flow}
 - IssuedBy can be default or user defined
 - AppliesTo is fully qualified flow name resource Broker.ExecutionGroup.Flow
 - Identity appears in Message Tree
- ALSO in 6.1: Simplified Basic Authentication for WS and HTTP request nodes
 - TFIM can add username/password certificate to request

MQInput Node Properties - MQInput

Identity token type

Identity token location

Identity password location

Identity issuedBy location

Treat security exceptions as normal exceptions

MyApplicationFlow.cmf

Additional Instances

Commit Count

Commit Interval

Consumer Policy Set

Consumer Policy Set Bindings

Coordinated Transaction

Provider Policy Set

Provider Policy Set Bindings

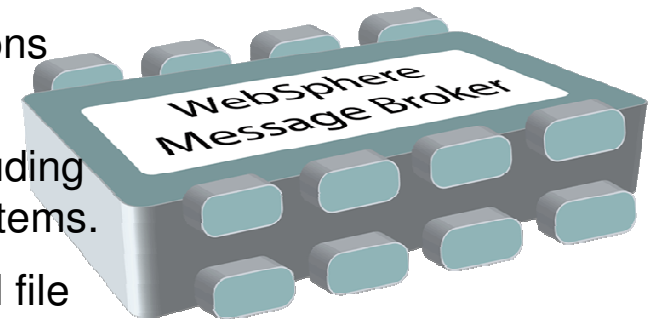
Security Profile Name



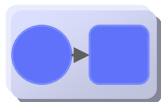
WebSphere Message Broker on System z

Built for universal connectivity and transformation in heterogeneous IT environments

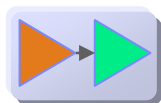
- Connect FROM anything TO anything: the broadest range of transport, protocol, data format and transformation capabilities
- Flexible and function rich ESB: address a wide range of requirements encompassing both existing & new, applications and services.
- Tightly integrated and optimized for the z/OS platform, including specific features for MQ, DB2, CICS, IMS and RRS subsystems.
- Advanced features such as Complex Event Processing and file based integration including VSAM.



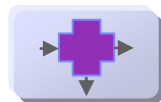
Exploits the unparalleled reach and reliability of the WebSphere MQ enterprise messaging backbone



Integrates everything through standard protocols, WebSphere Adapters for enterprise applications, and specialized connectivity options



Enables transformation between a wide range of data formats, including XML, legacy, and industry standards, and custom formats



Optimized for high-volume processing and rapid time to value for complex mediation requirements with a robust set of pre-built mediation function

