Enhance Productivity and Scalability with New Functionalities in Message Broker & MQ Family of Products
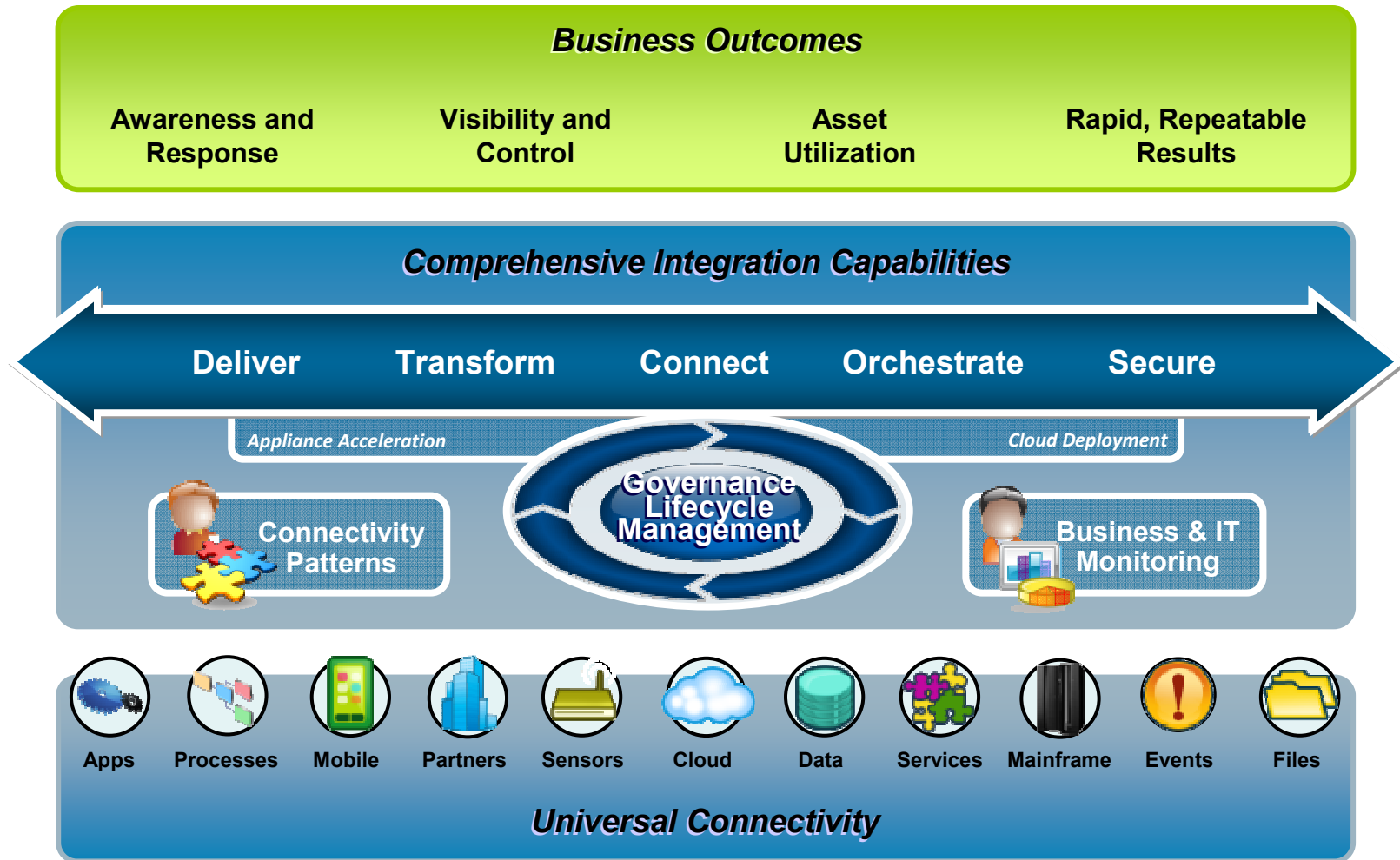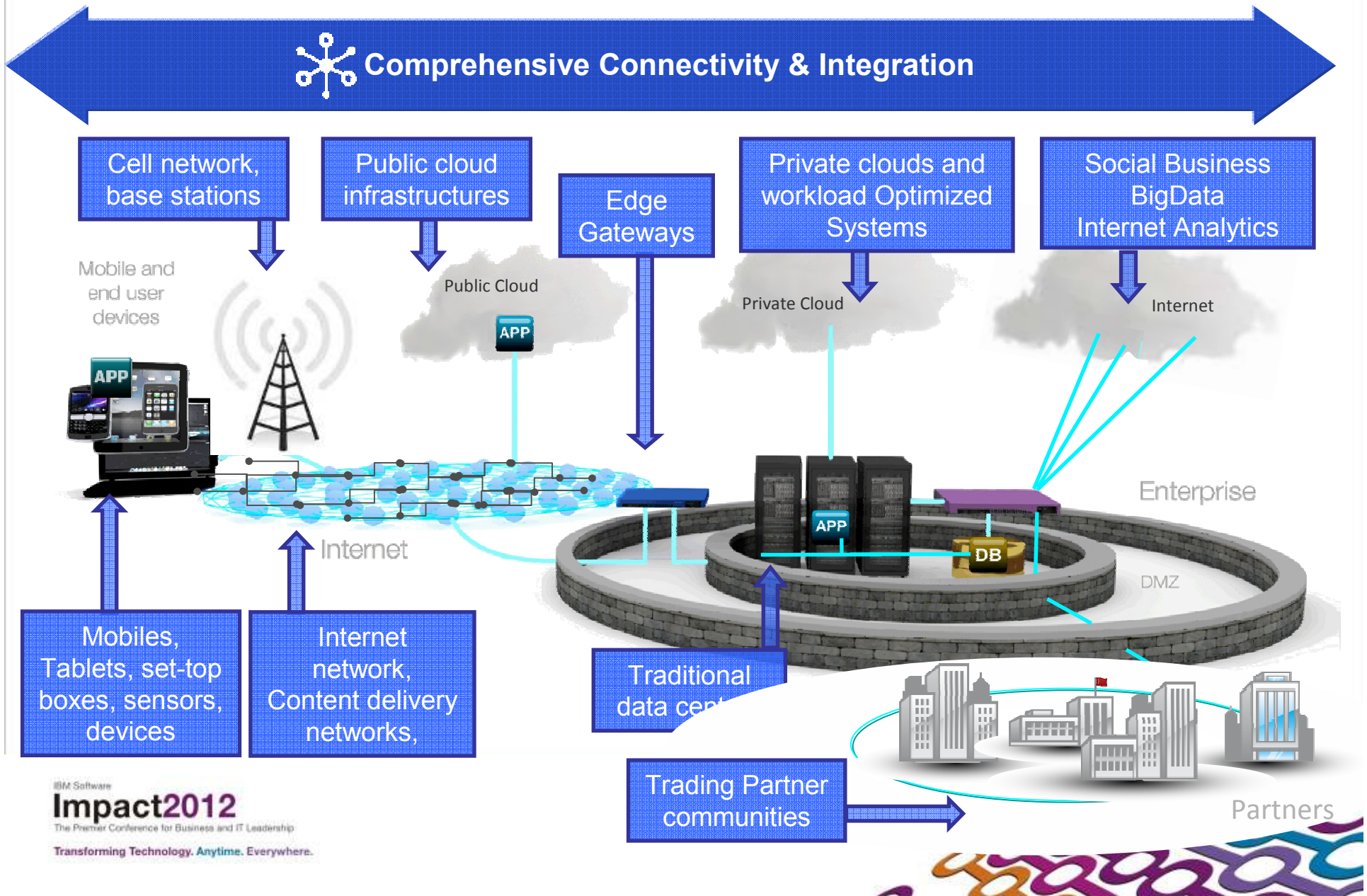
Agenda

- IBM Connectivity & Integration overview

- What's new in IBM WebSphere MQ family
    - Latest versions: V7.1, V7.5

- Connectivity & Integration for Mobile

- What's new in IBM WebSphere Message Broker
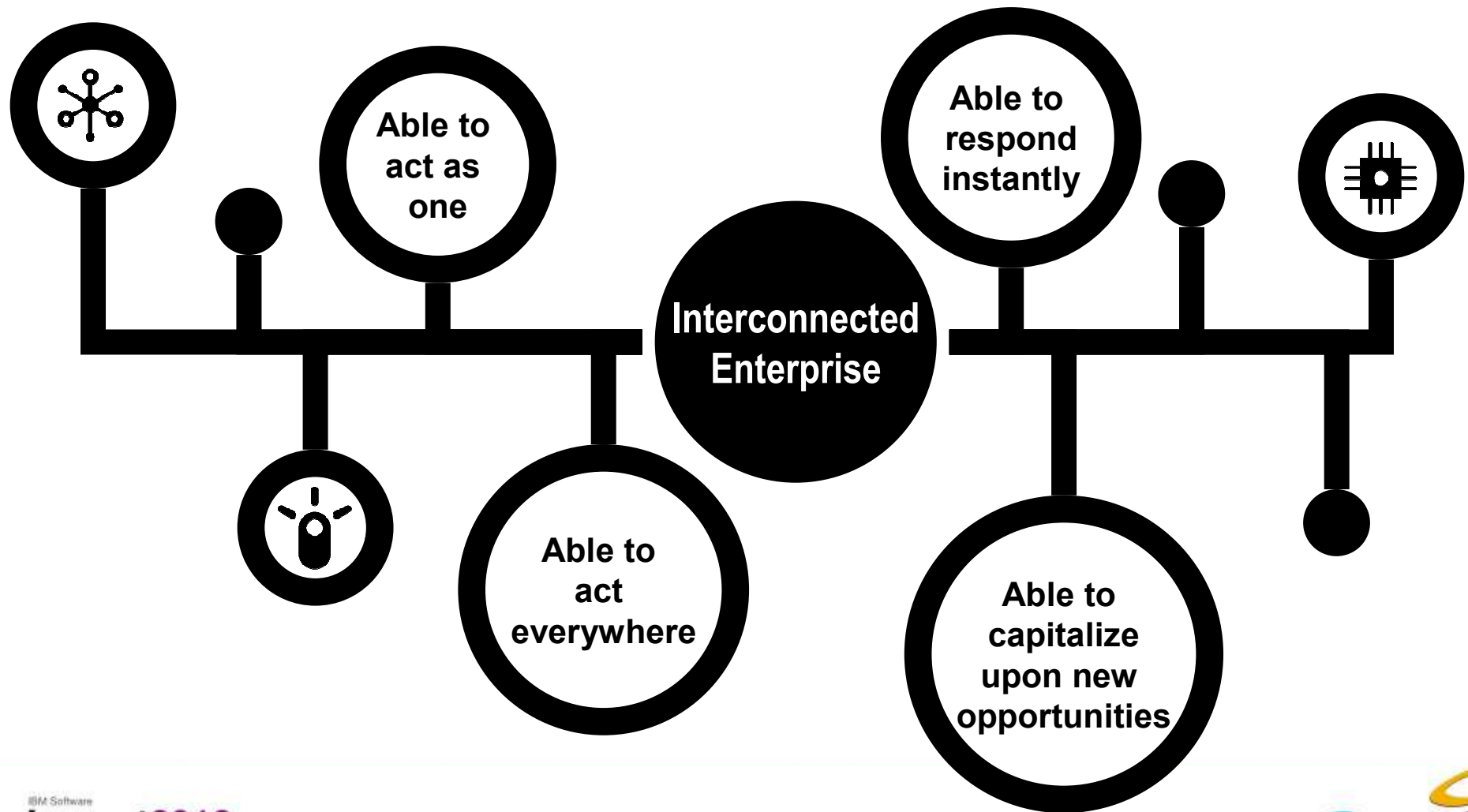   - Latest version: V8.0

IBM Connectivity & Integration

Business Outcomes

| Awareness and Response | Visibility and Control | Asset Utilization | Rapid, Repeatable Results |

Comprehensive Integration Capabilities

Deliver   Transform   Connect   Orchestrate   Secure

Appliance Acceleration   *Cloud Deployment*

Connectivity Patterns

Governance Lifecycle Management

Business & IT Monitoring

Apps   Processes   Mobile   Partners   Sensors   Cloud   Data   Services   Mainframe   Events   Files

Universal Connectivity

Extending the reach of Connectivity & Integration

IBM

Comprehensive Connectivity & Integration

| Cell network, base stations | Public cloud infrastructures | Edge Gateways | Private clouds and workload Optimized Systems | Social Business BigData Internet Analytics |

Mobile and end user devices

Public Cloud

APP

Private Cloud

Internet

Enterprise

APP

APP

DB

Internet

DMZ

| Mobiles, Tablets, set-top boxes, sensors, devices | Internet network, Content delivery networks, | Traditional data cen | |

Partners

| Trading Partner communities |

Smarter organizations are
Interconnected Enterprises

Able to
act as
one

Able to
act
everywhere

Interconnected
Enterprise

Able to
respond
instantly

Able to
capitalize
upon new
opportunities

What's new in

IBM WebSphere MQ family

IBM MQ Connectivity for a Smarter and Secure Planet

A Universal Message Bus providing connectivity to, from and within your Enterprise to access data *wherever it exists* to support your business
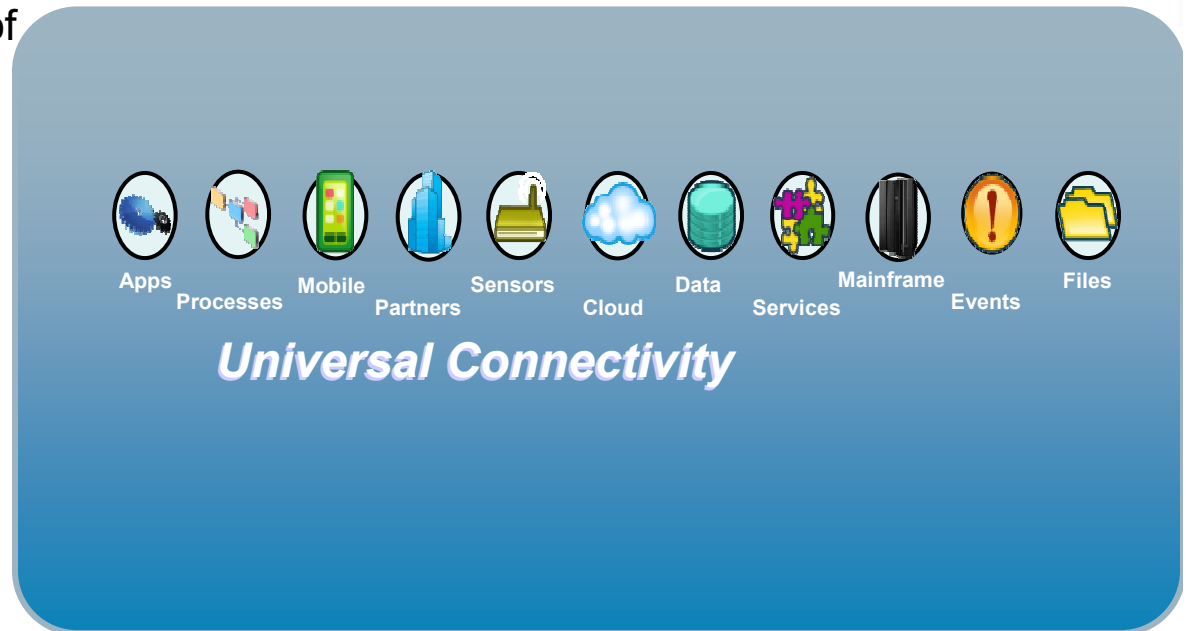
Provides a comprehensive range of Messaging capabilities
to support your Business
requirements for data integration:-

-- Messaging integration patterns
-- Reliability and availability QoS
-- Managed File Transfer
-- SOA foundation
-- EDA foundation

Provides appropriate data access and data privacy controls to help meet audit and regulatory requirements

Provides a range of messaging on-ramps appropriate to your business needs and developer skills

Provides a range of messaging topologies and deployments to meet your business and IT needs

Apps Processes Mobile Partners Sensors Cloud Data Services Mainframe Events Files

Universal Connectivity

How WebSphere MQ meets your Connectivity needs

*Dynamic network that delivers the **data** you require from wherever it resides to wherever you want it in whatever way you want it at whatever time you want it*

Universal Messaging

1. Anything Anywhere
- Any skills
- Any traffic
- Any language
- Any environment
- Any platform

2. Best Delivery
- Choice of service
- Resilience, Integrity, Security
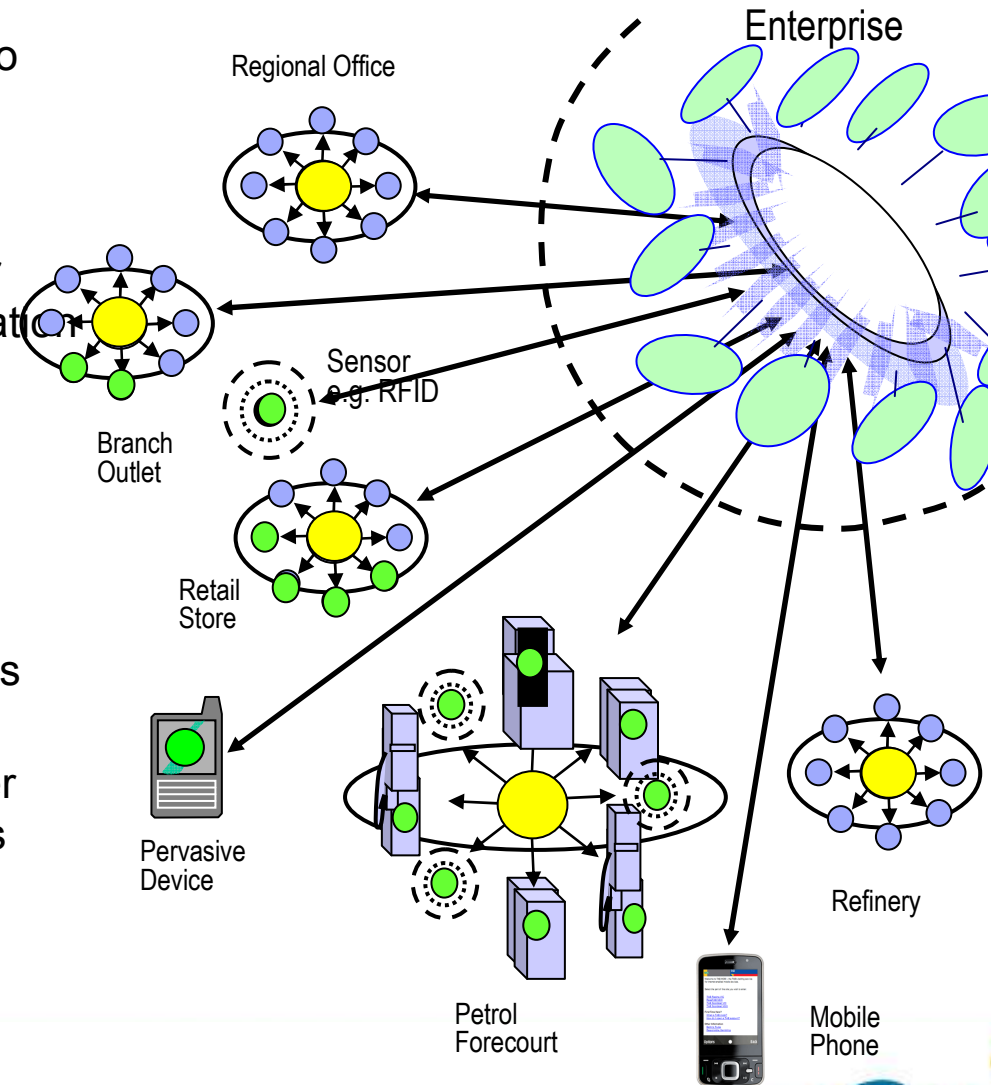- Throughput, Latency
- High availability

3. Scale Dynamically
- Start small
- Grow incrementally
- Stretch elastically
- Scale admin

CSS: F S

WebSphere MQ Value: Connectivity to, from and within an Enterprise

- A Universal Message Bus for access to data wherever it exists to support your business
- Provides a comprehensive range of Messaging capabilities to support your Business requirements for data integration
  - Managed File Transfer
  - Messaging integration patterns
  - Reliability and availability QoS
  - SOA foundation
- Provides appropriate data access and data privacy controls to help meet audit and regulatory requirements
- WMQ Telemetry is one step in extending the reach of WMQ to a wider world of data relevant to your business

Enterprise

Regional Office

Branch Outlet

Sensor e.g. RFID

Retail Store

Pervasive Device

Petrol Forecourt

Mobile Phone

Refinery

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WebSphere MQ V7.1: Feature Summary

WebSphere MQ V7.1
Announced: 4 October 2011
Availability: 11 November 2011

New Feature	*Benefits*	
Multi-Version Install capability on Distributed platforms	Makes it easier to deploy and upgrade systems and stage version to version migration	Unix and Windows support for multiple versions of MQ V7.x (AND one copy of MQ V7.0.1) down to fixpack levels. Relocatable installation support. Applications can connect to any Qmgr
Enhanced Security	Simplified configuration Enhanced Authorisation and auditing	IP address Authorisation capability Additional crypto algorithms More granular authorisation for non-local queues Application Activity Reports
Cloud Support	Simplifies and support Cloud deployment	Additional HVE images
Enhanced Clustering	Improves ease-of-use	Authorisation on Cluster Q rather than XMIT Q on Dist. Platforms Bind-on-Group support
Multicast capability	New messaging QoS provides low latency with high fan-out capability	MQ Pub/Sub topic space now map to multicast Group Addresses Provides direct interoperability with MQ LLM
Improved scalability and availability on z/OS	Further exploitation of z196 Customer control over CF storage use CF Connectivity Loss improvements	Code contention reduced to improve multi-processor linear scaling Use of MQ Datasets rather than DB2 significantly improves "large" message capability Structure rebuild capability for CF Connectivity Loss scenarios
Improved Performance on Dist platforms	Improved multiprocessor exploitation	Various code improvements

Simplification (watermark)

# WebSphere MQ V7.5: Content Summary

IBM

- For Windows, Unix and Linux

WebSphere MQ V7.5
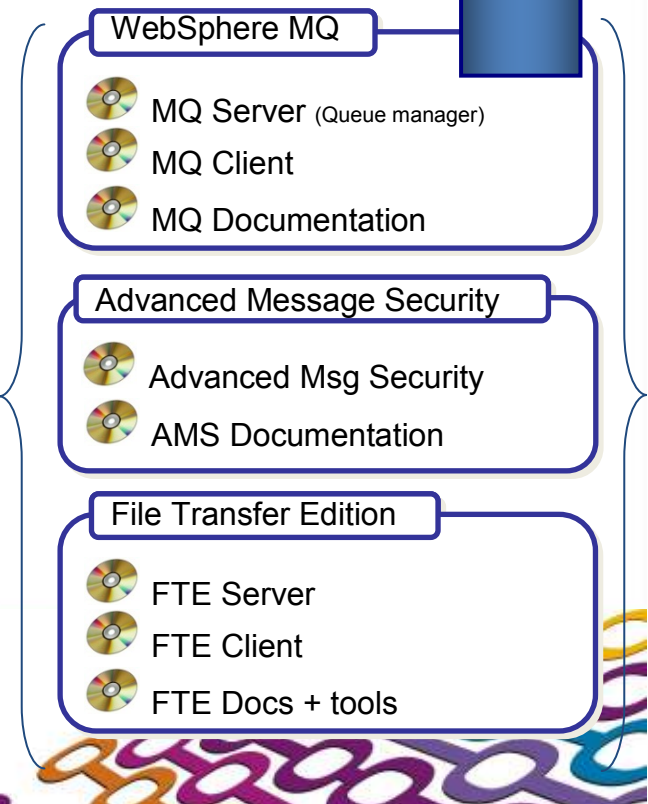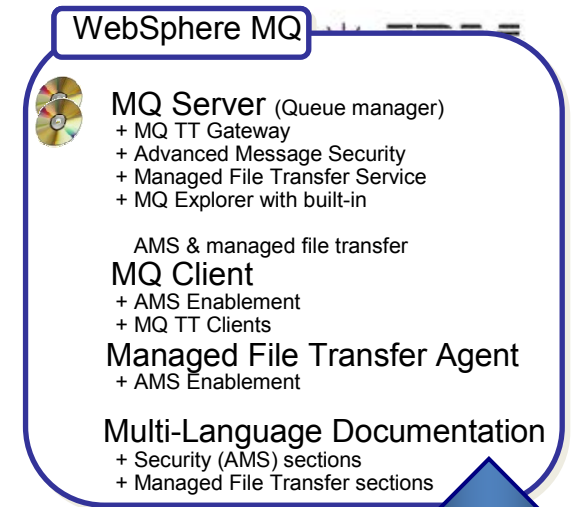Announced: 24 April 2012
Availability: 20 June 2012

Simplification

New Feature	Benefits	Details
Integrated Installation	Makes it easier to deploy systems Simpler licensing	Combines several products into a single package Common experience
Enhanced Clustering	Improves ease-of-use Improves application isolation	Split Cluster Transmission Queue
Java Application Identification	Makes it easier to distinguish applications	Applications no longer to all have the same name
AMS channel interception	Provides a level of message protection even when application environment cannot run AMS	Interception in the SVRCONN still protects messages before hitting queues
FTE Logger Options	Can write FTE audit records to flat file	No longer a requirement for an enterprise database Easier to read data immediately
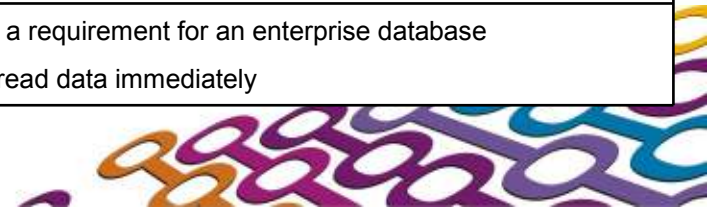
WebSphere MQ V7.5

- ## Integrated Messaging Offering
  - Single install, packaging & tooling for all Messaging options
  - Reduce time to value, simplify usage

- ## What's being delivered?
  - Integration of MQ with MQ FTE, MQ AMS and MQ Telemetry
  - Single install, common integrated tooling and management, simplified licensing and entitlements
  - Updated MQ Explorer tooling for all platforms
  - More complete, easy to use messaging infrastructure, enabling you to gain full range of messaging, swiftly & easily

- ## All messaging functions & capabilities available to all customers, new and existing with rich choice of qualities of service
  - Removal of charge for MQ XA client
  - Reduced pricing metric for standard MQ Telemetry client
    - Lower cost for larger numbers of clients

WebSphere MQ
MQ Server (Queue manager)
+ MQ TT Gateway
+ Advanced Message Security
+ Managed File Transfer Service
+ MQ Explorer with built-in

AMS & managed file transfer
MQ Client
+ AMS Enablement
+ MQ TT Clients
Managed File Transfer Agent
+ AMS Enablement

Multi-Language Documentation
+ Security (AMS) sections
+ Managed File Transfer sections

WebSphere MQ
MQ Server (Queue manager)
MQ Client
MQ Documentation

Advanced Message Security
Advanced Msg Security
AMS Documentation

File Transfer Edition
FTE Server
FTE Client
FTE Docs + tools

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Managed File Transfer
Delivered over the internal messaging backbone

- **Reliably and efficiently** transport growing amounts of business data

- **Protect** sensitive information and intellectual property

- **Reduce cost** of on-boarding, system maintenance, and customer support

- **Leverage existing investments** in skills, applications and infrastructure

- **Govern and standardize** data movement inside and across the extended enterprise

Financial Services & Banking

Retail

Government

Manufacturing

Securely and *cost effectively* while providing *scalability* over most platforms regardless of protocol

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13

WebSphere MQ File Transfer Edition Topology Example
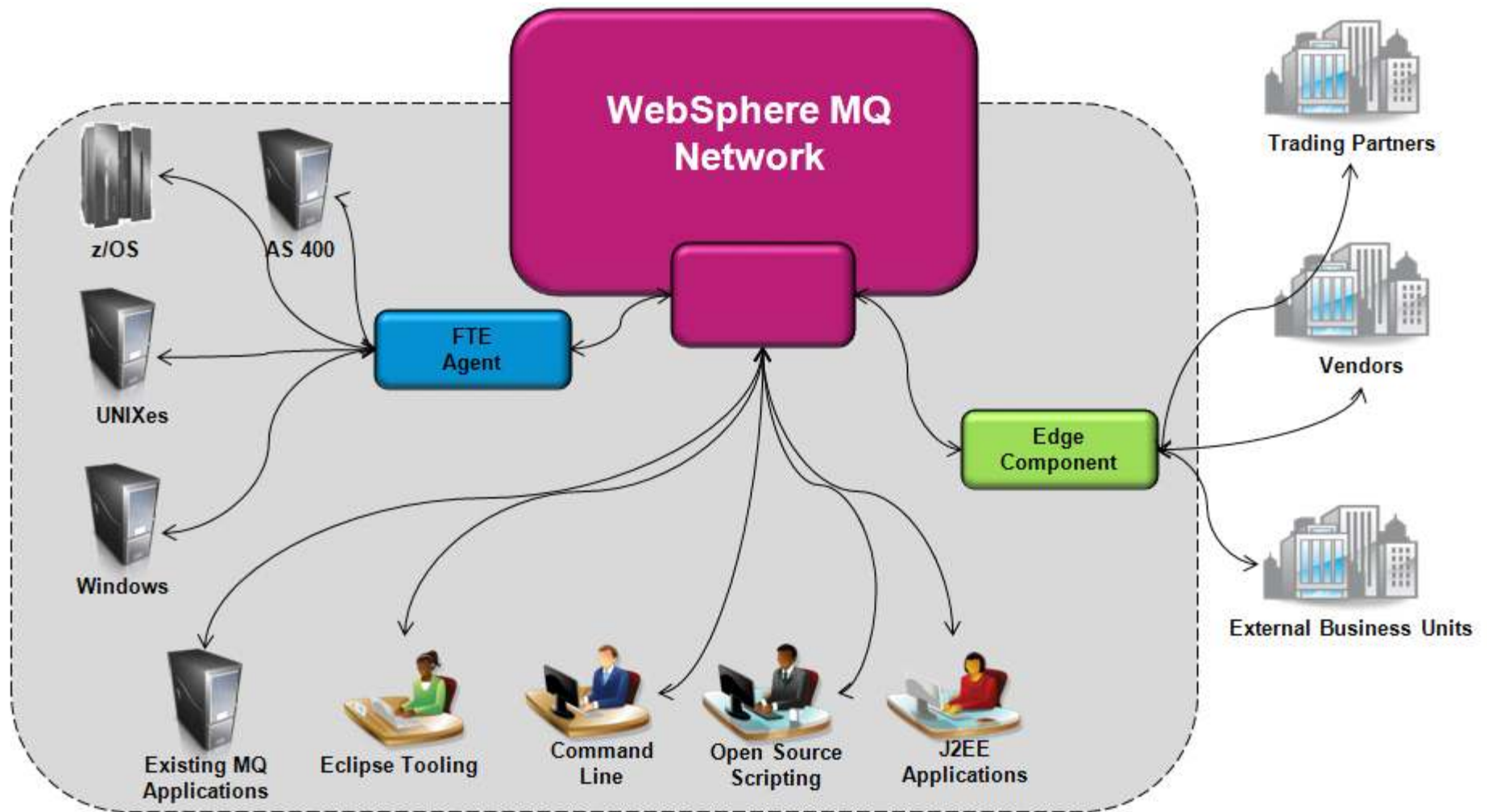
Enhanced end-to-end security
Plug in to the power of MQ Advanced Message Security

End-to-End Security

- *Protect data at rest in queues, detects and removes rogue messages*
- *Authenticate and protect messages across the enterprise*
- *Apply end-to-end encryption to existing systems with minimal disruption*

Administrative Logging

- *Reduce the scope and costs of audits*
- *Prove data is not captured in logs, dumps and traces*
- *Provide separation of duties for administrators*

Reducing the time and skills needed to comply with aspects of common security standards, including PCI-DSS

WebSphere MQ Advanced Messaging Security Topology
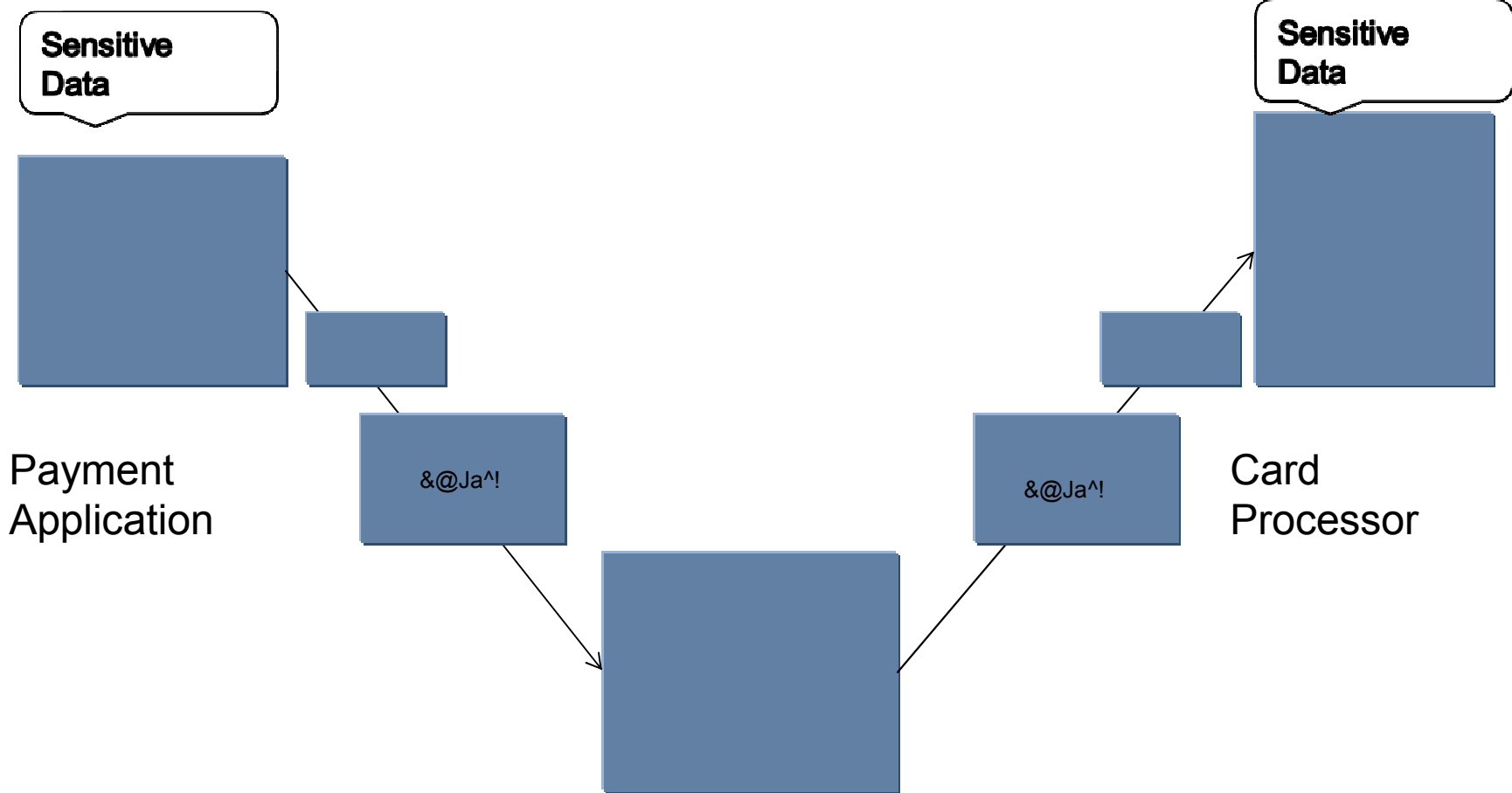
Messaging Optimized for Smart Sensors and Telemetry Devices
IBM WebSphere MQ Telemetry (included in WMQ V7.1)*

- Extend your business to mobile & other devices and sensors, using the MQTT protocol

- A single WebSphere MQ V7.1 Queue Manager can connect with more than 240,000 endpoints using MQTT protocol.

- Enables *intelligent decision-making* based on remote real-world events

- *Remote resource management* of static or moving assets, people, locations
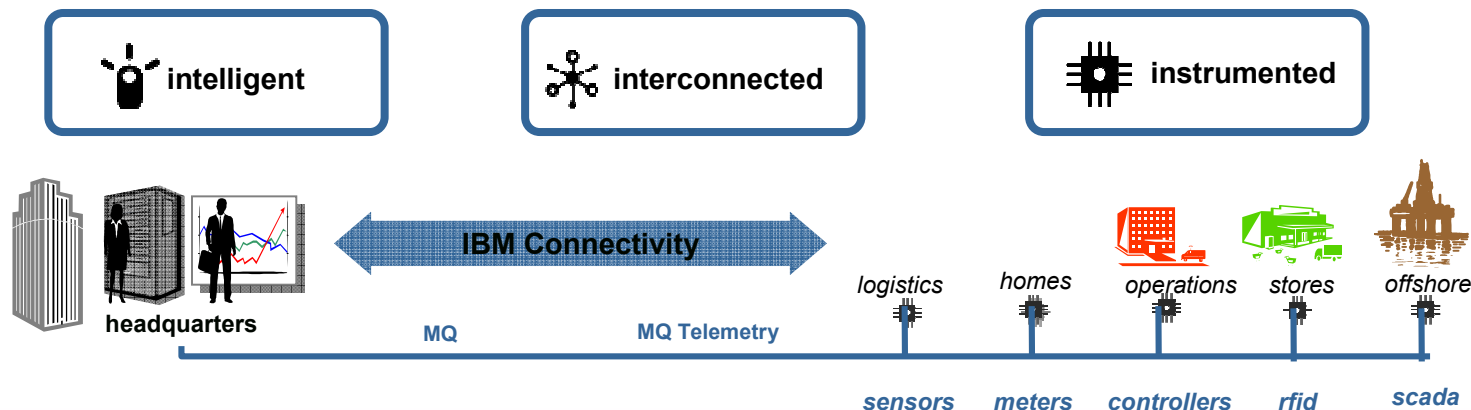
Ultra low latency messaging
WebSphere MQ Low Latency Messaging (separate product)

Performance

Consistently Execute up to
98 million messages per
second

Reliability

High Availability without
performance compromise
while guaranteeing message
order in a tier

Flexibility

APIs that support the ability to
code once and re-use with any
configuration (Infiniband, 10GE,
Shared Memory or a mix)

Integrity

Durable subscriptions saves
messages for all inactive
subscribers and delivers when
reconnected

Allowing you to scale to the demands of your network
**Interoperates with
WebSphere MQ V7.1/7.5 built-in Multicast**

Multi-Version Installation

- MQ on Unix and Windows can install multiple levels on a system
    - Re-locatable to user-chosen directories
    - Can have multiple copies even at the same fix pack level

```
┌──────────────────────────────────────────────────┐
│   ┌──────────┐              ┌──────────┐           │
│   │  MQ      │              │  MQ      │           │
│   │  V7.0.1  │              │  V7.1    │           │
│   └──────────┘              └──────────┘           │
│                                                    │
│   ╭──────────╮              ╭──────────╮           │
│   │  Queue   │              │  Queue   │           │
│   │ Manager 1│              │ Manager 2│           │
│   ╰──────────╯              ╰──────────╯           │
│                                                    │
│   ┌──────────┐              ┌──────────┐           │
│   │Application 1│           │Application 2+│        │
│   └──────────┘              └──────────┘           │
└──────────────────────────────────────────────────┘
```
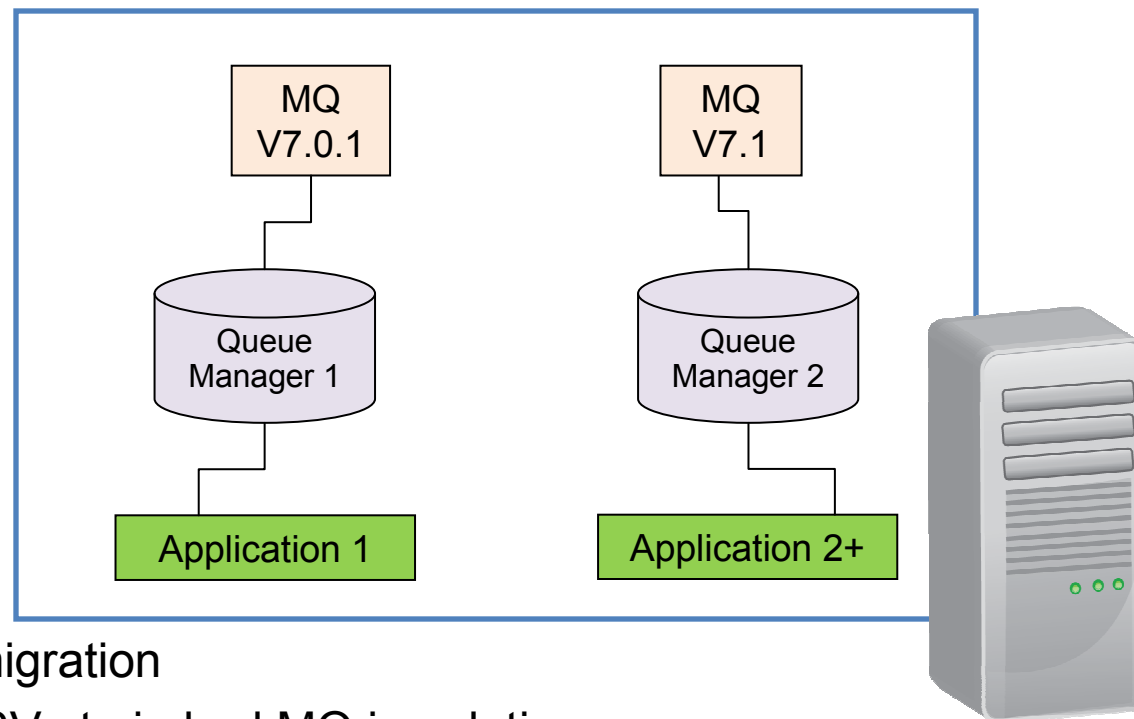
- Simplifies migration
- Easier for ISVs to imbed MQ in solutions
- Permits a single copy of V7.0.1 to remain on system

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Simplified and enhanced security for channels
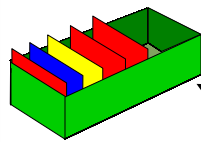
Access Control Lists
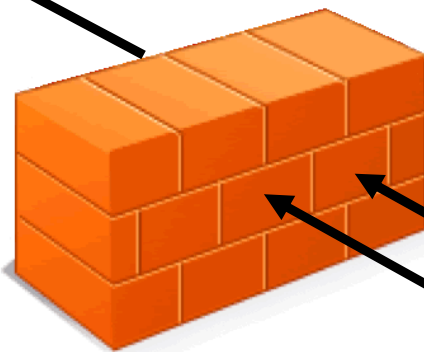
Channel blocking and user mapping

Listener blocking

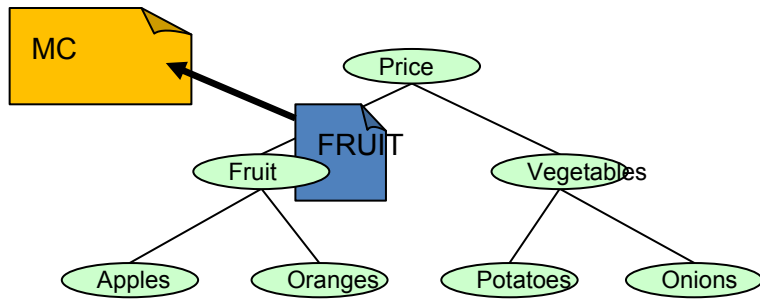**IP Firewall**

CSS: F
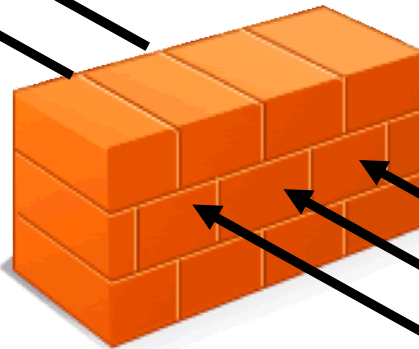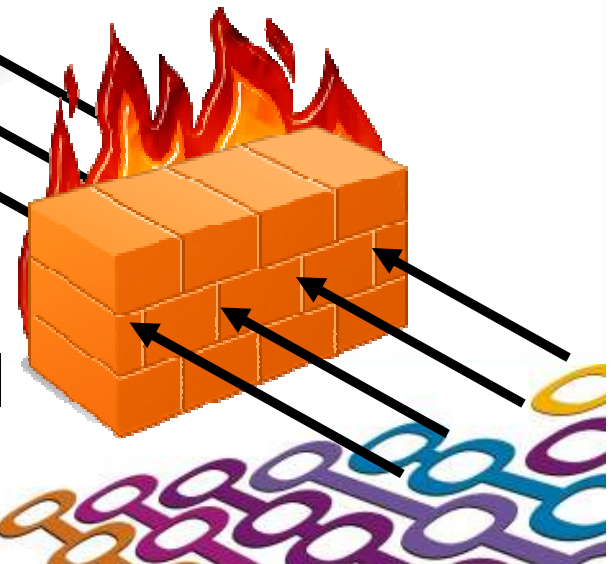
Dynamic Client Connection Using Pre-Connect Exit

- Look up in a directory such as LDAP
- Make choice based on any accessible criteria
  - Is system running?
  - Workload?
 - Where is the application running now?
- No "*" needed

planet?

use
pluto

LDAP

MQCONN ("planet",hConn,cc,rc);

MQ Client

mars

venus

pluto

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CSS: F
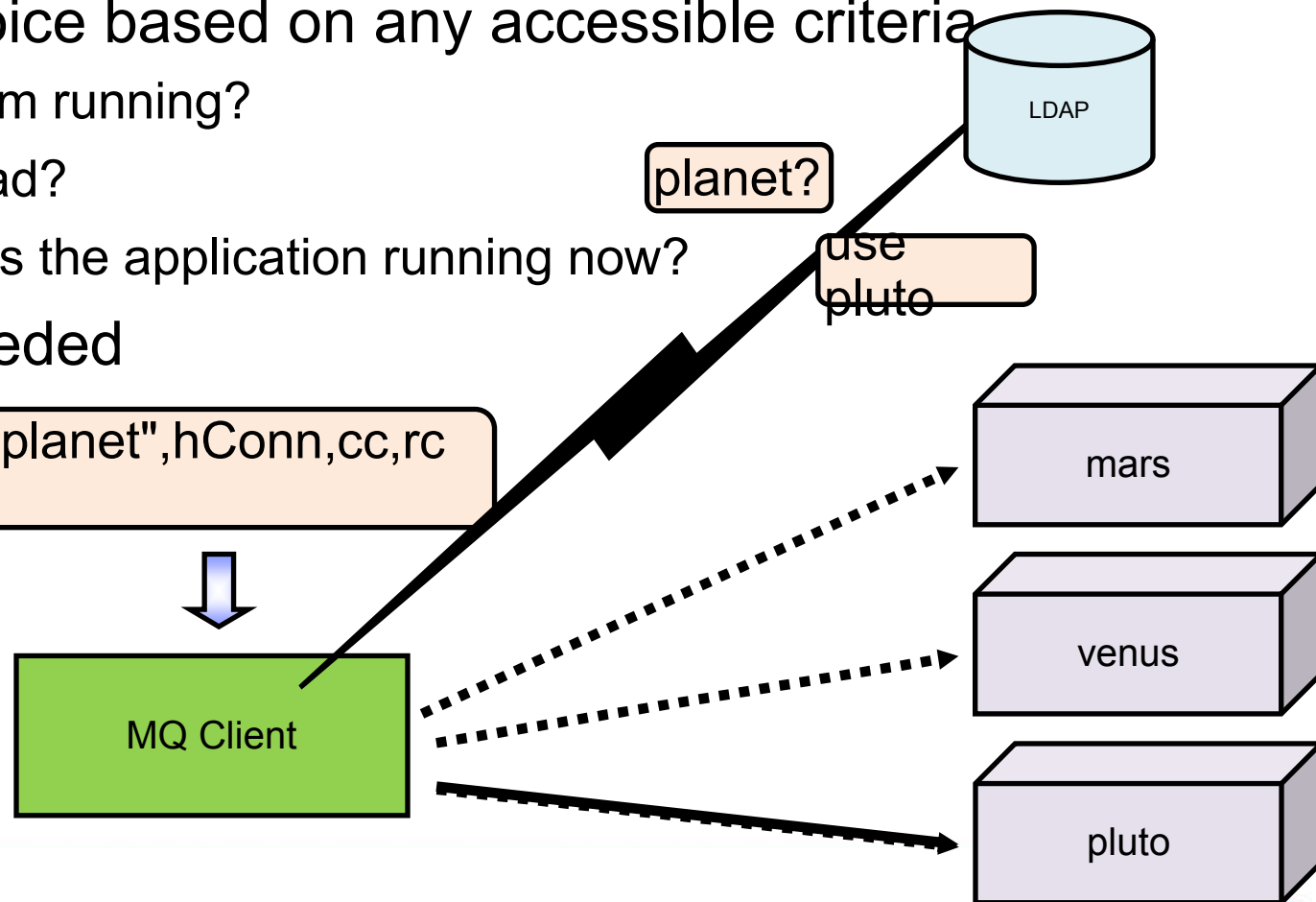
Multicast Publish/Subscribe

- Normal MQ connection still required
- Messages flow directly between clients
- Subscriber matching done at each client
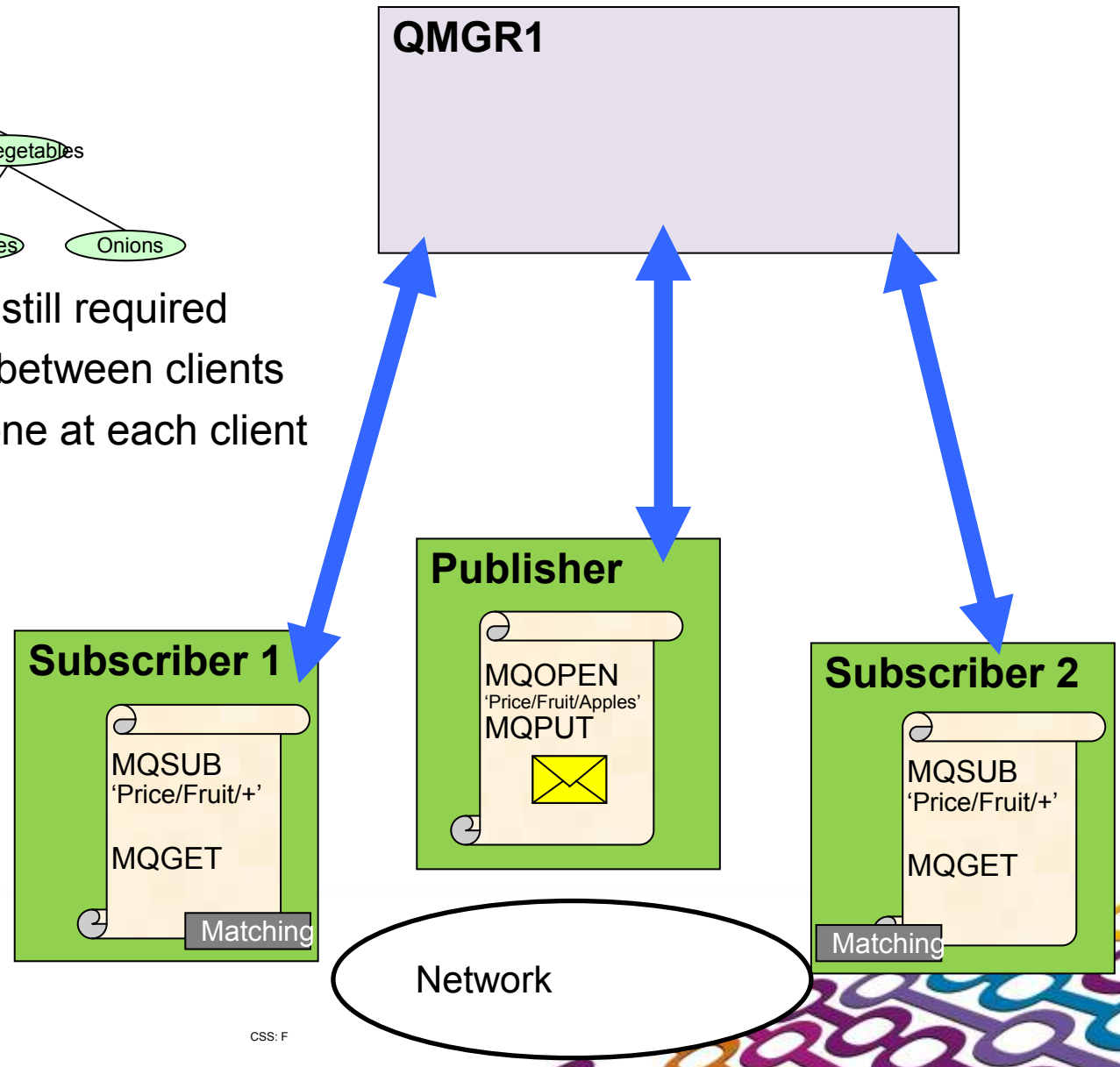
Other features

- TLS/SSL Security
  - More crypto algorithms supported for SSL
  - Stronger algorithms are now available and recommended

- Simplified authorization for remote cluster queues
  - No need to define remote queue objects, or manage authority on the cluster transmit queue

```
setmqaut –m QM1 –t queue –n SYSTEM.CLUSTER.TRANSMIT.QUEUE -p mquser +put
 … BECOMES …
setmqaut –m QM1 –t rqmname –n QM2 –p mquser +put
```

- Cluster workload balancing: 'Bind on group'
  - All messages within a logical group are routed to the same queue manager
  - Workload balancing is done for each group
  - Simpler for applications that use message groups
  - Previously would have had to close and reopen the queue

CSS: F S
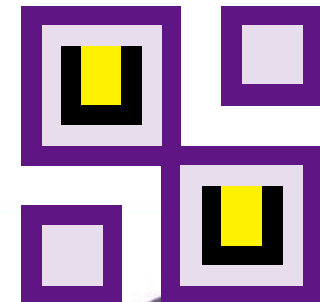
Performance and Throughput
V7.1 is the Fastest WebSphere MQ ever!

Speed, scaling and throughput improvements for all platforms

Distributed

- Exploits multiple cores

- Persistent Messaging throughput **up 100%** on Microsoft Windows and Linux x86, 45% on AIX on identical h/w for persistent 2KB messages.

- Non-persistent Messaging throughput up **50→100%+** on some Linux environments for non-persistent 2KB messages

z/OS

- Over **ONE MILLION** messages/sec (2KB non-shared) through a single Queue Manager on 30-way z196

- Over **150,000 messages/sec** (2KB shared) using 3 Qmgr queue sharing group on 30-way z196

- Can achieve **20x** improvement on large (>63k) shared queue message with new Shared Message Datasets (SMDS)
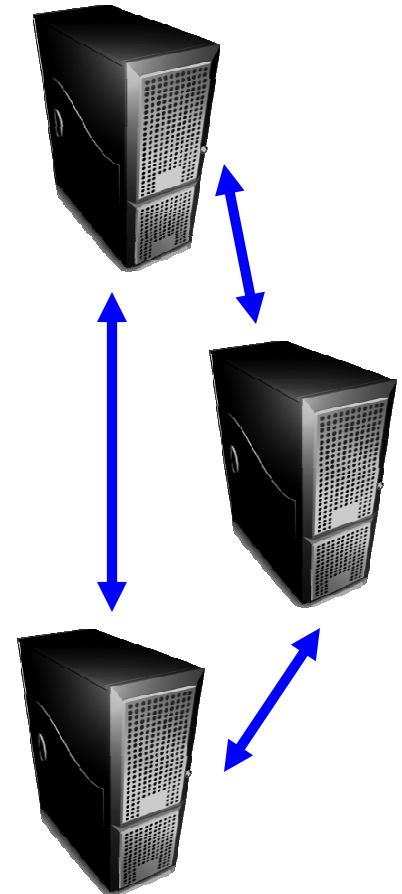
Specific MQ Enhancements for System z
Availability, Scalability, Performance

MQ v7.1

- Automatic recovery capability from connectivity loss to MQ Shared Queue Structures in a Coupling Facility
  - improves the already highly-available MQ Sysplex shared queues

- New Shared Message Datasets (SMDS) feature for large (>63k) shared queue messages
  - "large" is customisable providing much greater control over usage of Coupling Facility storage

  - Big performance gains … factor of **20x** observed for non persistent, large (64k) shared queue messages

- Scaling improvements for multi-way

MQ Explorer – more efficient and compact

Design changes to
MQ Explorer reduce its
footprint and improve
performance
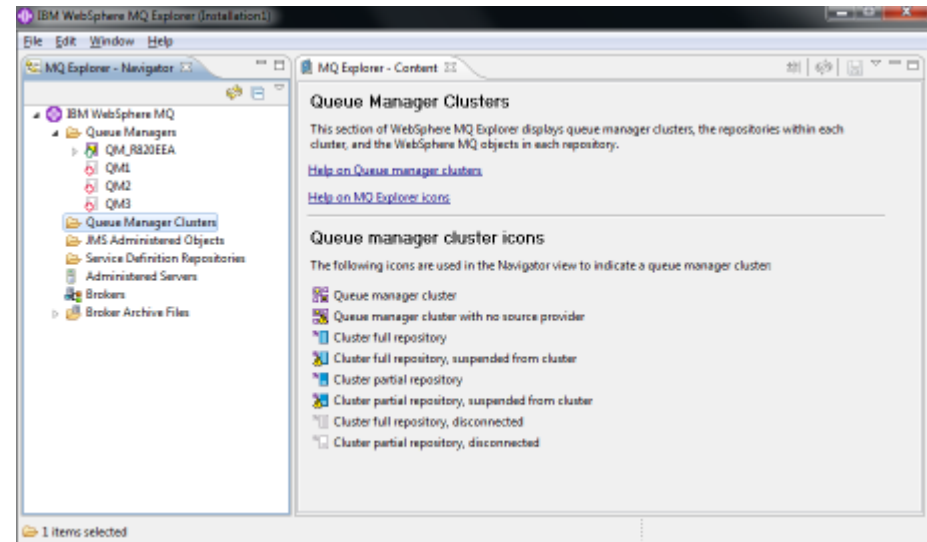
	V7.0.1	V7.1
Time to install MS0T	203 seconds	92 seconds
Install Footprint (Windows excluding JRE)	309 MB	96 MB
Startup Time	6 seconds	4 seconds
Connect to 100 queue managers	At least 53 seconds	7 seconds
Enable and disable Sets for 100 queue managers	35 seconds	1 second

CSS: F S

V7.5: Separate XMITQ per cluster-sender channel
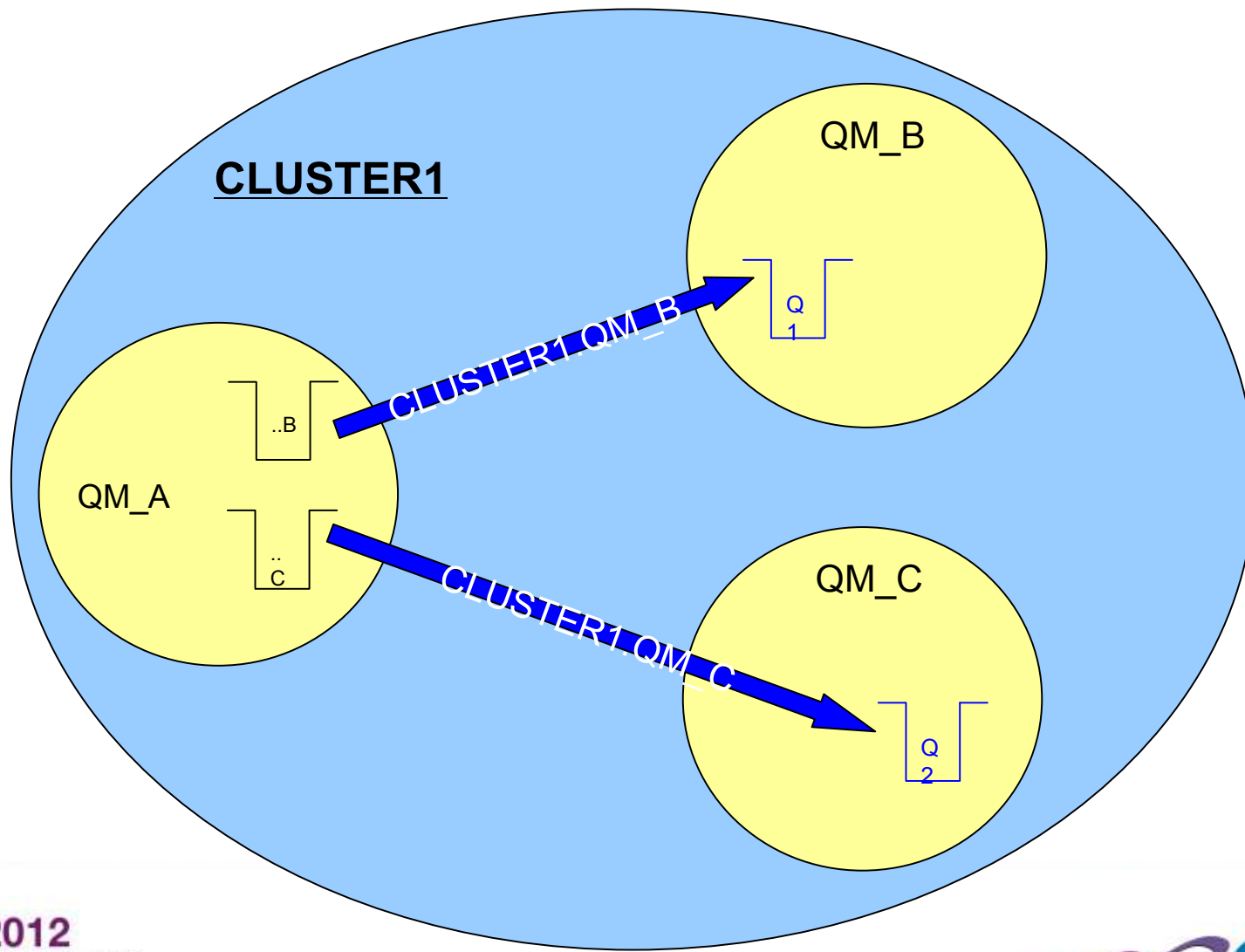
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Connectivity & Integration for

Mobile

Mobile is Different from Desktop

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Desktop		Mobile
Sit back and read	→	Read while moving
Document-oriented	→	Message-oriented
Large complex apps	→	Purpose-built mini-apps
Context-neutral	→	Context-aware
Task-driven	→	Notification-driven
Mains powered	→	Battery-powered
Predictable network response	→	Unpredictable network response

Mobile is Driving Changes to the Traditional Web

HTML4 → **HTML5**

– Applications need to be online
– Browser plug ins for additional application function (e.g., Flash, Silverlight)

– Offline execution
– No plug ins required.

HTTP → **WebSockets?**

– No built in reliability
  - Loses data on brittle networks
– Polling oriented
  - Unnecessary additional communications
  - Wastes battery life
– Chatty
  - Each message involves lots of back and forth
– One directional invocations
  - Client always initiates the communications.

– Bi-directional data exchange
  - Useful for push and streaming data (i.e. stock-ticker, media)
– **But missing key function**
  - A low level TCP socket; not a full blown messaging protocol
  - No assured delivery
  - No built-in publish / subscribe
  - Requires coding of message handling on top of it.

The MQ Telemetry Transport (MQTT)

Minimize the "on-the-wire" footprint

Expect frequent network disruptions

Deal with slow, poor quality networks

Expect client applications to have limited processing resources available

Exploit publish/subscribe

Provide several qualities of service

Provide an "open published protocol"

– Easing adoption by device vendors and third-party client software.

Value of MQTT to Mobile Applications

IBM

Push Request/Response
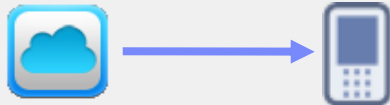
- ✔ Real-time Alerts
- ✔ Analytics Tracking
- ✔ Assured Delivery

Rich Framework

- ✓ Two-way Communication
- ✓ Rich / HTML Messages
- ✓ Status Channels
- ✓ Security
- ✓ Simple

Low Bandwidth & Cost

Very efficient bandwidth usage

Much cheaper alternative to SMS

Low Power Usage

3G ↓↑ 0.3041%

📶 0.0047%

% Battery per Hour

Mobile Device messaging

MQTT

WebSphere MQ Queue Manager

MQ

- Mobile application uses the MQTT client code (available from eclipse.org/paho)
- and the WebSphere MQ Telemetry capability shipped in MQ V7.1 & V7.5 today
    - Ensures reliable communications between devices & back-end
    - Can be used for push notifications to the device
    - Scalability
- The WebSphere MQ licensing model has changed for mobile device support
    - MQTT clients are now free
    - There is a nominal $100 charge for the server

Making it real
Why facebook standardised on the MQTT protocol for 350m mobile users

".. performance improvements designed to make your messaging experience even better. To do this without killing battery life, we used a protocol called MQTT … designed to use bandwidth and batteries sparingly… phone-to-phone in hundreds of milliseconds, rather than multiple seconds."

- Lucy Zhang, Facebook Engineer 10/19/11 www.facebook.com/lucyz
(MQTT used by their 350M mobile users, 475 mobile operators)

How does MQTT fit with Worklight?
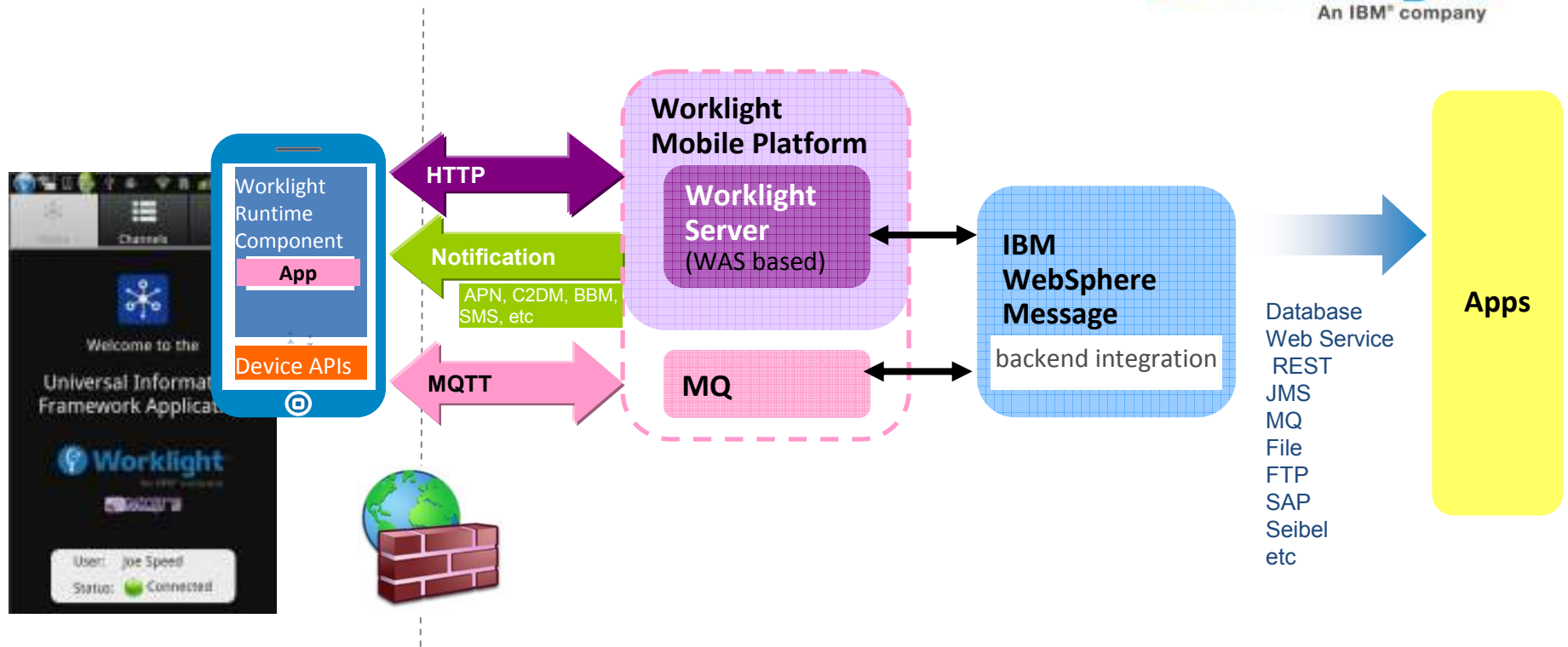
What's new in

IBM WebSphere Message Broker

Unlock the value of your business data
WebSphere Message Broker Version 8.0
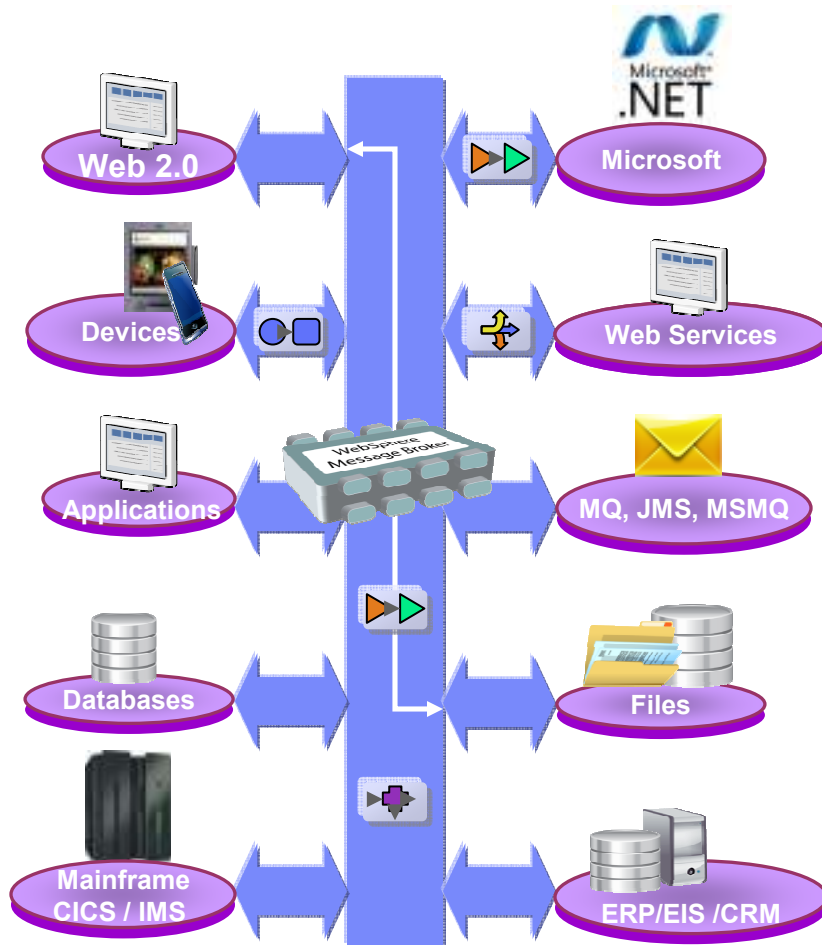
- **Simply Connect *FROM* anywhere*, TO* anywhere**
- ***Simple & Easy* –to Install, Learn, Develop, Deploy and Manage**
- **Visually Map and Transform between any two message or file formats**

Web 2.0

Microsoft

Devices

Web Services

WebSphere Message Broker

Applications

MQ, JMS, MSMQ

Databases

Files

Mainframe CICS / IMS

ERP/EIS /CRM

MATCHES & ROUTES communications between services

CONVERTS between different transport protocols

TRANSFORMS between different data formats

IDENTIFIES & DISTRIBUTES business events
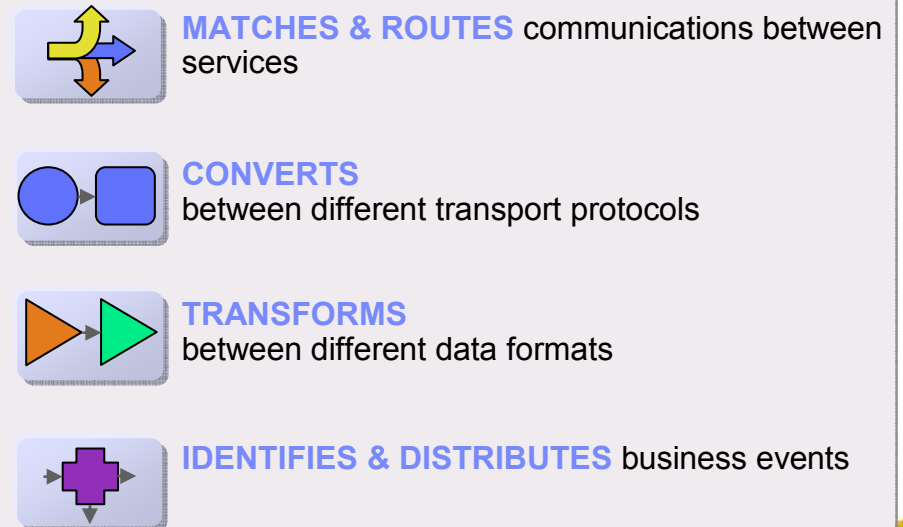
Message Broker Themes

- **Simple & Productive**

  - Making it easier and quicker to develop and manage MB solutions
    - Learn, Develop, Deploy, Manage, Migrate quickly and easily

- **Universal & Independent**

  - Connecting MB to a range of different systems
    - Universal connectivity includes standards, de facto standards, industry and custom systems

- **Industry Specific & Relevant**

  - Provide industry relevant connectivity packs to solve domain specific problems
    - Industry specific nodes, solution-oriented patterns & user-oriented tooling

- **Dynamic & Managed**

  - Allow the creation of dynamic and governed solutions
    - Design solutions for easy, flexible change with appropriate control

- **High Performing & Scalable**

  - Provide a platform and technology neutral connectivity option
    - Work on the widest possible range of hardware, software and virtualized environments

Content At a Glance

- **Simple & Productive**
  - Apps & Libs for streamlined development, packaging, deployment & management facilities
  - New .NET pattern, customization enhancements & user defined pattern editors
  - Express Edition starting point for departmental capability, capacity & price needs
  - Programmable message flow API for totally flexible solution creation and customization

- **Universal & Independent**
  - New B2B nodes for Sterling Connect Direct
  - Simple & high performing data modelling with DFDL
  - Code-free graphical transformations with GDM
  - Enhanced JMS connectivity, including JMS Receive node
  - SOAP nodes now support W3C WS-RM
  - Database & file enhancements

- **Industry Specific & Relevant**
  - Healthcare Connectivity Pack: Clinical application connectivity, healthcare patterns & end-user tooling

- **Managed & Dynamic**
  - Web 2.0 browser console with REST management API for ubiquitous access
  - Record & Replay to capture, view, edit & replay in-flight messages
  - Message flow activity trace for rapid flow analysis by end-users
  - Deployable sub flows, ESQL, Maps & schemas for dynamic transforms
  - IBM Workload Deployer for x/Linux & AIX private clouds

- **High Performing & Scalable**
  - Extended platform support with deep .NET integration

A Broad Range of Supported Platforms and Environments

- **Broad range of operating system and hardware platforms supported**
  - AIX, Windows, z/OS, HP-UX, Linux on xSeries, pSeries, zSeries, Solaris (x86-64 & SPARC)
  - IBM Workload Deployer for x/Linux & AIX; Windows introduces support for .NET CLR V4

- **64 bit Support on ALL platforms**
  - Execution group size is 64 bit & all commands are 64 bit on all platforms
  - Maintain 32bit option for developers on Windows & x/Linux platforms

- **Full range of industry standard databases**
  - DB2, Oracle, Sybase, SQL Server, Informix, solidDB
  - Open Driver Manager support enables new databases to be accessed
    - Contact IBM for details on MySQL, Teradata, PostgreSQL, Cache & Progress

- **MQ 7.0.1 prerequisite**
  - Minimum prerequisite as MB7 simplifies migration, MQ 7.1 support part of standard lifecycle

- **Java 6 on all platforms**
  - 64 bit IBM J9 engine for superior Java performance

- **New Installer**
  - Install Anywhere for distributed platforms, z/OS fully supports and exploits SMP/E
  - Includes new combined silent install, non-root install & flexible security groups

- **Detailed MB8 System Requirements**
  - See www.ibm.com/software/integration/wbimessagebroker/requirements/

Easy Migration and Co-existence

- **Migration from V6.1 and V7**
  - Message flows, message sets, ESQL, Java, Maps and XSLT run without change
  - Includes automatic migration of existing MB6.1 32 bit execution groups to 64 bit

- **Migration commands for in-place migration**
  - Includes migration of all configuration data including broker databases, queues and registry
  - Forwards and backwards migration of existing components, in situ
    - `mqsimigratecomponents` command (includes `-t` option for rollback)

- **Co-existence for incremental migration**
  - MB8 co-exists with MB6.1 & MB7 to enable incremental migration
    - MB6.1, 7.0 will support MQ7.1 as part of standard service lifecycle
  - MQ7.1 supports queue manager co-existence
  - MB8 Explorer can administer MB7 and MB8 brokers
    - New web admin can only administer MB8 and higher brokers

- **Publish Subscribe migration**
  - MQRT clients migrated to MQ7 clients with new MQ7 facilities for message streaming
  - MQTT and multi-cast clients use native MQ nodes with MQ7.0.1 & MQ7.1 respectively

- **Production ready**
  - V8 is designed to be ready for production at General Availability;
  - Extensive Alpha, Beta and IBM testing from Jan 2011

Web Administration for Universal Access

- **Web Administration Console**
  - Objective is to provide comprehensive web management interface
    - Focus on non-administrators to understand brokers & resources
  - Supports all major browsers Firefox, IE, Opera, Safari, Chrome
  - Designed as users as a complement MBExplorer
    - MB Administrators can users continue to use MB Explorer
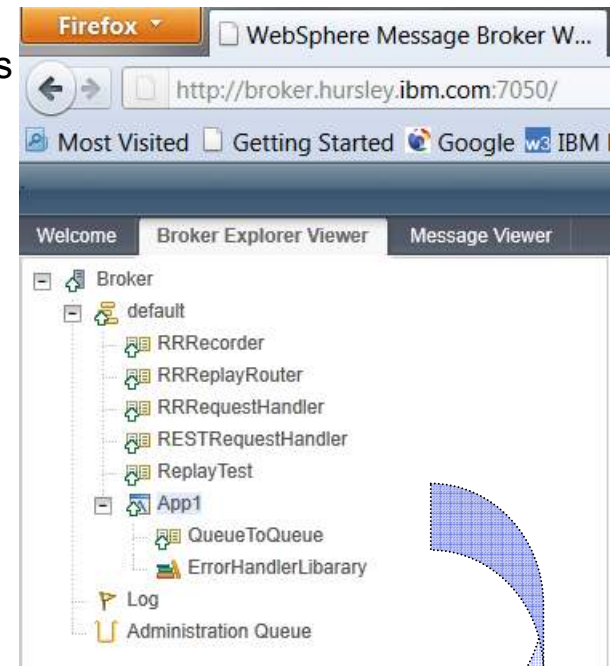
- **Easy to configure**
  - No extra moving parts - uses internal HTTP listener to serve data
    - Web admin started by default on port 7050
  - Can reconfigure to listen on user port or disable
    - SSL connector configured via `mqsichangeproperties`
  - Role based access provides custom class user control
    - Default is read-only access to MB resources
    - More authority required to create, change or delete resources

- **Using Web Admin**
  - Intuitive tree view shows hierarchy of MB resources
  - View resource details with click or button
  - Includes full suite of resources
    - Apps, Libs, Flows, Configurable services etc

- **Web Admin & MB Explorer**
  - MBX & web admin designed for concurrent use
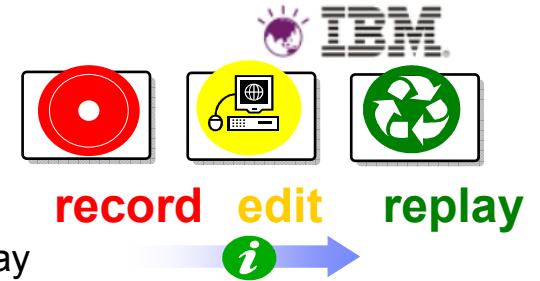 - Web admin requires MB8 broker
  - Explorer can manage both MB8 & MB7 brokers
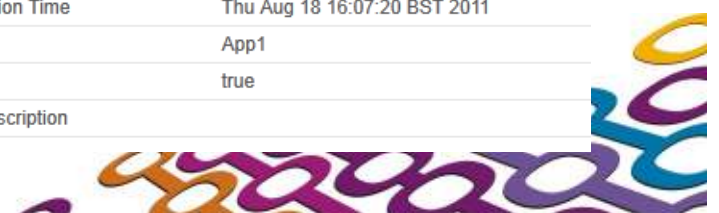
Record & Replay

record edit replay

- **Enable Record, Edit and Replay of In-flight Data**
  - Comprehensive audit of messages, web, ERP, file & other data
  - Flexible topology: single or multiple brokers for recording, capture & replay

- **Data Recording, Capture & Store**
  - Graphically configure binary, text, XML payload capture, including whole, partial & multi-field data
  - Source data is currently limited to MB flows, including MB6.1, MB7 & MB8
    - Monitor tab or monitoring profiles identify captured events
  - Capture events on *any broker*, local or remote
    - Any broker EG can be configured as capture agent
    - Configurable service identifies topic, target database
  - Agent stores data in any supported broker database
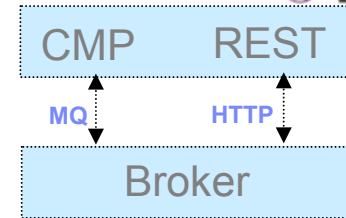   - Oracle, DB2, SQL Server, Sybase, Informix…
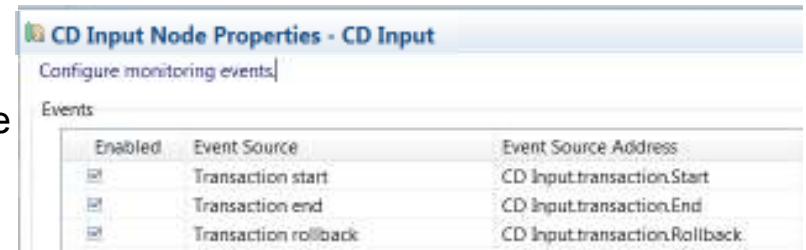
- **Web Tooling to View and Filter data**
  - Independent web admin & capture for scalability
    - Configure multiple EG listeners for web
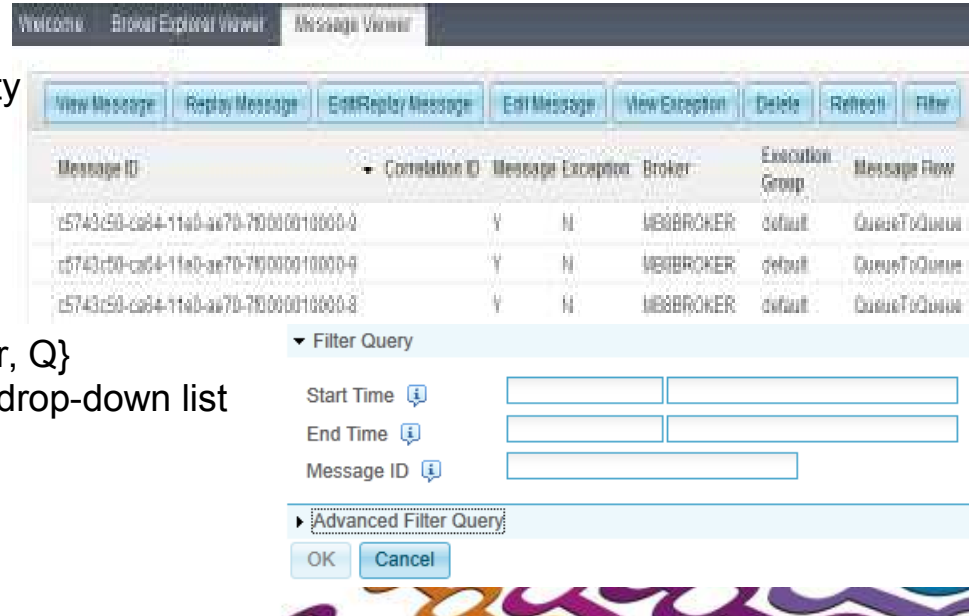
- **Replay for redelivery or flow reprocessing**
  - Replay selected data to flows or applications
  - MB admin configures logical destinations
    - Maps to physical protocol, e.g. MQ: {Qmgr, Q}
  - User selects destinations from auto-populated drop-down list

Open Management with REST

- **REST based management API**
  - MB now supports HTTP/REST management API
    - Complements & compatible with existing CMP interface
  - HTTP client can manage MB independent of CMP
    - Includes new interface for message record & replay


```
GET /admin/eg/MYEGNAME HTTP/1.1
From: machine@ibm.com
User-Agent: MyApp/1.0
```

- **URI for all MB Resources**
  - New ATOM data format for payload describes MB resources & related entities
  - ATOM service documents & feeds map intuitively mapped to MB artefacts
  - Provides very natural navigation of MB resources
    - e.g. Execution group document contains EG properties & per-message flow ATOM feed

```
HTTP/1.1 200 OK
Date: Sun, 1 Oct 2011 21:46:59 GMT
Content-Type: text/html
Content-Length: 426

<?xml version="1.0" encoding='utf-8'?>
<service xmlns=http://www.w3.org/2007/app xmlns:atom="http://www.w3.org/2005/Atom">
  <workspace>
    <atom:title>Execution group feeds</atom:title>
    <collection href="http://my.broker.com/admin/eg/MYEGNAME/resources" >
    </collection>
  </workspace>

  <executiongroup description.long="" description.short="" ... >
  </executiongroup>
</service>
```

- **Fully open interface can be exploited by 3rd party tools**
  - HTTP REST/ATOM formats published & maintained for use by external users
  - Enables widgets, mash-ups & other situational applications

Easy to Develop, Deploy & Manage

- **Streamlined AD, Deploy & Management**
  - New & migrated resources grouped into Apps & Libs
    - Encourages designing for reuse
    - Simplifies deployment & management

- **Apps & Libs contain all solution resources**
  - Apps contain solution specific resources
    - e.g. main processing flow, specific transformations
  - Libs contain common resources
    - e.g. data definitions, error routines…
    - Can reference other libraries
  - Apps & Libs created from migrated workspaces
    - Automatic migration from MB6.1 & MB7

- **Easy deployment**
  - Drag & drop apps to run them immediately
  - Simple to package with 1-click for each app
  - Override deployment properties for promotion

- **Consistent Operations**
  - AD artefacts are visible in runtime with same structure
    - MBTK, MBX, Web admin all reflect same structure
  - Can manage using apps e.g. start, stop, delete
  - Commands updated to refer to Apps & Libs e.g. `mqsilist`
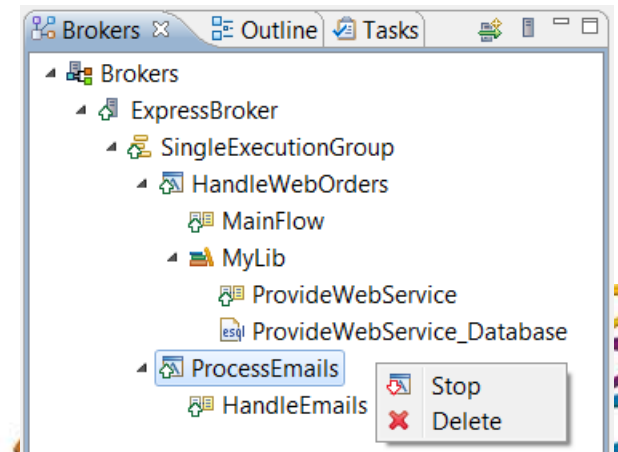 - Full lineage available, e.g. version, deploy date…
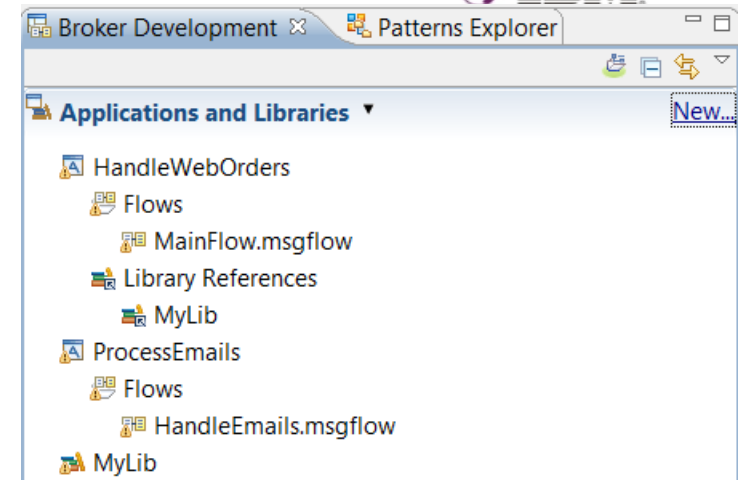
Patterns for Easy Solution Creation & Capture

- **Patterns Based Development**
  - Quickly create best practice solutions from pre-built templates
    - e.g. Web Service façades, Message processing, File to queue…
  - IBM pre-supplied & User Defined Patterns
    - Create & share user patterns, including community downloads

- **New .NET pattern for service façade scenarios**
  - Use .NET pattern to quickly create web service from assembly
  - Create message flows & WSDL for external consumer
  - Extend pattern for (e.g.) Dynamics to SAP integration
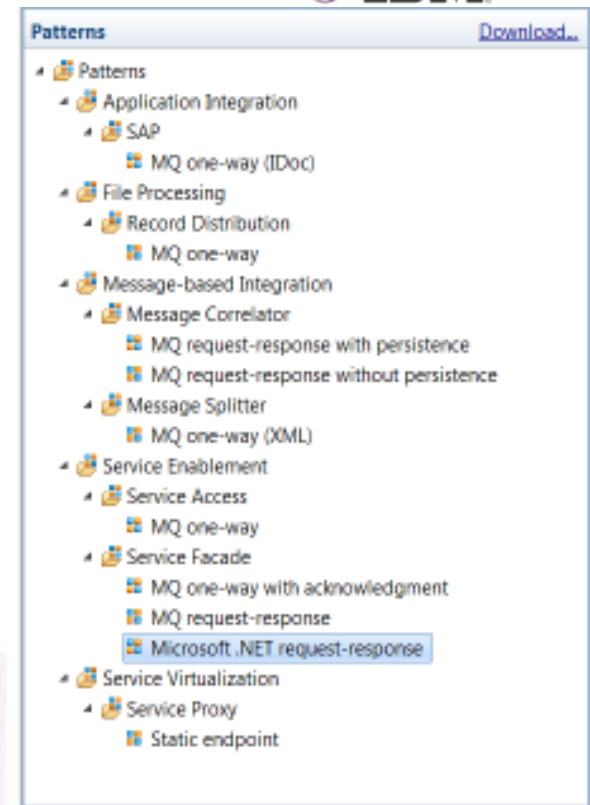
Configure Microsoft .NET service

Configure your .NET assembly that the service invokes.

Assembly file name:	C:\Argo\Microsoft\sdk\bin\64bit\microsoft.crm.sdk.dll	Refresh	Select...

Assembly Information

Class name: Microsoft.Crm.Sdk.Customer

Methods on the class that the service will invoke:

Method Name	Abstract	Static	Public	Private	Return Type	Nullable
get_name	No	No	Yes	No	System.String	No
set_name	No	No	Yes	No	System.Void	No

- **Pattern Authoring Enhancements**
  - Reconfigure pattern preserving user customizations
    - Identify invariant parts using simple annotations
  - User-defined editors for rich pattern dialogs
    - e.g. .NET discovery introspects assembly
  - Unbounded repeating group pattern parameters
    - Allows more open-ended solutions

Patterns   Download...

- Patterns
  - Application Integration
    - SAP
      - MQ one-way (IDoc)
  - File Processing
    - Record Distribution
      - MQ one-way
  - Message-based Integration
    - Message Correlator
      - MQ request-response with persistence
      - MQ request-response without persistence
    - Message Splitter
      - MQ one-way (XML)
  - Service Enablement
    - Service Access
      - MQ one-way
    - Service Facade
      - MQ one-way with acknowledgment
      - MQ request-response
      - Microsoft .NET request-response
  - Service Virtualization
    - Service Proxy
      - Static endpoint

Configure Pattern Parameters

Provide values for pattern parameters. Click the "Generate" button or click here to generate a pattern instance.

Configure the .NET assembly that the service invokes.

Pattern Parameters

- Microsoft .NET assembly

Configure the .NET assembly that implements the service calls

Class name   Configure...

Application domain
name

- Service information
- Logging

Healthcare Connectivity Pack

- **New Feature for Healthcare**
  - MB part of many healthcare solutions, including HL7, medical devices, home health & analytics
  - Connectivity Pack provides IBM ESB for Healthcare as a priced feature of Message Broker
  - Typical scenarios include device integration, electronic forms, clinical document sharing, analytics…
  - Built-in & customizable patterns enable rapid creation of healthcare connectivity scenarios
  - New facilities for connecting HL7 clinical applications, with end-user operational tooling

- **Built-in Clinical Applications Support**
  - New input & output nodes connect HL7 clinical applications
    - EPIC, Cerner (ADT, Demographics), JAC, Sunquest, IHE, MediTech…

GenericHL7Input
GenericHL7Output
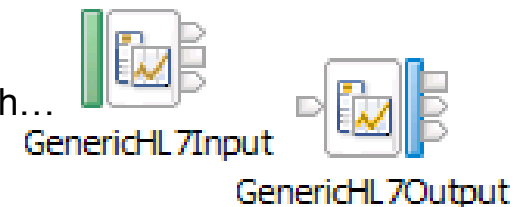
- **HL7 Connectivity Pattern**
  - New Patterns Explorer Healthcare category handles common HL7 connectivity requirements
    - e.g. HL7 pattern has sequencing, duplicate detection, journaling, remainder processing built-in
    - Exploits HL7 V2.x Common Information Model (CIM)
  - Users can extend built-in patterns & create their own healthcare patterns

- **Operational Tooling**
  - Provides end-user view for status and statistics
  - Informational details on clinical applications
    - On/off-line, messages sent/received/queued etc

Clinical Application Connections

From	To	TCP/IP : Port	Execution Group
Message Broker	Pharmacy	Pharmacy:3333	Healthcare
Message Broker	Maternity	Maternity:2222	Healthcare
Message Broker	Patient Registration	localhost:1111	Healthcare
Pharmacy	Message Broker	localhost:3333	Healthcare

Broker Development Patterns Explorer

Patterns   Download…

- Patterns
  - Application Integration
    - SAP
      - MQ one-way (IDoc)
  - File Processing
    - Record Distribution
      - MQ one-way
  - Healthcare
    - HL7 to HL7
  - Message-based Integration
    - Message Correlator
      - MQ request-response with persistence
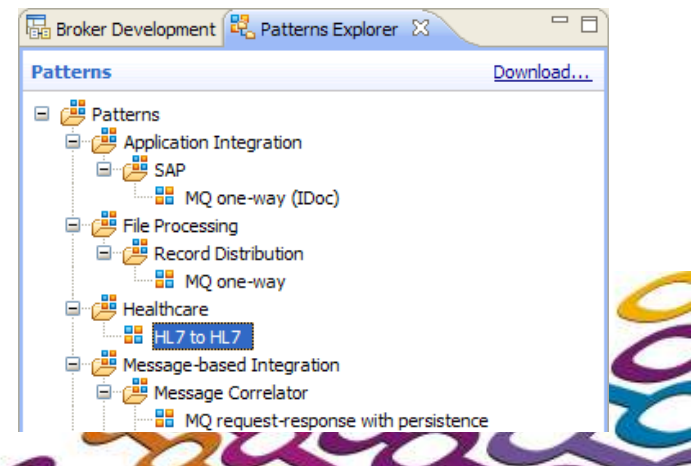
Easy Data Modelling with DFDL

- **Simple & powerful standard for data modelling**
  - New standard for binary, text & industry data formats
    - Logical structure with physical annotations
    - e.g. endian, ASCII/EBCDIC, padding, justify...
  - Data Format Description Language (DFDL)
    - For use in IBM and non-IBM products
    - **forge.gridforum.org/projects/dfdl-wg**

- **Built-in facilities to model data easily**
  - Quick wizards for (e.g.) CSV, record oriented data
  - Auto-model importers (e.g.) COBOL copybooks
  - DFDL editor for power users
    - Create logical model & physical refinements

- **Test parsing and test data generation**
  - Test whether sample data fits with DFDL definition
    - Parse trace provide success & error case explanation
  - Auto-generate test data for test & debug scenarios

- **All broker nodes can exploit new DFDL parser**
  - Configure as existing XML, JSON, MRM, MIME... parsers
    - Interacts with message tree in usual manner
  - Excellent performance characteristics
    - (e.g.) element type, size, structural complexity etc
    - Supports streaming, partial parsing etc...

Graphical Transformations

- **IBM Graphical Data Mapper (GDM)**
  - Visually map and transform source to target data
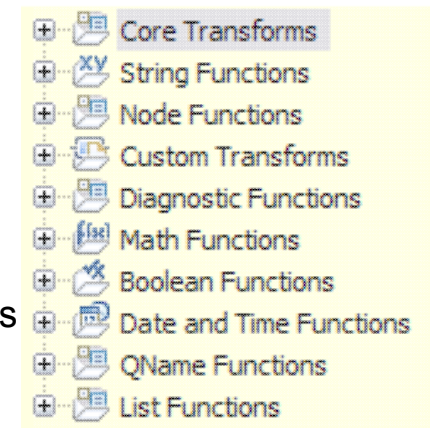   - Code-free, high performing & scalable
  - GDM designed for whole IBM product set
    - e.g. Full map exchange with MDM Server V9
    - Mapping Script Language (MSL) format
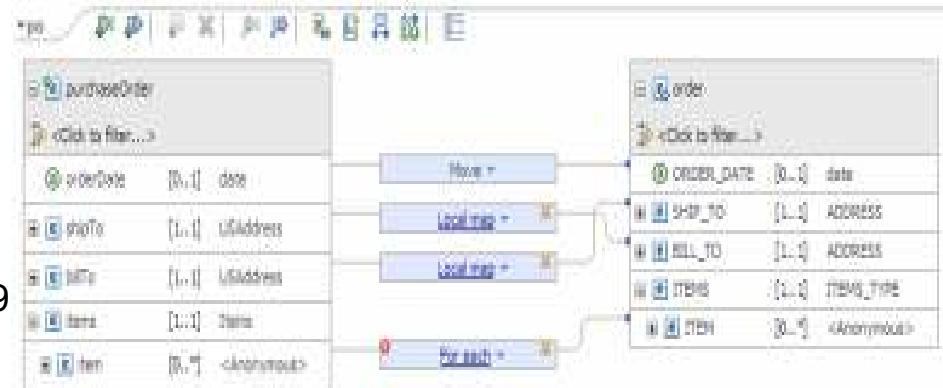
- **Simple & powerful graphical mapping experience**
  - Apply transformations to single and multiple elements
    - Conditionals (`if then else`), Loops (`for each`), Functions (`target = f(source)`) & more!
  - Database mapping sources and targets for routing and enrichment scenarios
    - Broad database support (Oracle, DB2, SQL Server, Sybase, Informix…)
  - Complements and supports existing transformation languages
    - Call user defined transformation in Java, SQL, XPath, .NET…

- **Simple deployment, high performing & scalable**
  - Maps can be deployed with solution BAR file or stand-alone
  - JIT compile means technology advances improves existing, deployed solutions
    - Source deploy + runtime compilation = enhanced performance

- **Migration from pre-version 8 maps**
  - Existing maps developed before version 8 continue to work as-is
    - Existing maps opened in read-only mode for visualization & comprehension, cannot be modified
   - Automatic conversion of `.mfmap` format to MSL not currently built-in

- Core Transforms
- String Functions
- Node Functions
- Custom Transforms
- Diagnostic Functions
- Math Functions
- Boolean Functions
- Date and Time Functions
- QName Functions
- List Functions

Deep Integration for .NET on Windows

- **New node for native .NET program invocation**
  - Call .NET programs directly via CLR V4; includes app domains for isolation
  - C#, VB .NET (COM), JScript & F# programming available natively in MB
    - Extensive range of .NET data types supported for easy integration

- **Integrated Visual Studio Development**
  - Create .NET nodes in Visual Studio; Native MB assemblies simplifies process
    - e.g. packages, templates, #using, debug, content assist etc
  - Visual studio compiled resources available without redeploy
    - Broker .NET watcher loads App Domain with most recent assembly
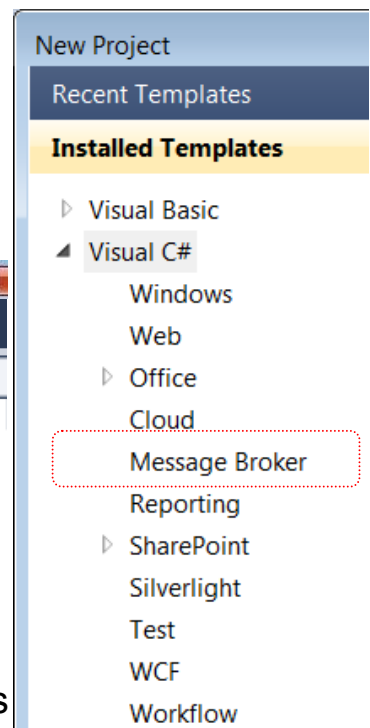
- **Call .NET programs from new and existing MB nodes**
  - Toolkit can introspect .NET assemblies to dynamically discover available methods
    - Automatically create appropriate language signatures to simplify invocation
  - (e.g.) ESQL can now directly invoke .NET programs using simple procedure call

- **.NET performance compares favourably with native ESQL & Java transformations**
  - .NET resource statistics show behaviour partitioned by app domain (calls, storage...)

Extend Sterling with MB Connectivity

- **End-to-End Processing in B2B Scenarios**
  - C:D backbone enriched by MB - connects partners to Enterprise
    - e.g. Web2File, File2Queue, Database2File, File2Dynamics, .NET
  - Sophisticated file processing includes timely inbound and outbound transfers & intelligent metadata
  - New C:D File input & C:D File output nodes allow MB to use files transferred by C:D
    - Complement existing MB file, FTP, SFTP and FTE file capabilities
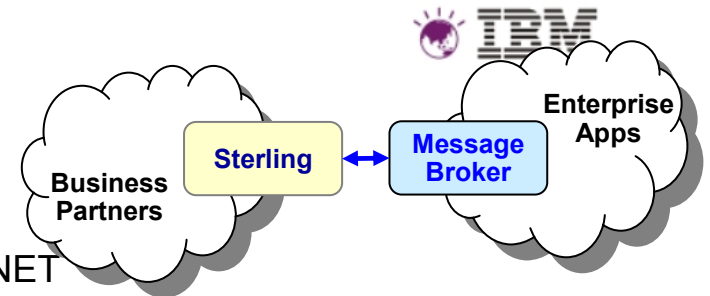
- **C:D File Input node**
  - Message flow starts processing message as soon as C:D agent notifies of complete file transfer
  - C:D metadata provided in `LocalEnvironment` allowing intelligent processing of transfers & scripting
  - File can be processed as whole file or record-at-a-time; simple & user records – per existing file nodes

- **C:D File Output node**
  - Creates file output records and requests C:D transfer with appropriate metadata
  - `LocalEnvironment` allows users to specify transfer overrides and customizable metadata

- **C:D Agents are automatically Installed, Configured and Managed**
  - Installed seamlessly as part of regular install, auto configured CD-R
  - CD-R agents are started with MB execution groups when message flows are started and stopped
 - Execution Group Properties for custom configuration
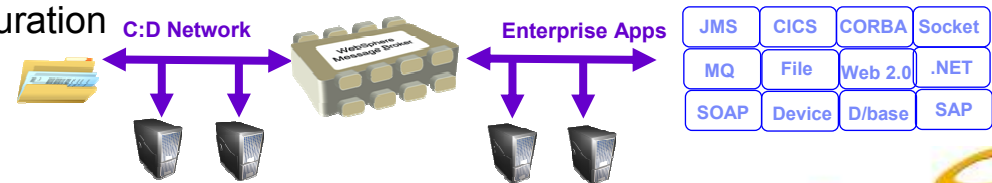
- **MB Explorer Monitoring**
  - Resource manager statistics & reporting
  - Activity Log displays C:D JOB details & other reference data

Business Partners

Sterling

Message Broker

Enterprise Apps

C:D Network

Enterprise Apps

JMS	CICS	CORBA	Socket
MQ	File	Web 2.0	.NET
SOAP	Device	D/base	SAP

IBM Workload Deployer for Private Clouds

- **Simplify provisioning MB on x/Linux & AIX**
  1. Initial system deploy resulting in quicker time to solution value
  2. Fix pack deploy reduces recurring maintenance cost

- **Virtual image software & hardware packages**
  - Packages includes all MB & MQ components
  - RHEL 5.5 for VMware ESX x86-64 & IWD images
  - AIX 6.1 TL7 `mksysb` & IWD images
  - Updated when new fix pack levels released
    - Download to customer site from IBM web
    - Uploaded to IWD using scripts or Image Loader tool
  - VMware & `mksysb` images can be used standalone

- **Configuration patterns & scripts**
  - HVE Scenario Configuration Information
    - Base Pattern with configuration script packages
  - Base Pattern for most popular MB topology configurations
    - *Basic Broker, Advanced Broke*r, *<User Pattern>*
  - Script Packages configure base pattern
    - *Create Exec Group, Deploy BAR, Run MQSC, <User Script>*
    - Emergency Fix also possible: iFix binary + script package to drive installer

- **Full function deployed configuration**
  - Interaction with deployed MB components as per regular deployment
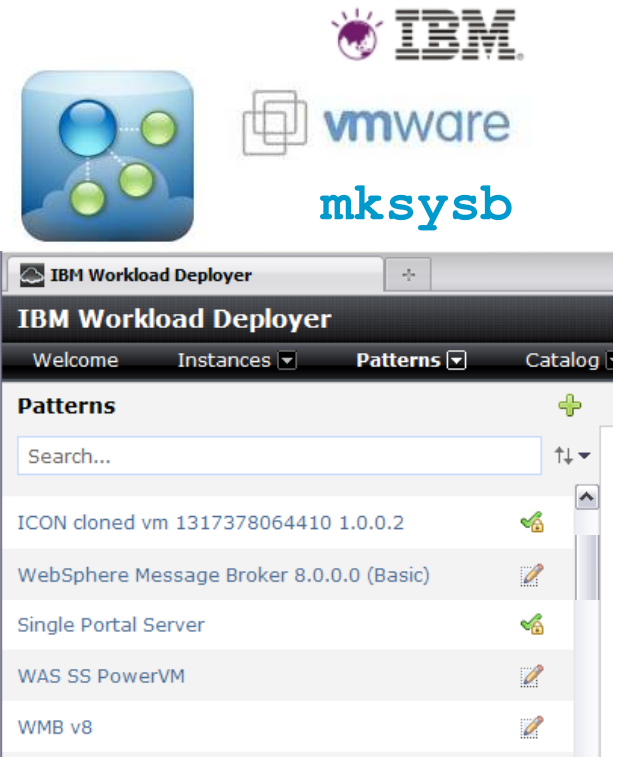
Express Edition for Initial Deployment and Future Growth

- **Adopt Message Broker in intuitive increments**
  - A starting point for new users with department level capacity, functionality and price needs
  - Single package allows movement between modes
    - e.g. Trial->Express->Standard->Advanced
  - Same toolkit for all modes of operation, same service package for simple maintenance

- **New Mode of Operation**
  - **Express:** Initial deployment with 1 execution group, no explicit flow limit, and limited node set
    ```
    mqsimode BROKER1 -o express
    ```
  - Node set includes many transports & protocols, graphical transformation, scripting & programming
    - e.g. SOAP, MQ, HTTP, JMS, File, Email, Graphical maps, PHP, Java, .NET

- **Development & Deployment**
  - All toolkit facilities available, including unit test environment
  - Packaging of solution via BAR file as with other modes
  - Deployment to unlicensed mode fails gracefully with reason
    - Change to unsupported mode also reports reason

- **Operational Management**
  - Flows & applications provide basic isolation & control
  - Single execution group collocates resources in OS process
    - Multiple threads can be assigned to message flow

- **Licensed & Visible**
  - Separate ITLM file for each mode enables compliance check
  - MBX and Browser administration report & start-up messages for operational clarity
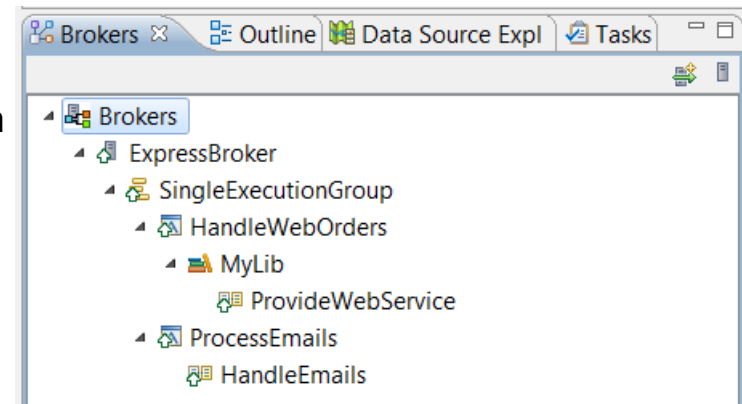
# WS-Reliable Messaging

- **SOAP nodes now support WS-RM W3C protocol**
  - Typical Scenarios for reliable delivery of messages between applications
  - Multiple classes of service: {AtLeastOnce, AtMostOnce, ExactlyOnce}, InOrder
  - Complements SOAP/JMS reliability & persistence. SOAP/JMS(MQ) is formidable!

- **Existing SOAP Nodes now support WS-RM**

Receive reliable msg   Send reliable msg   Reply reliable msg
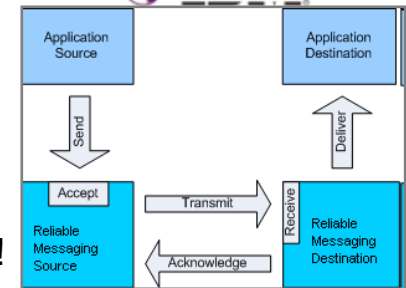
  - The existing SOAP nodes participate in WS-RM exchanges
  - Policy Set editor defines QoS: e.g. InOrder, ExactlyOnce
  - SOAP nodes handle ALL protocol details, programmers simply send or receive WS-RM messages
    - SOAP input type nodes (input, async response) propagates reliably received message
    - SOAP request nodes (reply, request, async request) receive message to be delivered reliably
  - Only for SOAP/HTTP: SOAP/JMS, SOAP/MQ are already reliable, persistent and transactional

- **Broad Platform support for WS-RM 1.0 & 1.1**
  - .NET compatibility option for .NET 1.0 WCF clients
  - Extensive testing to other application servers

- **Composable as expected**
  - WS-Security
  - WS-Addressing

Set up Policy Sets and Policy Set Bindings for this broker

This panel configures the inbound and outbound actor roles URI.

Policy Sets
- WSS10Default
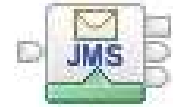 - WS-Security
- WSRMDefault
  - WS-RM
- Policy_Test
  - WS-RM

Reliable Messaging Settings
☑ Deliver messages in the order that they were sent
Client Compatibility
Microsoft .NET WCF ▼
Choose this compatibility option

JMS Receive Node and other JMS Enhancements

- **New JMSReceive Node supports all JMS 1.1 Providers**
  - Process JMS messages in the middle of a message flow, c.f. MQGET node
  - Typical scenarios include request response, routing & augmentation
  - Works with any JMS 1.1 provider, MQ is default provider

- **JMS Receive node**
  - Works on JMS queues: receive paradigm is not applicable to topics!
  - Can be configured for destructive read or browse

- **Comprehensive & Flexible options**
  - Retrieve particular JMS with message properties
  - Per message customization
    - Many `LocalEnvironment` overrides!
  - Flexible data locations
    - Incoming & received message can be kept

- **Activity Logging**
  - All JMS nodes updated to provide activity logging
  - Allows operators to understand JMS operations without understanding detailed flow design
    - e.g. failed to open or start JMS session, message sent to destination

- **Other JMS Enhancements**
  - Allows generic session object to be overridden as queue or topic
  - `JMSDestinationList.DestinationList.Queue = topic|queue;`

JMS Receive Node Properties - JMS Receive

Settings for working with the message selectors.   More...

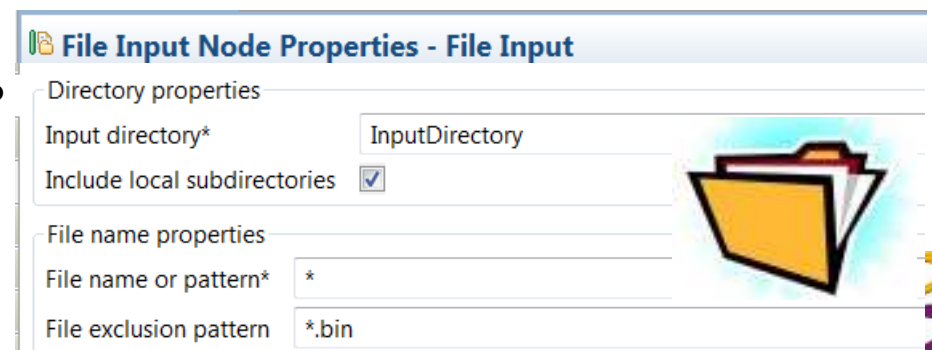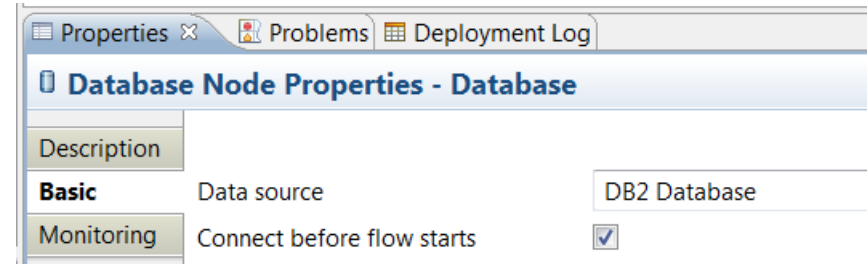|	
Application property	
Timestamp	
Delivery mode	All
Priority	
Message ID	
Redelivered	
Correlation ID	='12'

JMS Receive

Extended File & Database Support

- **"Fast first message" processing with pre-emptive database connections**
  - New configuration option acquires & maintains database connections before messages processed
    - Default will connect first thread to database at flow start before message processing
  - Extra flow option to start all flow threads at EG start
    - All threads process "fast first message"
  - Immediate reconnect option database after failure
    - Retry once for successful reconnect
    - Exception still thrown to rollback transaction

Properties ⊠	🖫 Problems	⊞ Deployment Log
🜲 Database Node Properties - Database		

Description		
Basic	Data source	DB2 Database
Monitoring	Connect before flow starts	☑

- **New Database Support**
  - Open Driver Manager allows MB to connect to even more ODBC data sources
    - e.g. MySQL, PostgreSQL, Teradata, Cache, Progress…
  - Product architecture supports third party database drivers
    - Oracle, DB2, SQL Server, Sybase, Informix, solidDB unaffected
    - More options available for other database drivers
  - Formal support requires interlock with IBM – contact IBM for more details

- **More File Processing Enhancements**
  - Append mode for File Output node
    - Add new records to end of existing file & FTP
  - File input nodes wildcard directory matching
    - Design & configurable service for operators
  - Dynamic (S)FTP file name
    - **LocalEnvironment** override

🗈🔒 File Input Node Properties - File Input

Directory properties
Input directory*	InputDirectory
Include local subdirectories	☑

File name properties
File name or pattern*	*
File exclusion pattern	*.bin

Making it Easier to Understand Broker Behaviour

- **New Activity Logging Allows users to understand what a message flow is doing**
  - Complements current extensive product trace by providing end-user oriented trace
  - Can be used by developers, but target is operators and administrators
  - Doesn't require detailed product knowledge to understand behaviour
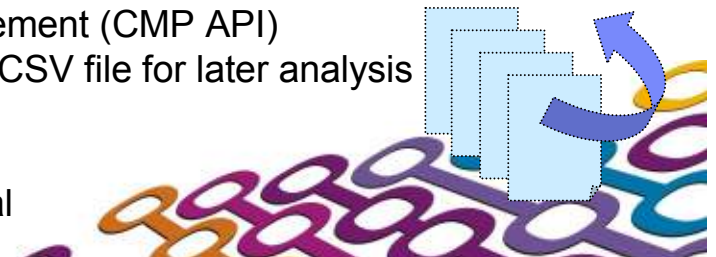 - Provides qualitative measure of behaviour

Message…	Timestamp	Message Summary
i BIP12001I	17-Jun-2011 10:10:50.85…	Connected to JMS provider 'WebSphere_MQ
i BIP12002I	17-Jun-2011 10:10:50.85…	Created a 'Transaction_None' session for JMS provider 'WebSphere_MQ
i BIP12004I	17-Jun-2011 10:10:50.93…	Created JMS producer for destination 'ASYNCREQUESTQ
i BIP12007I	17-Jun-2011 10:10:50.93…	Sent a JMS message to queue 'ASYNCREQUESTQ
i BIP12004I	17-Jun-2011 10:10:50.52…	Created JMS producer for destination 'ASYNCRECEIVEQ
⊗ BIP12014E	17-Jun-2011 13:47:51.65…	Failed to send message to 'ASYNCRECEIVEQ'
i BIP12001I	17-Jun-2011 13:47:54.99…	Connected to JMS provider 'WebSphere_MQ
i BIP12004I	17-Jun-2011 13:47:55.00…	Created JMS producer for destination 'ASYNCRECEIVEQ

- **End-user oriented with external resource lifecycle**
  - Focus on easily understood actions & resources
  - "GET message queue X", "Update DB table Z"…
  - Complements quantitative resource statistics

- **Flow & resource logging**
  - User can observe all events for a given flow
    - e.g. "GET MQ message", "Send IDOC to SAP", "Commit transaction"…
  - Users can focus on individual resource manager if required
    - e.g. SAP connectivity lost, SAP IDOC processed
  - Use event filters to create custom activity log
    - e.g. capture all activity on JMS queue REQ1 and C:D node CDN1
  - Progressive implementation as with resource statistics, starting with JMS and C:D resources

- **Comprehensive Reporting Options**
  - Reporting via MB Explorer, log files and programmable management (CMP API)
  - Extensive filtering & search options, also includes save data to CSV file for later analysis

- **Log Rotation facilities**
  - Rotate resource log file when reaches using size or time interval

Dynamic Deployment of AD Artefacts

Sub In   Database Insert   Sub Out

- **Allow sub-flows to be deployed independently of main flow**
  - Additional to existing build-time sub-flow; no performance impact
  - New "Route to sub-flow" allows dynamic addition of new/changed logic
  - Intuitive Drag and drop deploy & simple BAR file packaging
    - Sub-flow is fully visible as development artefact c.f. message flow

- **Independently deployable ESQL**
  - Particularly useful for dynamic transformation scenarios
  - Allows new/changed transformation without whole-flow redeploy
  - Intuitive Drag and drop deploy & simple BAR file packaging

ESQLs
(default broker schema)
ADDNAMESPACEMF.esql
CHANGENAMESPACEMF.esql
DELETENAMESPACEMF.esql

- **Deploy Flow Stopped provides fine grained initialization control**
  - Important in "order-of-initialization" type scenarios
    - Allows operator to declare initial state for deployed flow resources
      - Manual: always needs to be started by user
      - Automatic: always started by broker
      - Maintained: remember
  - Persists over expected or unexpected restarts

Start Mode
Start additional instances when flow starts
Maintained
Maintained
Manual
Automatic

- **Deployable Maps & Schemas**
  - Graphical maps & XSDs (XML and DFDL) can now be deployed independent of flow
  - Simplifies change management for incremental solutions
    - Just deploy changed artefacts rather than whole flow!
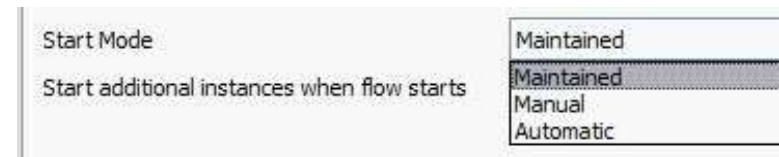
Programmable Message Flows

- **Create message flows (and more!) programmatically**
  - Full flow creation lifecycle now available via simple Java API
    - Create flow, add/remove node, change properties
    - Extends CMP operational API covering deployment & config
  - Single API for MBTK, MBX, commands, end users & 3rd Party

- **Message Broker API**
  - Single API allows creation & management of all MB resources
  - Works on familiar MB resources, e.g. rename a message flow

```
File msgFlow = new File("main.msgflow");
MessageFlow mf1 = FlowRendererMSGFLOW.read(msgFlow);
mf1.setName(mf1.getName()+"Generated");
```

- **Source deployment**
  - MB8 engineered to provide source artefact creation, packaging & deployment
    - Flows, XSDs (XML & DFDL), ESQL, Maps, JARs, XSL stylesheet, WSDL, IDL…
  - Source author & deploy has many advantages
    - Easy round tripping for import/export scenarios
    - Enables more environments
      - AD: Eclipse, Web, Visual Studio etc…
      - Operations: load artefacts from other sources, e.g. registry, file systems…
    - Optimizes performance – JIT compilation means technology can improve deployed solutions

- **Comprehensive range of samples**
  - InfoCenter contains many samples showing how to use Message Broker API

Side panel items:
- Loading an existing message flow into memory
- Renaming a node
- Adding a node and a subflow node
- Setting the position of a node
- Copying a node
- Removing a node
- Adding connections between nodes

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Other Features Our Users Requested (1/1)

- **New Installation and Command Security Options**
  - **mqbrkrs** security group for command administration now configurable
    - Allows broker administrators to confirm to local security naming conventions
  - Install without root (UNIX) or Administrator privilege (Windows)
    - Allows broader installation community
  - Combined Toolkit and runtime silent install on Linux and Windows
    - Simplifies provisioning of developer machines

- **Dynamic Configurable Services**
  - Many configurable services no longer require an execution group restart to take effect
  - Significant benefits for multi-tenancy and continuous operations

Message Broker Summary

- **Message Broker Version 8**
  - Major engineering release containing architectural, functional & operational advances
  - Content heavily influenced by user requirements, participation and feedback
  - Continuous rollout beyond general availability

- **Diverse Connectivity Requirements**
  - Simple & Productive to make connectivity easy and powerful
  - Universal & Independent to connect everything you need in the way you want to manage it
  - Industry Specific & Relevant to help solve business problems
  - Managed & Dynamic to create flexible designed which can be changed with control
  - High Performing & Scalable to maximize hardware and grow with you

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