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Technology · Connections · Results

13877
First Steps With Message Broker:
Application Integration for the Messy

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First Steps With IBM Integration Bus: Application Integration for the Messy

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Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.

Introduction to Integration

- **Enterprise systems consist of many logical endpoints**

  - Off-the-shelf applications, services, packaged applications (SAP, Siebel etc)

  - Web applications, devices, appliances, custom built software and many more!

- **Endpoints expose a set of inputs and outputs, which comprise:**

  - Protocols such as MQ, TCP/IP, database, HTTP, files, FTP, SMTP, POP3

  - Formats like (C/COBOL), XML, industry (SWIFT, EDI, HL7), user-defined

- **Point-to-point connections quickly deteriorate into spaghetti**

  - Inflexible architecture which is expensive to maintain and resistant to change

- **IBM Integration Bus connects these endpoints in meaningful ways**

  - IBM Integration Bus simplifies application and device integration!

  - Avoids rewrites in response to new integration requirements

  - Simplifies maintenance by reducing expensive coupling

  - Flexibility adding anonymity between producers and consumers of data

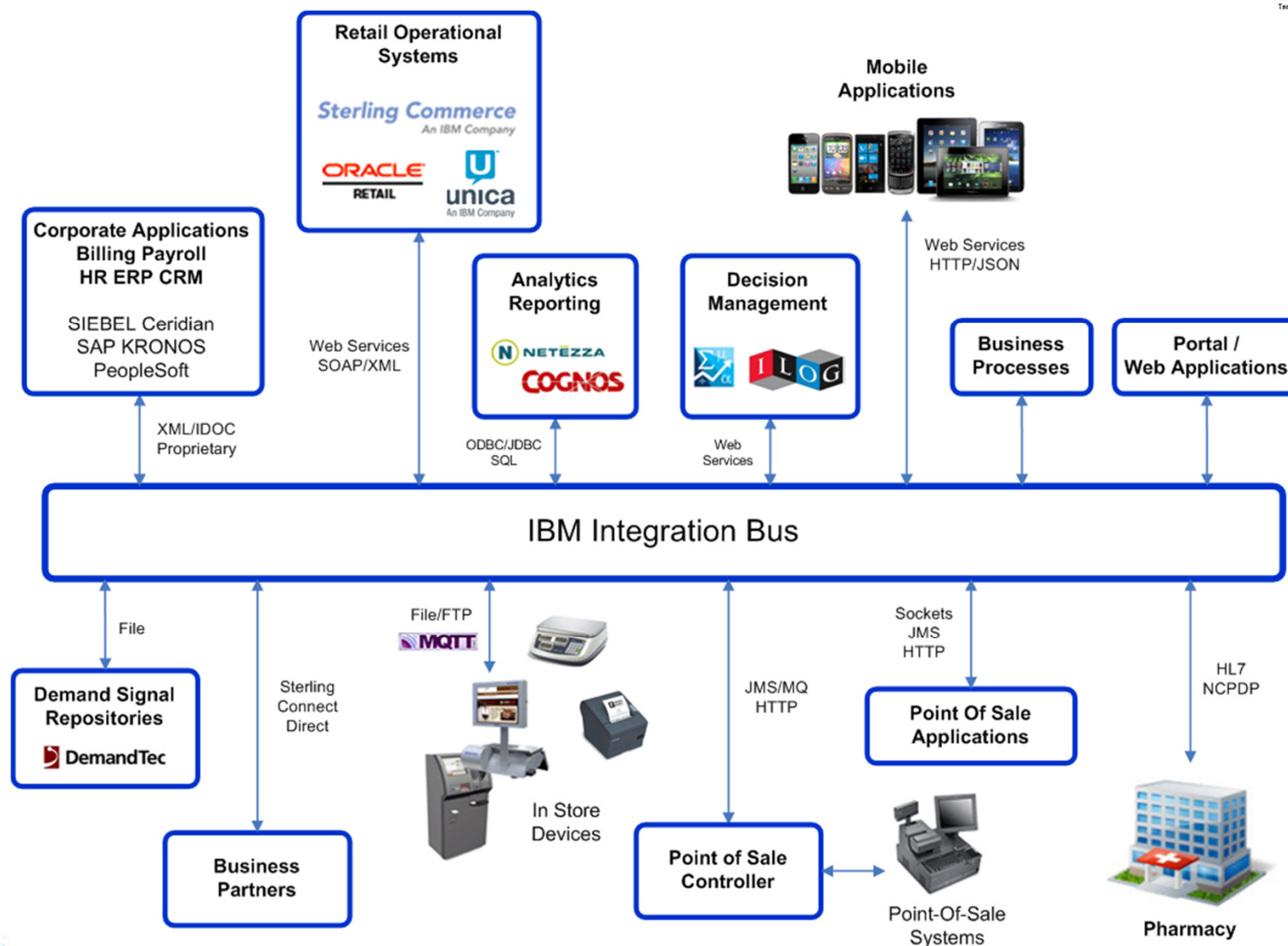 - Adds insight into applications and business value they bring

Healthcare Integration
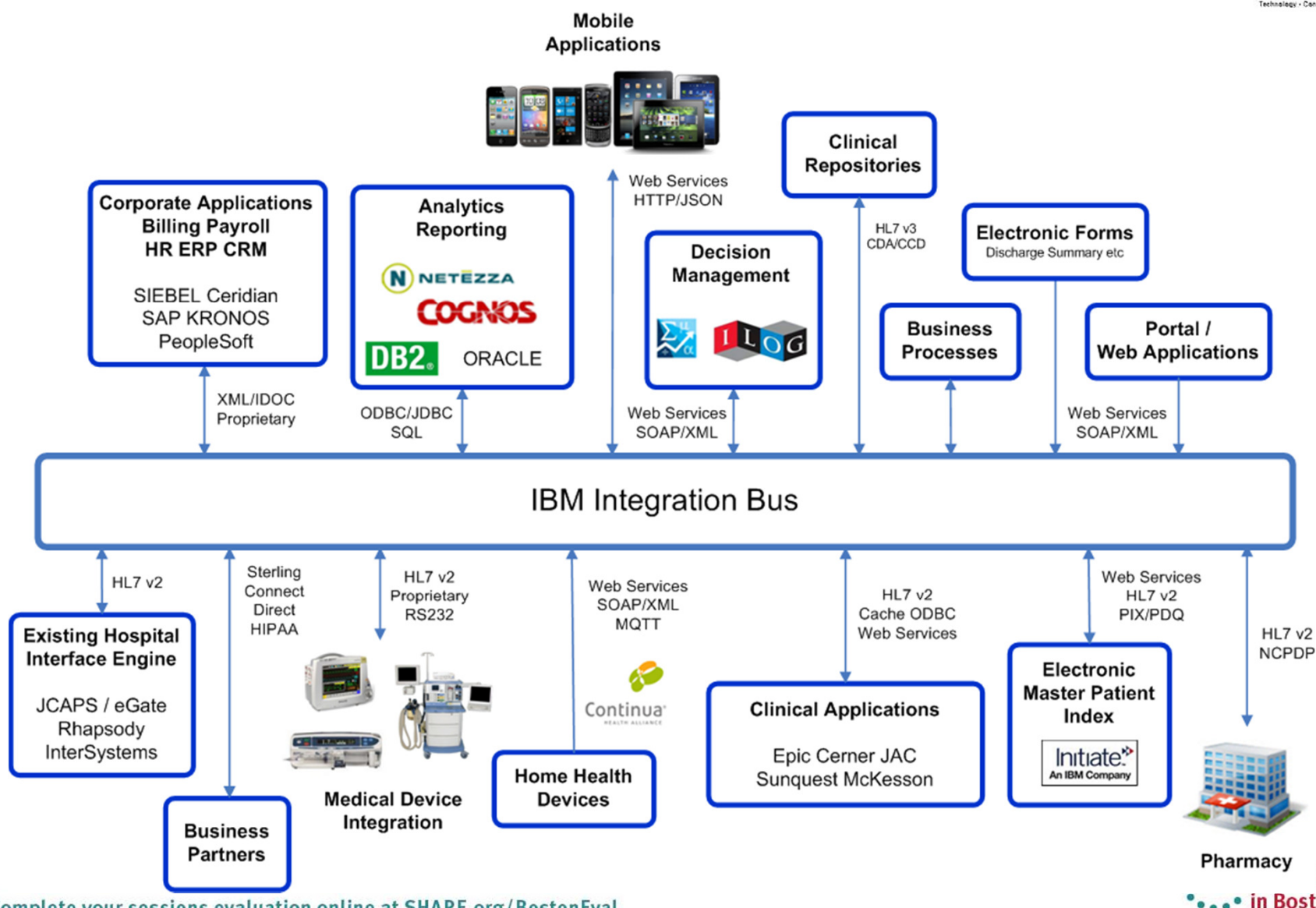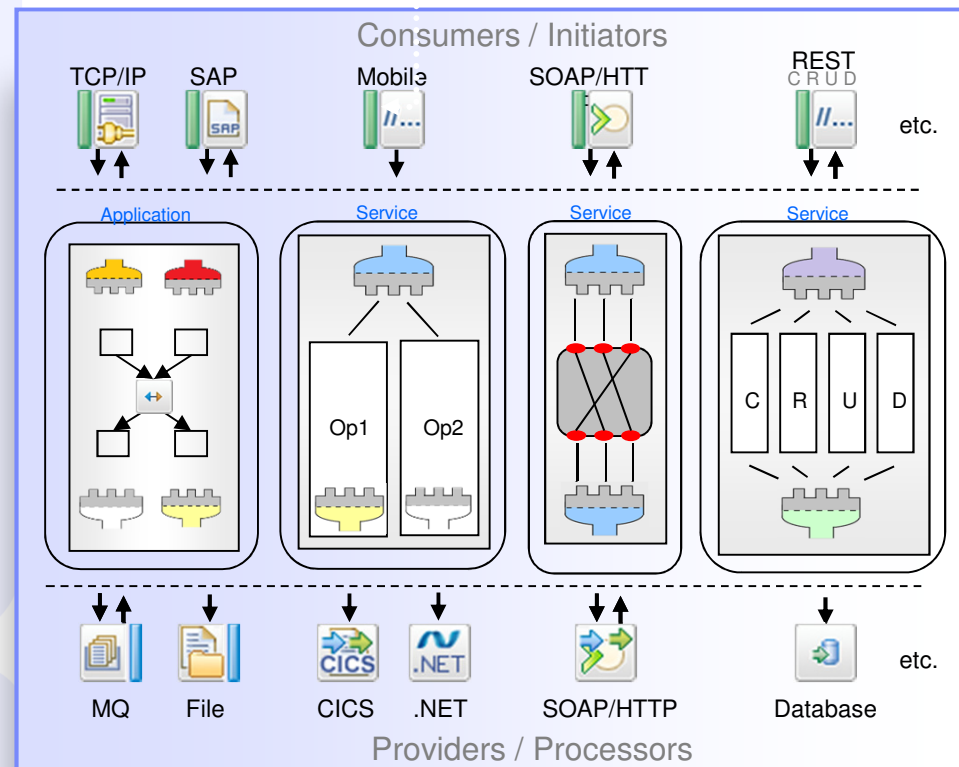
Retail Integration

IBM Integration Bus
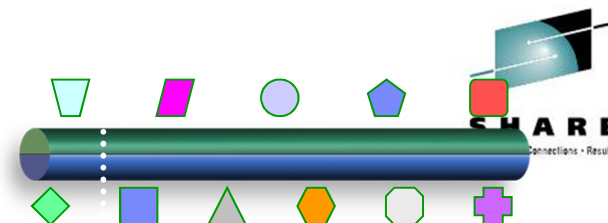
- **Provides solutions to diverse integration requirements**
  - Diverse set of connectors
    - e.g. MQ, JMS 1.1, HTTP(S), SOAP, REST, File (incl. FTP, FTE, Connect:Direct), DB, TCP/IP, Mobile, MQTT, CICS, IMS, SAP, SEBL, .NET, PeopleSoft, JDEdwards, SCA, CORBA, email
  - Diverse set of data formats
    - e.g. Binary (C/COBOL), XML, CSV, DFDL, JSON, Industry (SWIFT, EDI, HL7…), IDOCs, User
  - Diverse set of operations
    - e.g. Route, Filter, Enrich, Point-to-point, Pub/Sub, Sequencing, Timer, Aggregation, Security
    - Custom Logic via Graphical Mapping, Java, JAXB, ESQL, XSL, PHP, C & .NET
  - Diverse programming styles and orientations
    - e.g. batch, real-time, service-oriented, event, data-oriented, resource CRUD access
  - Patterns for best practice and quick time-to-value
  - Added value through industry specific content

- **Flexible, dynamic, intelligent solution operation**
  - Fast, robust, scalable, lightweight architecture
  - Various deployment options:
    - Traditional OS, cloud, HVE, IWD, Pure and more
  - Broad applicability for different operational requirements
    - Web UI, MQ, WAS, command-line, Java, REST
  - Record and replay, audit, technical / business monitoring
  - Built-in caching and high availability for resilient, distributed workloads

Consumers / Initiators

TCP/IP SAP Mobile SOAP/HTT REST CRUD etc.

Application Service Service Service

Op1 Op2 C R U D

Providers / Processors

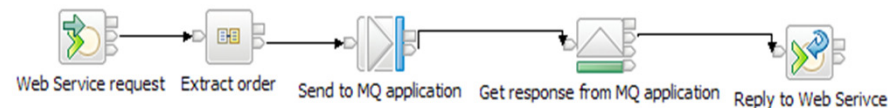MQ File CICS .NET SOAP/HTTP Database etc.

Integration Usage Patterns

Integration Usage Patterns

- Extending the reach of existing applications

- Connect file and online for end-to-end efficiency

- Beyond applications – integrate devices into the enterprise

- Mobile integration and service enablement

- Packaged applications provide best of breed business function

- Distribute database information to where it is needed!

- Provide secure access (CIAA) to applications and services

- Monitor your business and act intelligently

- Connectivity within Microsoft .NET environments

Services and Files

- **Extending the reach of existing applications – service enablement!**
  - Expose existing applications without having to change them (enable re-use)
  - Range of service interfaces including WS-* (SOAP), JSON/HTTP and JMS
  - Service gateway allows IBM Integration Bus to mediate between clients and providers

Web Service request   Extract order   Send to MQ application   Get response from MQ application   Reply to Web Serivce

- **Connect file and online for end-to-end efficiency**
  - Scenarios include file-to-queue, database-to-file, file-to-SAP, and file-to-pubsub
  - Comprehensive file support includes local files, network mounted file, FTP and SFTP
  - Whole-file, record-at-a-time; simple delimiters to complex COBOL, and user-defined
  - FTE nodes send and receive files through MQ MFT for reliable and secure delivery
  - Connect:Direct nodes join IBM Integration Bus into the Sterling file transfer network

File Input   CD Input   CD Output

FTE Output   File Output   FTE Input   File Read
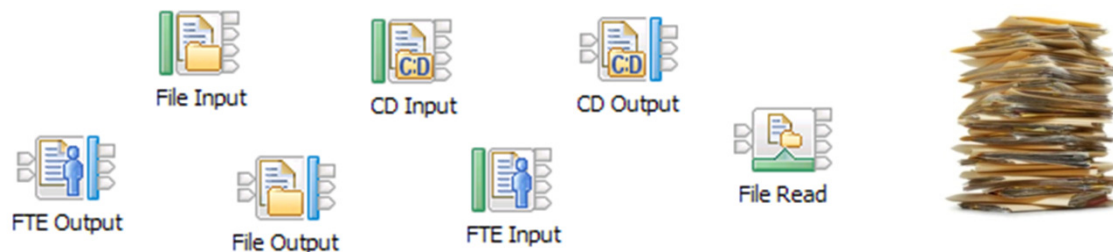
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Device Integration

- **Beyond applications – integrate devices into the enterprise**
  - Huge amounts of data are generated by devices outside the enterprise
  - Applicable across many industries in many different scenarios
  - Medical, energy and utilities, distribution, transport, gaming
  - Combined with analytics provides cost effective predictive maintenance
- **Support for MQTT provides standards based device integration**
  - Small footprint client, embeddable, low bandwidth cost
  - Fragile network support for hostile environments (including last-will-and-testament)
  - Data from MQTT enabled devices can be sent directly into IBM Integration Bus
- **Industry specific device capability such as medical device integration**
  - Healthcare Connectivity Pack for patient monitors and much more

Mobile

- **Worklight integration makes developing mobile services simple!**
  - Four patterns makes mobile service integration quick and easy
  - Pattern source included for flexible customization to many other tools

- **IBM Integration Bus provides a range of mobile patterns**
  - Mobile enablement for Microsoft .NET applications
  - Create flexible mobile services on top of IBM Integration Bus
  - Resource management including security and caching
  - Outbound push notifications for asynchronous data delivery

Comple
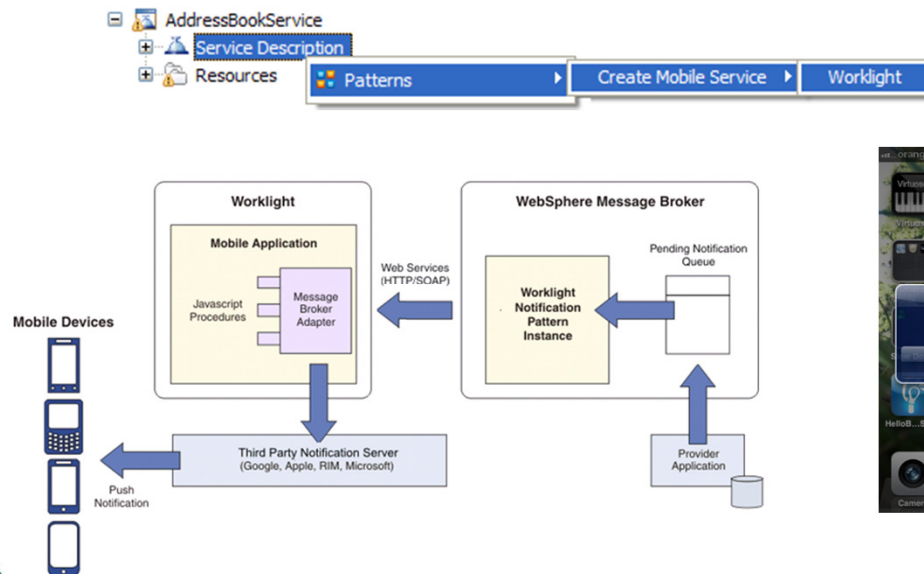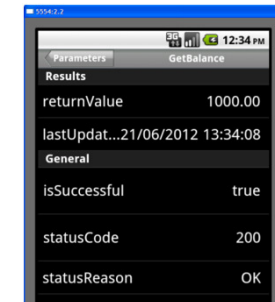
Packaged Applications and Databases

- **Packaged applications provide best of breed business function**
  - SAP for purchasing, sales, inventory - SIEBEL for sales, PeopleSoft for HR etc
  - Interfaces are often non standard: for example SAP BAPIs, IDOCs
  - Integrate processing and data otherwise isolated from other applications
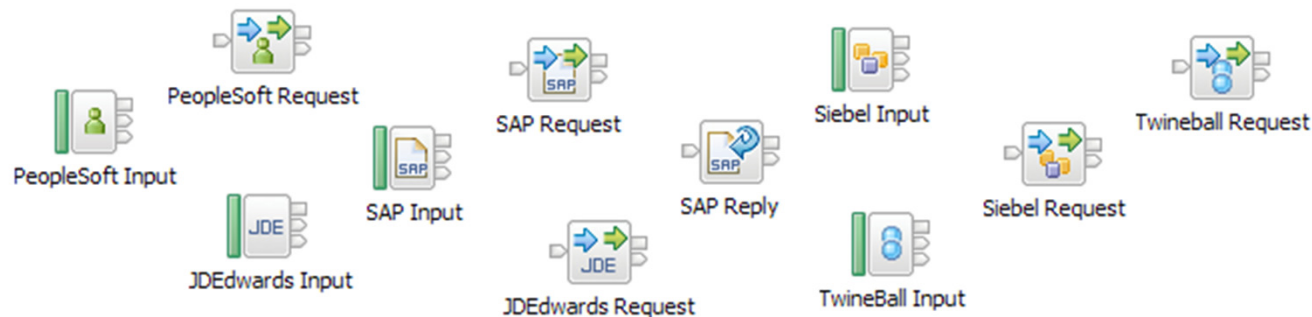
- **Distribute database information to where it is needed!**
  - Provide timely access to changed database information
  - Move to near real-time data trickle from infrequent ETL extract
  - Database Node allows tables to be treated as an input source
  - The node is triggered to start connectivity processing as transactions commit
  - Works with full range of databases including Oracle, DB2, SQL Server and more

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Security and Analytics

- **Provide secure access (CIAA) to applications and services**
  - Understand and convert broad range of security domain identities
  - Provide secure external access services to partners
  - Variety of security tokens: user/password, X509, SAML, Kerberos, LTPA and more
  - Integration engine is Policy Enforcement Point (PEP)
  - Security is enforced in IBM Integration Bus, policy is owned by PDP
- **Monitor your business and act intelligently**
  - IBM Integration Bus processes data and events from many different sources
  - Straightforward to take additional feeds of that data for value added uses
  - Data flowing through Message Broker can be published for downstream applications
  - Enables business monitoring and event correlation (for example, fraud detection)
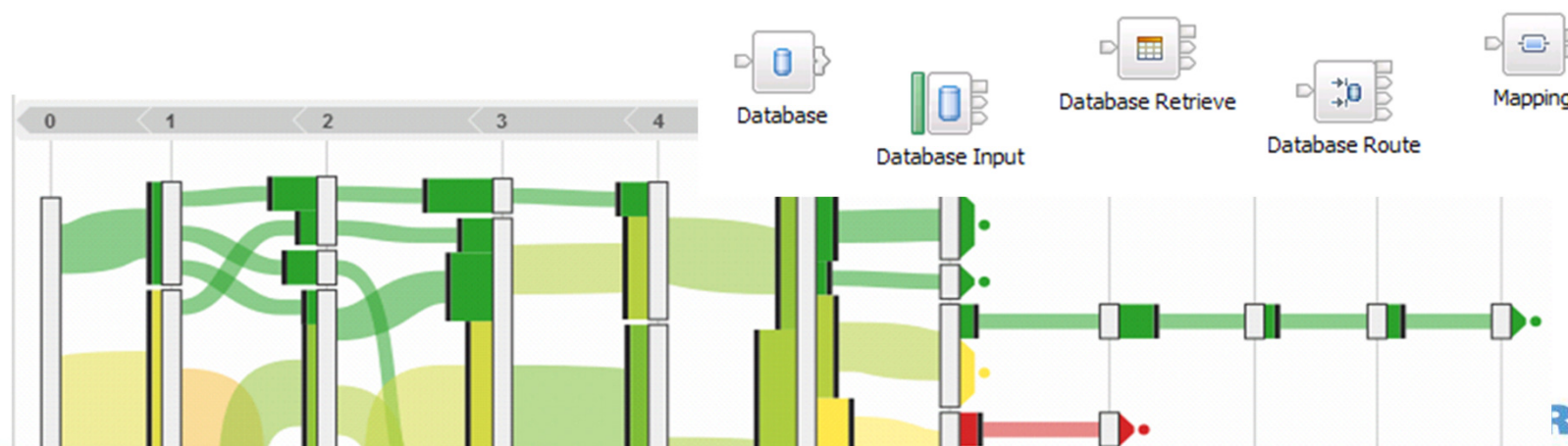
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Microsoft .NET

- ## Connectivity within Microsoft .NET environments
  - Easily bridge Microsoft and non-Microsoft systems and applications
  - Dynamics (CRM/ERP), SharePoint, Excel, .NET applications and COM
  - Call .NET programs directly via CLR V4; application domains for isolation
  - Tooling is provided in Visual Studio for natural developer experience
  - C#, VB .NET (COM), JScript and F# programming available natively
  - Extensive range of .NET data types supported for easy integration
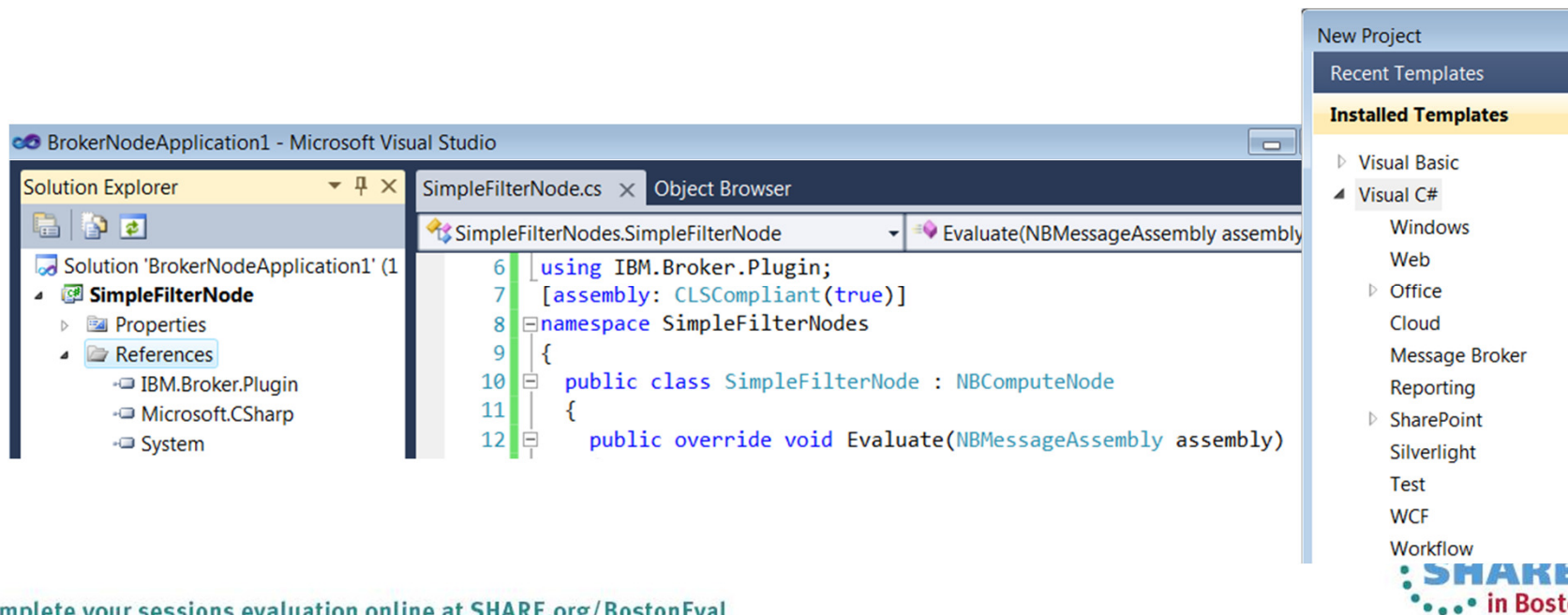
Concepts

Connecting with Nodes

- Built-in nodes encapsulate transports, technologies and applications
  - Our intent is always to make the common tasks easy, and the rest possible!
  - Use the built-in nodes to reduce the amount of custom code required ⭐
  - This makes best use of the built-in facilities like activity trace and resource statistics
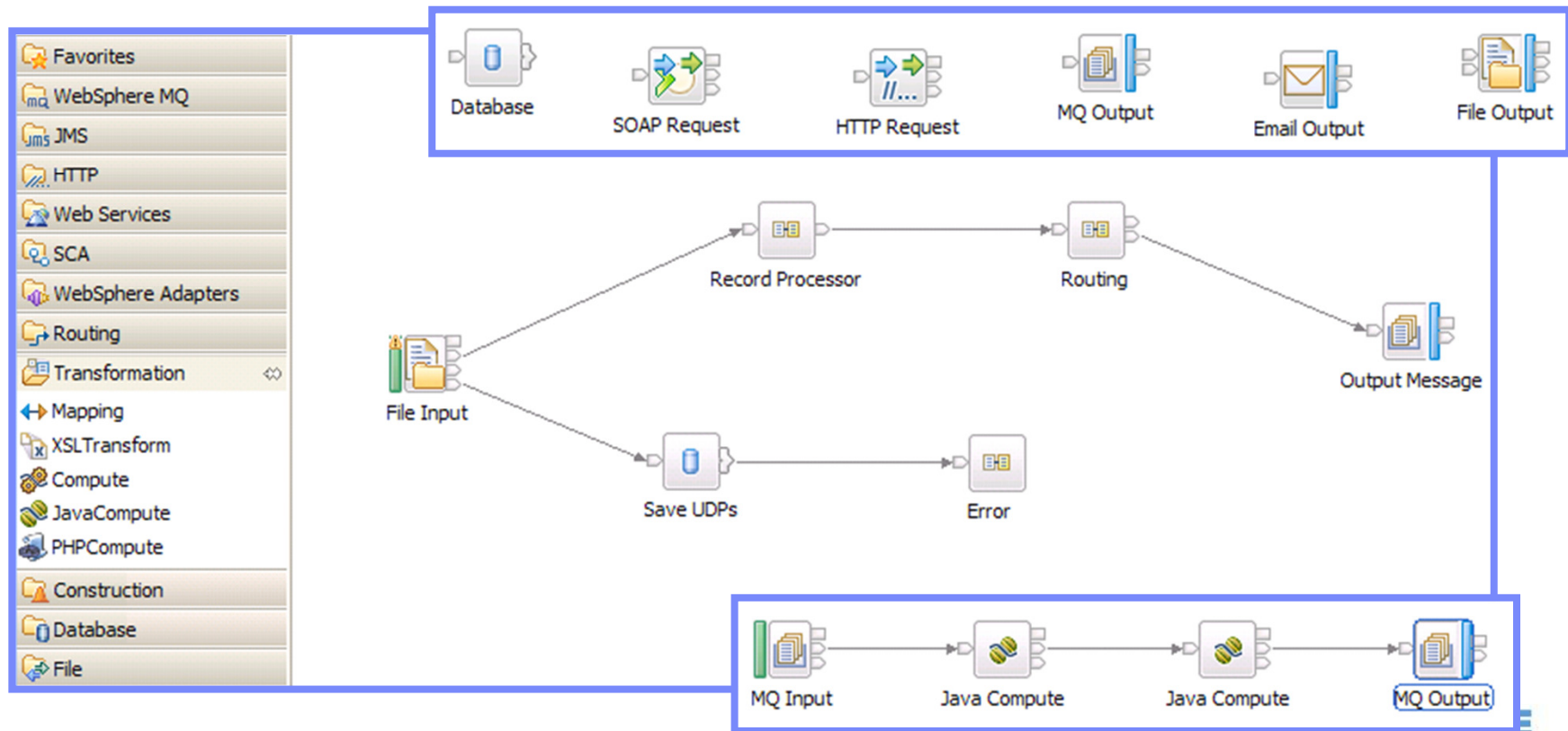
Transformation Options

- IBM Integration Bus has several transformation options:
  - Mapping
  - XSLT
  - ESQL
  - Java
  - PHP
  - .NET

- Reflects the importance of transformation in connectivity solutions
  - User-defined nodes supported for Java and C/C++

- Every transformation option has strengths and weaknesses!
  – Performance and scalability
  – Backend integration
  – Skill sets and learning curve
  – Developer usability
  – Portability and maintenance

- Use a transformation technology appropriate to the problem at hand!

Message Modelling

- ▪ **Models are needed for parsing, validation and transformation** ⭐
  - – Models avoid the need to write custom code to parse messages!
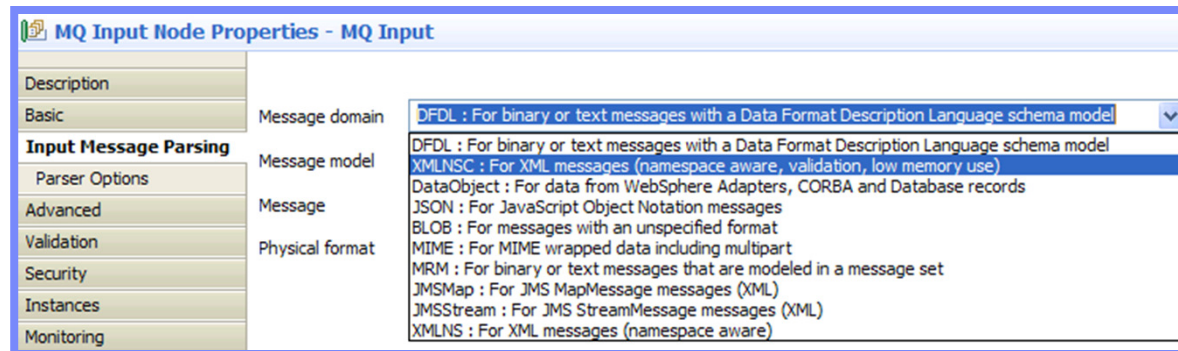
- ▪ **Graphical mapper requires models to display the message structure**
  - – ESQL editor provides in line validation of code that navigates message trees

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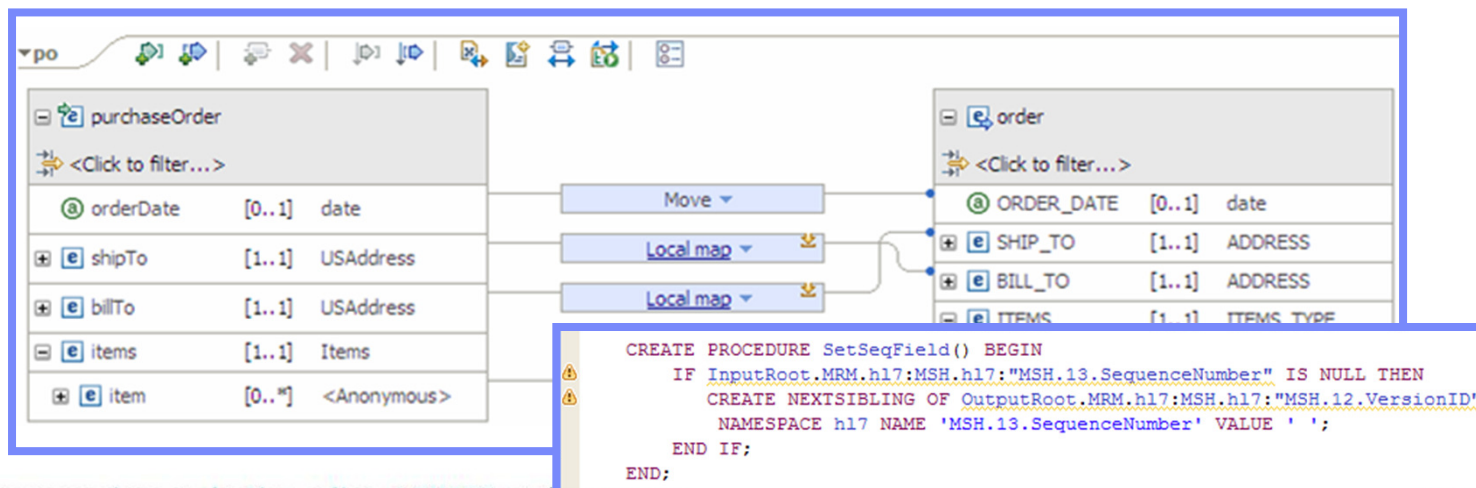
Administration

- IBM Integration Bus Explorer has a wealth of monitoring tools!
  - Statistics monitor resource usage across execution groups
  - Range of options to update and visualise the resource statistics

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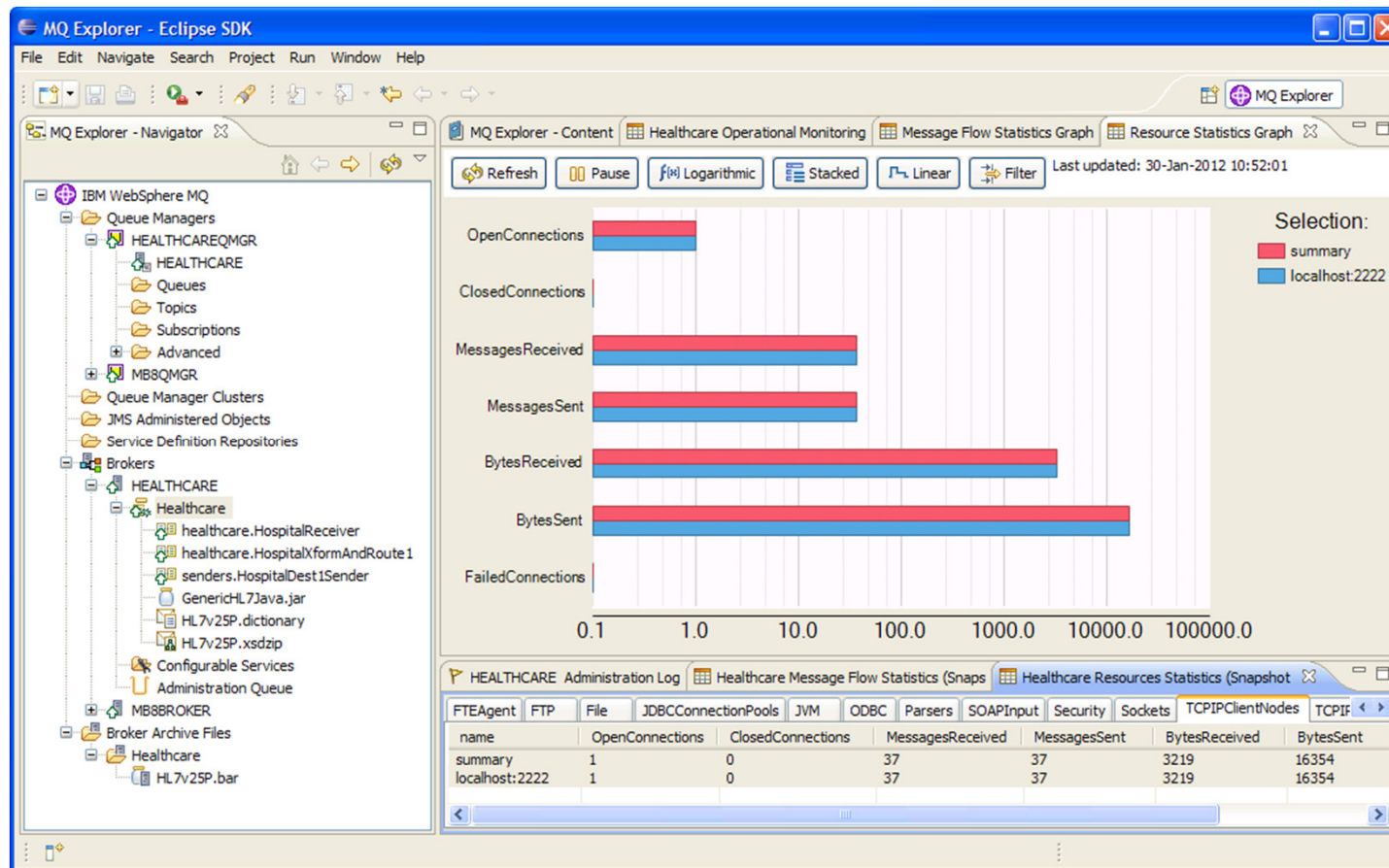
Patterns for Simplified Development

- Creates top-down, parameterized connectivity solutions

- Reduces common problems in flow development

- Establishes best practices for healthcare integration

- Reduces time-to-value for solution development

- Patterns are easily extended with regular ESB functionality

Database   SOAP Request   HTTP Request   MQ Output   Email Output   File Output

Healthcare: HL7 to HL7 pattern

The Healthcare: HL7 to HL7 pattern integrates an application that can send Health Level Seven International (HL7) v2 messages with one or more applications that can receive HL7 messages. The applications must be capable of sending and receiving HL7 messages by using Minimal Lower Layer Protocol (MLLP) over TCP/IP.

- 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)
  - Mobile
    - Worklight
      - Microsoft .NET request-response
      - Mobile service
      - Push notification from MQ
      - Resource handler
  - 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
      - Static endpoint (web based)

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▪Your feedback is very important to us – we use it to improve next year's conference

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This was session 13877 - The rest of the week ……

	Monday	Tuesday	Wednesday	Thursday	Friday
08:00				Extending IBM WebSphere MQ and WebSphere Message Broker to the Cloud	CICS and WMQ - The Resurrection of Useful
09:30	Introduction to MQ				Can I Consolidate My Queue Managers and Brokers?
11:00		MQ on z/OS - Vivisection	Hands-on Lab for MQ - take your pick!	MOBILE connectivity with Broker	Migration and Maintenance, the Necessary Evil. Into the Dark for MQ and Message Broker
12:15					
01:30	MQ Parallel Sysplex Exploitation, Getting the Best Availability From MQ on z/OS by Using Shared Queues	What's New in the MQ Family	MQ Clustering - The basics, advances and what's new	Using IBM WebSphere Application Server and IBM WebSphere MQ Together	
03:00	First Steps With Message Broker: Application Integration for the Messy	What's New in Message Broker	BIG Connectivity with mobile MQ	WebSphere MQ CHINIT Internals	
04:30	What's available in MQ and Broker for high availability and disaster recovery?	The Dark Side of Monitoring MQ - SMF 115 and 116 Record Reading and Interpretation	MQ & DB2 – MQ Verbs in DB2 & Q-Replication performance	Big Data Sharing with the Cloud - WebSphere eXtreme Scale and IBM Integration Bus Integration	
06:00				WebSphere MQ Channel Authentication Records	

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