A decorative graphic in the top left corner consists of several overlapping circles of various colors (yellow, orange, red, purple, blue) that are divided into segments, resembling a stylized sun or a cluster of data points.

## **WebSphere MQ for z/OS: Connecting your assets across the enterprise from mainframe to mobile**

Speaker Name and Title

## Why Messaging is still important...do these sound familiar?

"business transactions must happen only once"

"adding new services or applications is unpredictable"

"consumer interaction is forcing us to respond faster"

"need to adopt new industry standards"

"we need to recover from IT failures better"

"we need to become more event driven"

"our applications are getting too complex"

"change is relentless"

"business insight is key in today's market"

"must become more agile"

"losing data costs time money and reputation"

## Here is why messaging is important...

- Failures still happen - application and network – cloud and mobile especially
- Don't try to handle these failures in your business application logic –
- Moves any type of data and any type of system, device or environment, with a common shared API
- Configurable: Persistence, Performance, Management, Security, etc.

# IBM Messaging Focus Areas



**Deliver Messaging Backbone for Enterprise**  
Focus on traditional MQ values, rock-solid enterprise-class service, ease-of-operation, breadth of platform coverage, availability, z/OS exploitation



**Enable developers to build more scalable, responsive applications**  
Focus on app use cases, breadth of languages, ease-of-deployment, lightweight services, integration with developer frameworks



**Capture Big Data from Mobile and Internet of Things**  
Focus on Internet-scale events, device enablement, zero-admin, security and privacy, feed into real-time analytics, location-based notifications

# What does WebSphere MQ do?

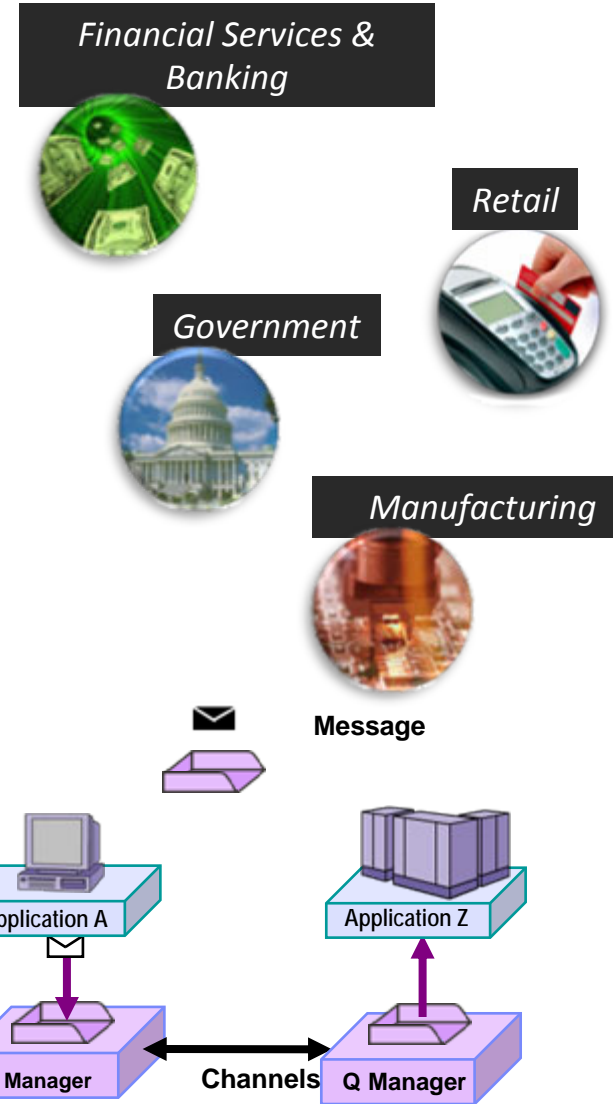
Provides messaging services to applications and Web services that need to exchange data and events with:

- Inherent reliable delivery and transaction control
- Native, high-speed handling of any type of message or file
- Native lightweight capabilities for supporting remote devices & sensors
- End-to-end advanced security
- Single point of control, visibility, and management for all data movement

*Universally supported by over 80 platforms  
20 years leading in transactional message delivery*

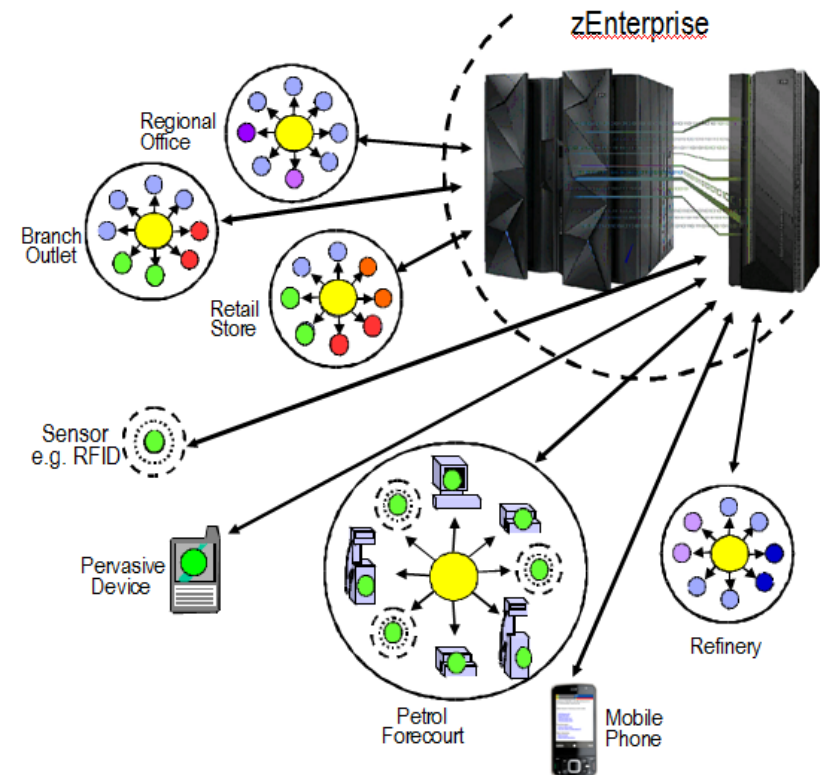
For z/OS WebSphere MQ provides the premier messaging solution

- The highest throughput of messages
- Only platform with Shared Queues – never lose a message
- Built to exploit native z/OS features

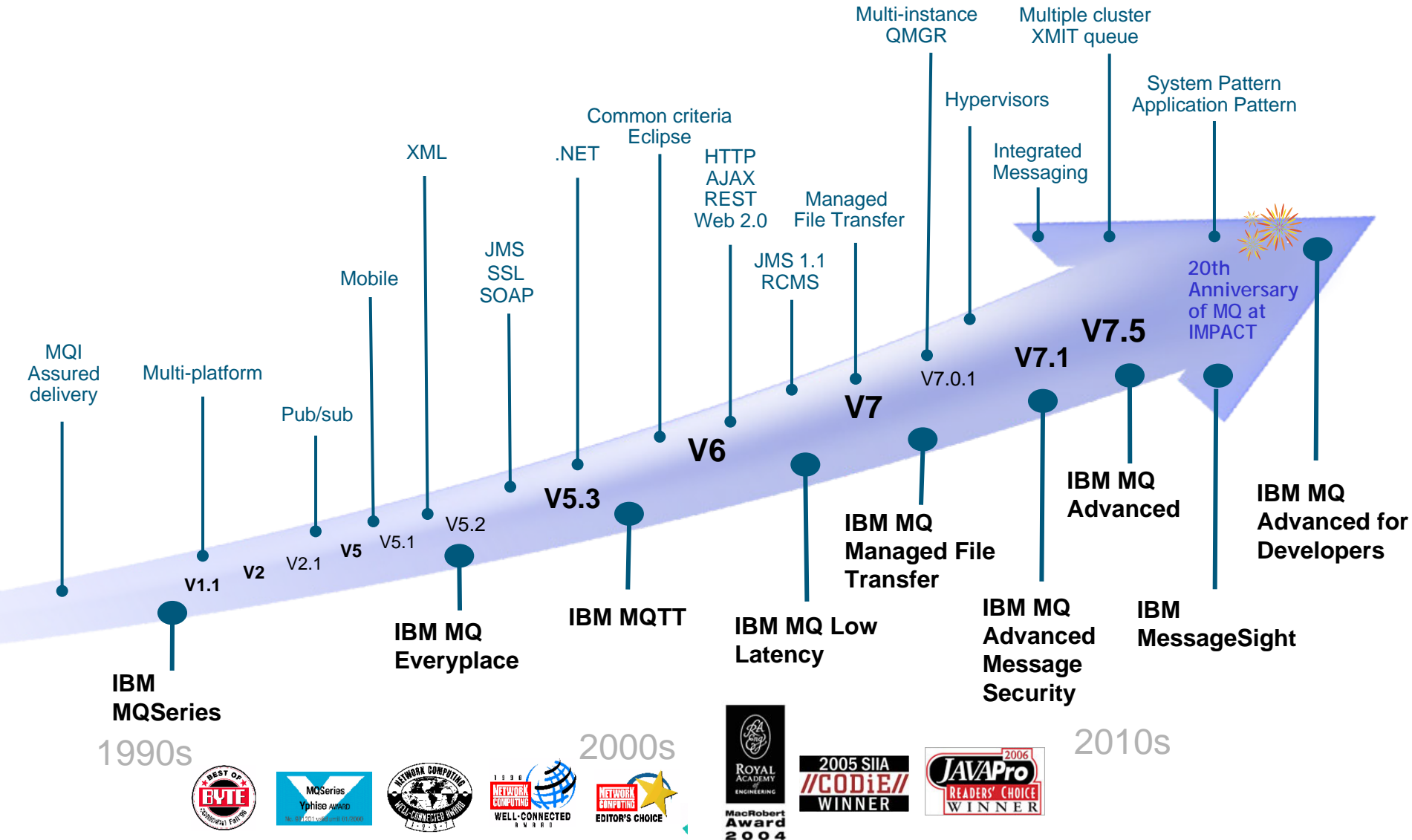


# IBM WebSphere MQ for z/OS

- WebSphere MQ (WMQ) connectivity combined with the availability and power of z/OS.
- Highly optimized for the underlying System z hardware and O/S:
  - Efficient messaging.
  - Native z/OS subsystem management.
  - Integrated access control.
- Exploits the System z Coupling Facility for Shared Queues giving **unparalleled availability characteristics**.
- WMQ for z/OS connects z/OS applications into the rest of the enterprise.



# IBM has a 20 year track record of innovation in Messaging



<b><i>New Feature</i></b>	<b><i>Benefits</i></b>	<b><i>Details</i></b>
<b>Multi-Instance Queue Managers</b>	Increases availability Does not require specialist skills Can help ease system maintenance	Enables automatic failover to a standby Queue Manager instance in the event of an incident or planned outage
<b>Automatic Client Reconnect</b>	Increases availability Simplifies programming	Provides Client-connected applications with automatic detection of failures and reconnects to alternative Queue Managers
<b>Enhanced Governance</b>	Increases visibility of changes Enables SOA Governance	Emits events whenever configuration changes are made or commands are run Service Definition wizard generates WSDL describing MQ apps
<b>Enhanced SSL Security</b>	Simplifies security certificate management	Supports certificate checks with Online Certificate Status Protocol (OCSP) as well as to Certificate Revocation Lists (CRL)
<b>Enhanced .NET support</b>	Increases ease-of-use for .NET developers	Provides IBM Message Service Client for .NET developers Supports use of WebSphere MQ as custom channel within Windows Communication Foundation
<b>Increased 64-bit z/OS exploitation</b>	Increased use of z/OS system resources Provides constraint relief for virtual storage	Extends use of 64-bit storage by Queue Manager enabling more capacity such as number of open queues
<b>z/OS Log Compression</b>	Increased use of z/OS system resources Increased log performance & bandwidth	Compresses message logs produced by persistent messages
<b>z/OS Group Units of Work</b>	Increased resilience	Enables Units of Work to be owned collectively by Queue Sharing Groups so that any Queue Manager in the group can process two-phase transactions from clients
<b>Publish/Subscribe Interfaces</b>	Additional control of pub/sub behaviour Simplified integration for Message Broker	Exit point to dynamically modify routing and content Tools to migrate pub/sub state from MB to MQ

<b><i>New Feature</i></b>	<b><i>Benefits</i></b>	<b><i>Details</i></b>
<b>Multi-Version Install capability on Distributed platforms</b>	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
<b>Enhanced Security</b>	Simplified Configuration  Enhanced Authorisation and Auditing	IP address Authorisation capability Additional crypto algorithms More granular authorisation for non-local queues Application Activity Reports
<b>Cloud Support</b>	Simplifies and support Cloud deployments	Additional HVE images
<b>Enhanced Clustering</b>	Improves ease-of-use	Authorisation on Cluster Q rather than XMIT Q on Dist. Platforms Bind-on-Group Support
<b>Multicast capability</b>	New messaging QoS provides low latency with high fan-out capability	MQ Pub/Sub Topic space can now map to multicast Group Addresses Provides direct interoperability with MQ LLM
<b>Improved scalability and availability on z/OS</b>	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
<b>Improved Performance on Dist platforms</b>	Improved multiprocessor exploitation	Various code improvements, delivering some substantial message throughput enhancements



# Reliable, Flexible and Secure Messaging

## IBM WebSphere MQ v7.1

### Target Audience

- Existing and new customers looking to connect systems and applications simply, securely and at high performance
- New opportunities around multi-cast for low latency requirements, and Telemetry for mobile or device connectivity



### IBM WebSphere MQ v7.1 highlights

- **Configurable Security (z/OS and distributed)**
  - Uses new improved security standards
  - Eliminates the need for homegrown security coding
- **Reduced TCO through enhanced performance and scale (z/OS and distributed)**
  - Fastest and best scaling MQ release ever
- **Multi-version or relocation install (distributed only)**
  - Determine where to install versions of MQ
  - Bridge Applications on the same machine
- **Publish/Subscribe Multi-cast (distributed only)**
  - Broadcast to all systems on the network level speeding up data delivery

# Reduced Total Cost of Ownership

## IBM WebSphere MQ v7.1



### Security Enhancements

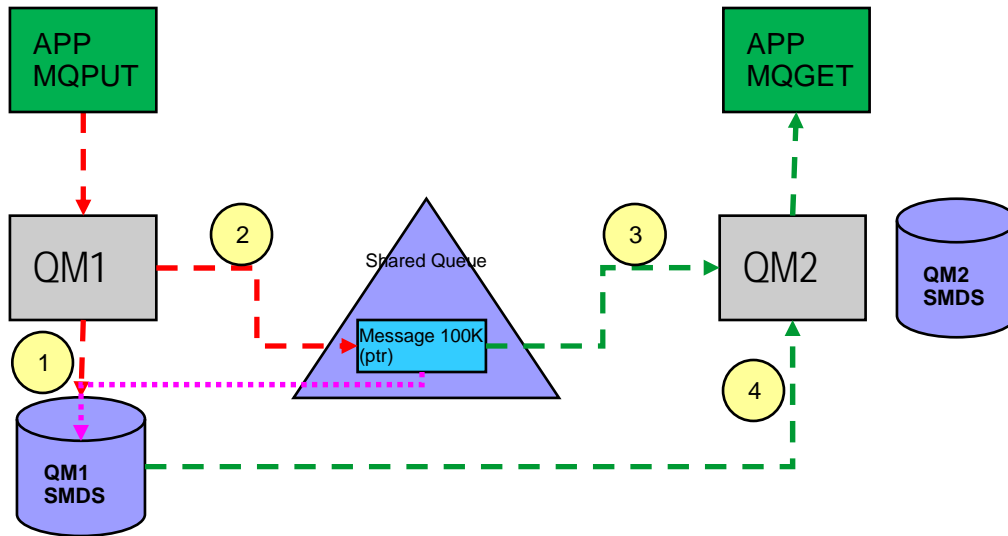
- “*Out of the box*” rules for controlling Channel access to Queue Managers eliminating the need for customer or vendor supplied exit code to provide popular security controls. Rules can be based on
  - Partner IP Address,
  - Partner Queue Manager Name,
  - SSL Distinguished Name (DN)
  - Asserted Identity,
  - Derived identity from DN mapping
- *Addition Channel Security* using stronger SSL Crypto algorithms from SHA-2 and NSA Suite B
- Distributed platforms now have *direct authorisation capability* for non-local queues
  - No longer require access to Cluster Xmit queue for (remote) Cluster queues
  - Access control now consistent with existing MQ on z/OS capability

- MQ v7.1 on Unix and Windows can support *multiple installations on a single OS image*
- MQ instances can be relocatable to user-chosen directories
- Can have multiple copies even at fixpack level
- Greatly simplifies and eases *migration/testing*
- Can move applications as and when needed
- No need for parallel hardware
- Enables full utilisation of large capacity H/W
- Easier for ISVs to *embed MQ in solutions*
- Can install in “private” locations without worrying about other copies of MQ
- Reduces support concerns
- Support for *coexistence of MQ v7.0.1* on same system
- Assists migration of existing MQ v7.0.1 systems

### Install and Migration



# Specific Enhancements for System z IBM WebSphere MQ v7.1 on z/OS



## Performance Enhancements

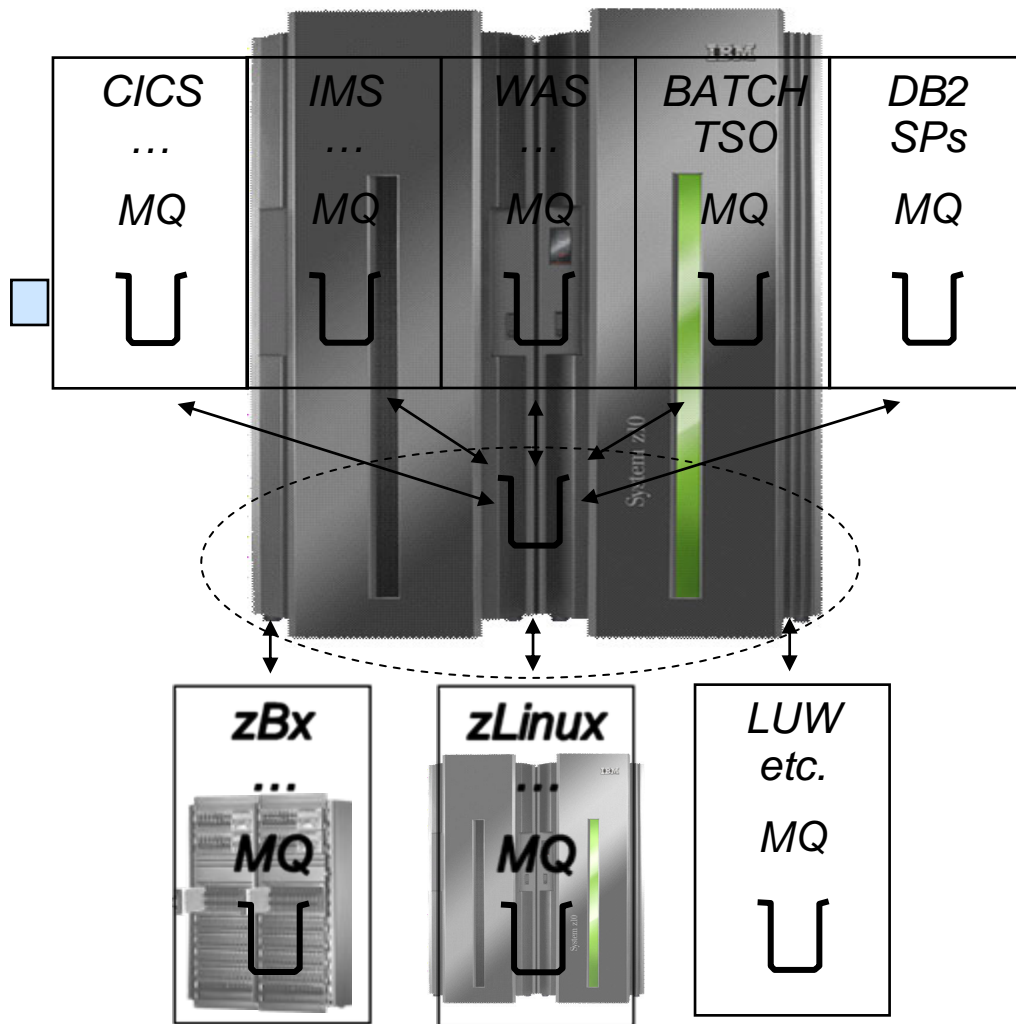
- Scaling improvements for multi-way configurations –
- Over **ONE MILLION messages/sec** (2KB non-shared) through a **single** Queue Manager on a 30-way z196
- Over 150,000 messages/sec (2KB shared) using a 3 Queue Manager QSG on a 30-way z196
- New Shared Message DataSets (SMDS) for storing large shared messages provide significant performance and capacity improvements over DB2

- Automatic recovery capability for 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 shared queue messages allow “large” to be customisable providing much greater customer control over usage of Coupling Facility storage

## Availability Enhancements



# Connectivity to, from and within zEnterprise

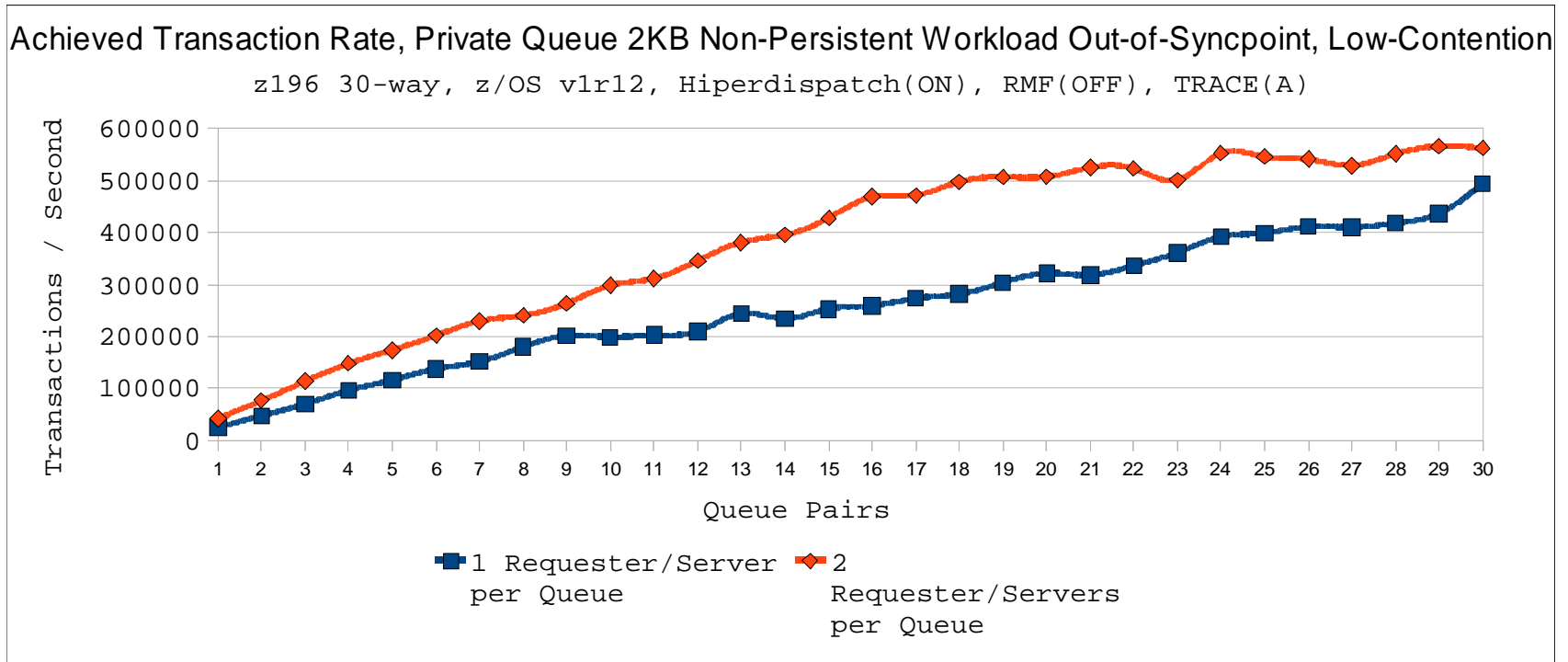


## Sysplex Shared Queue Message Availability:

Goal is to provide as near as possible continuous message data access under ALL failure scenarios (These scenarios include Application/Transaction failures, Application Execution Env. failures, Qmgr failures, CF failures, DASD failures, Network failures, CEC failures)

## Sysplex Shared Queue Message Capacity:

Goal is to provide Terabytes of affordable message capacity such that MQ is capable of meeting all business requirements for reliable message storage when processing applications are unable to run for whatever reason



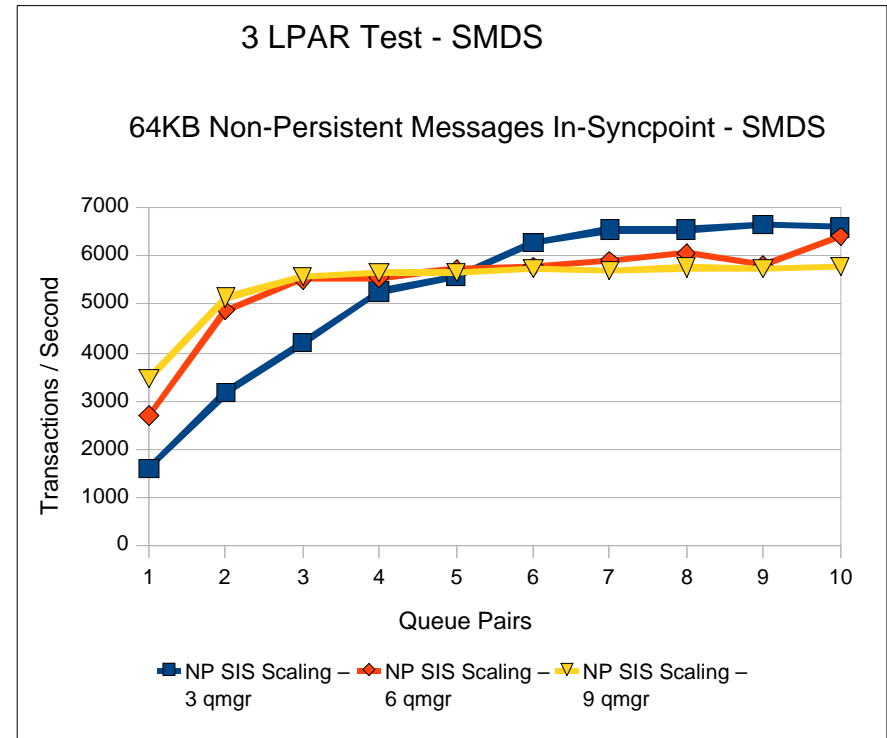
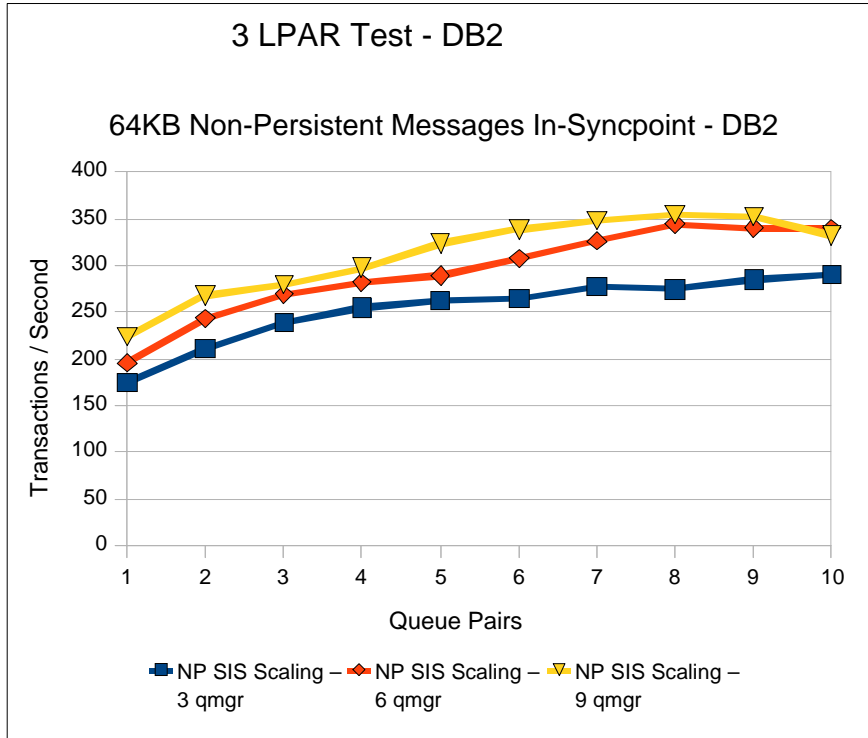
This measurement shows that MQ is able to exceed 550,000 transactions per second on a single queue manager running on a 30-processor LPAR

– and was repeated with similar results on a 64-processor LPAR.

**(Note that with current MQ V7.0.1, we max out in this scenario at 330,000 tps)**

Each transaction involves a requester task putting a message, a server getting the message and putting a reply and the requester getting the specific reply message - i.e. 2 MQPUT/MQGET pairs.

So a single queue manager is able to support a message rate of **1.1 million messages / second !!**



- Early Test Results on z196
- Tests show comparable CPU savings making SMDS a more usable feature for managing your CF storage
- SMDS per CF structure provides better scaling than DB2 BLOB storage

## ■ CICS and WMQ

- Need to apply maintenance for CICS TS 3.2 & 4.1 to allow exploitation later WMQ releases
- CICS 4.1 provides MQ Group Attach (a la DB2) with WMQ V6 and upwards
- CICS 4.2 will provide extended MQ Group Attach (GroupUR support - a la WMQ V7.0.1) when used with WMQ V7.1
- WMQ V7.1 provides 64-bit support for Java Classes for CICS

## ■ IMS and WMQ

- Transaction Expiration (IMS Bridge)
- IMS Resource Monitoring (IMS Bridge Flood Prevention)

## ■ WAS (z) and WMQ

- WAS can take advantage of WMQ V7.0.1 GroupUR support via Client attach
- JMS fix (WMQ V7.0.1.5) provides single phase commit optimisation for MDBs where WMQ is the only Resource Manager touched by the MDB (needs WAS 7.0.0.19)

## Looking at new enterprise workload?

### ■ Do you need to:

- Support a new business opportunity with a new application?
- Build a new application to streamline existing business operations?
- Better connect existing applications across your enterprise



### ■ Are you:

- Looking to deploy on z for mission critical reliability and enterprise class scaling?
- Looking to keep operational costs/expense low?





## Announcing WebSphere MQ for z/OS Value Unit Edition V7.1

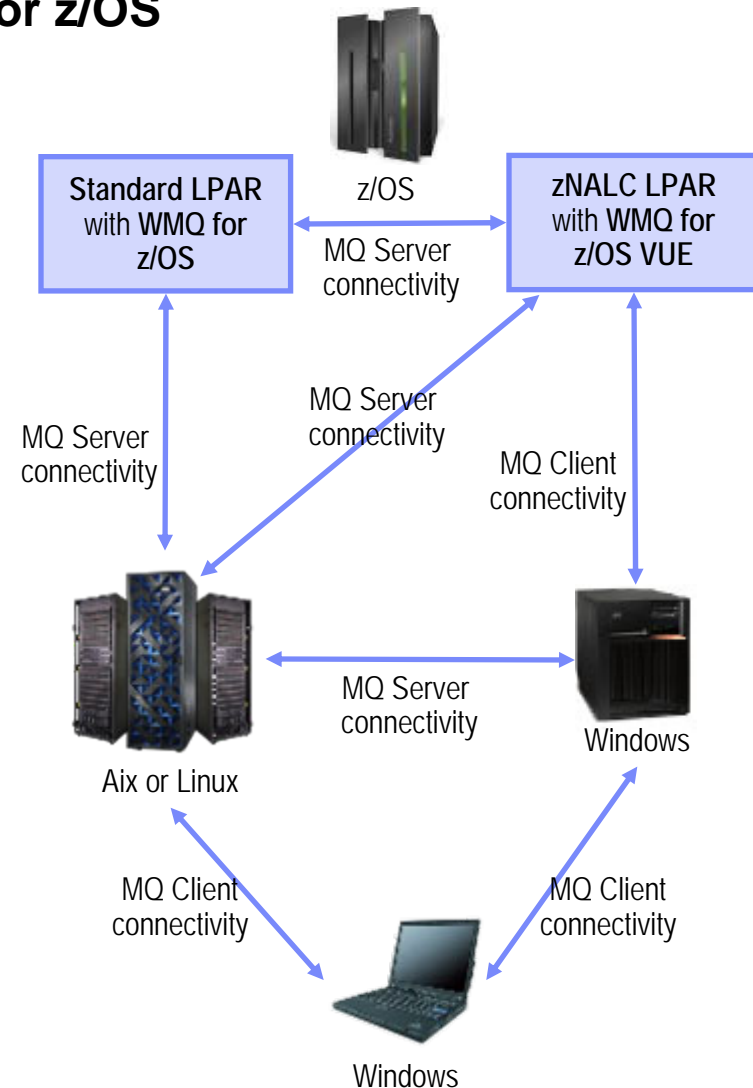
- All the power of the **premier, unmatched messaging product on z/OS** sold under an OTC license
- The **same product and capabilities** as WebSphere MQ for z/OS V7.1
  - Included in the product at **no additional cost** is the Client Attachment Feature
    - Offers direct connectivity to WebSphere MQ Clients running on other platforms
    - Easy to connect distributed workloads and data directly to applications on z/OS using MQ
- Connectivity for your new workload running on your zNALC partition
  - Connect to your applications running on the same zNALC LPAR,
  - Connect to another z/OS LPAR using MQ
  - Connect to MQ on other platforms
- Can federate with other instances of WebSphere MQ for z/OS
- Can be managed by the same System Management tool as other instances of WebSphere MQ for z/OS
- The affordable way to connect your zNALC workloads
  - Announcement on October 15<sup>th</sup> 2013
  - Availability on November 22<sup>nd</sup> 2013
- Can be extended with WebSphere MQ Advanced for z/OS
  - Adds WebSphere MQ File Transfer Edition and WebSphere MQ Advanced Message Security

# Connecting across your enterprise with WMQ VUE

## Scenario:

### Customer has WMQ on distributed and WMQ for z/OS

- Already have a zNALC LPAR?
  - Could add new WMQ for z/OS VUE to the zNALC LPAR without increasing Operational Expense but gain easy connectivity to the rest of the enterprise.
  
- Don't currently have a zNALC LPAR...
  - If one is added then adding WMQ VUE there will ease connectivity to the rest of the enterprise.
  
- In either situation benefits can be seen from not just WMQ VUE but if WMQ Advanced for z/OS is added it will provide WMQ FTE and WMQ AMS.



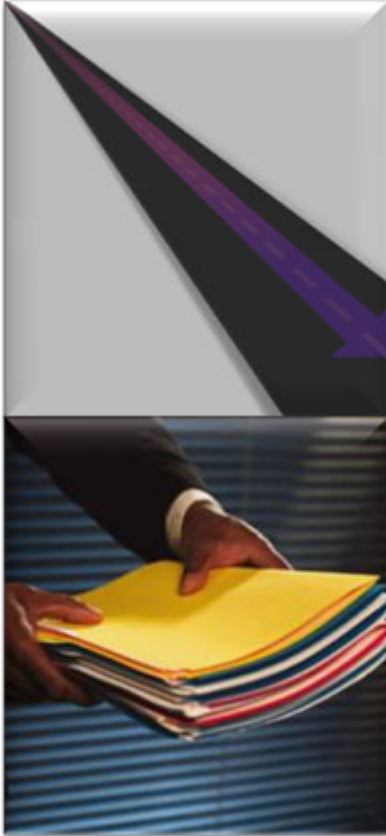
## Delivering more for z/OS customers with WebSphere MQ for z/OS V7.1 and WebSphere MQ Advanced for z/OS V7.1

- Our largest and most demanding customers run WMQ on z/OS to gain the most high performing connectivity between z/OS applications
- WMQ for z/OS is sold as MLC (monthly license charge) or OTC (as VUE)
  - WMQ AMS and WMQ FTE are available on z/OS and sold as OTC (One Time Charge) – just like distributed
- WMQ Advanced for z/OS V7.1 is a combined package of WMQ AMS and WMQ FTE
  - WMQ for z/OS entitlement is a pre-req
  - Customers can trade up to WMQ Advanced for z/OS if they own either WMQ AMS or WMQ FTE
  - Customers of either WMQ for z/OS or WMQ for z/OS VUE can add WebSphere MQ Advanced for z/OS or either of the 2 individual products

WMQ VUE	5655-VUE
WMQ	5655-R36
WMQ AMS	5655-W50
WMQ FTE	5655-U80
WMQ AMS	5655-W98 (WebSphere MQ Advanced for z/OS)
WMQ FTE	



## MQ Advanced Message Security – key points



### 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 etc.)***

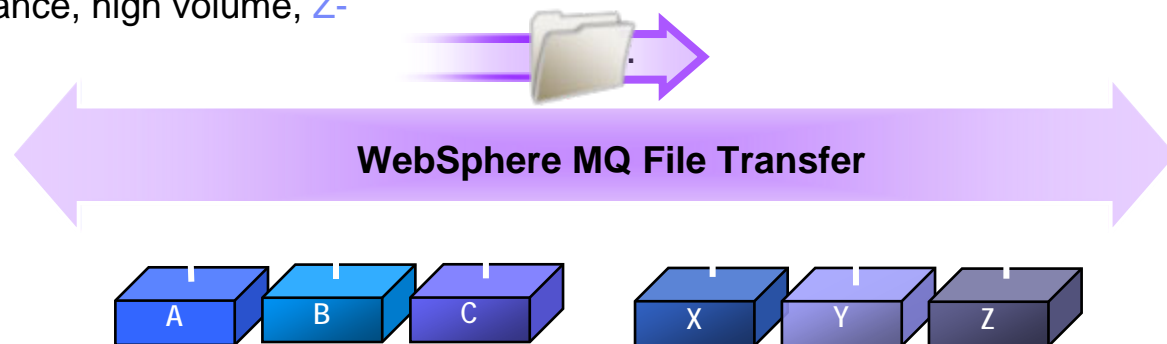
**Entitlement for WMQ AMS included within WebSphere MQ Advanced for z/OS**

## WebSphere MQ Managed File Transfer (WMQ FTE)

- Adds managed file transfer services to WebSphere MQ
- Enables reliable, secure and traceable file transfers from within the MQ environment
- Replaces costly, home-grown solutions that lack management controls – reuses the MQ Explorer console for management

### Capabilities:

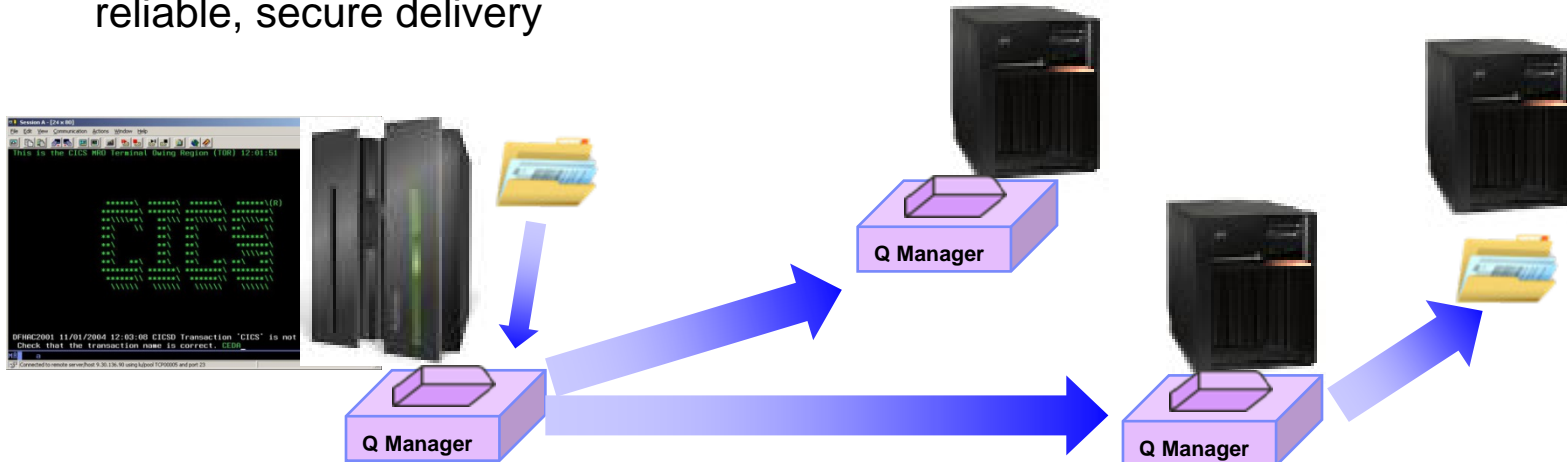
- Any file size (Kb, Mb, Gb, Tb...)
- Web UI for "ad hoc" file exchange & tracking between users
- No need for programming
- Reliable delivery leveraging MQ
- Full logging for audit purpose
- High performance, high volume, Z-optimized
- Industry standard SSL security
- Multi-purpose File-to-message(s) and Message-to-file modernizes batch applications
- XML scripting for distributed job automation
- Supports many platforms (11 OSs)



**Entitlement for WMQ FTE included within WebSphere MQ Advanced for z/OS**

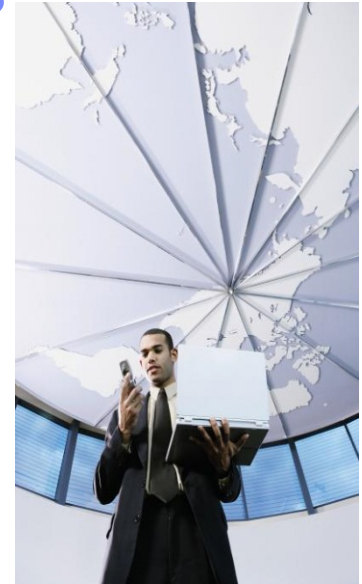
# Potential use case – MQ VUE, MQ Advanced and CICS VUE

- Client needs to deploy a new application
  - Not directly related to other z Workload, but needs reliability and throughput offered by z/OS deployment
    - Application would benefit from access to data created by other applications elsewhere in enterprise
    - Application also writes data as files which need to be moved across business for further processing
  - Cost is a factor
    - Client has CICS skills, but doesn't want to host more CICS workload in main LPAR
- Decision to deploy new application in zNALC LPAR
  - New application leverages CICS for transactional control
  - Connects via WebSphere MQ to Java and .NET applications elsewhere in business to drive customer and partner interaction
  - Application sends files over WebSphere MQ File Transfer Edition to ensure reliable, secure delivery



## Why Messaging for Mobile and M2M? What's new?

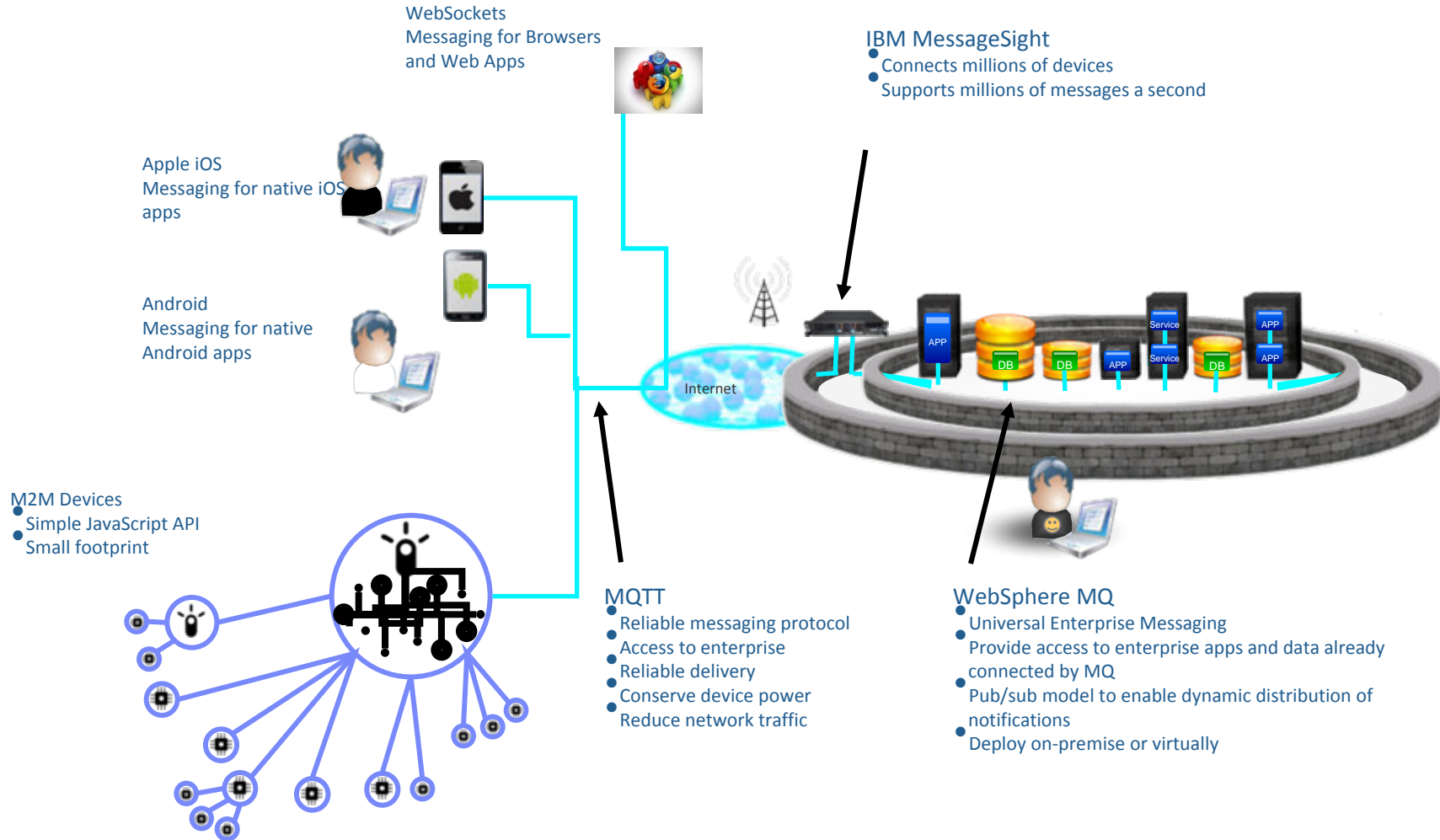
- The HTTP standard revolutionized how we consume data
  - A single simple model: Send a request, read the response
  - Available via any tablet, laptop, phone, PC etc.
  
- Mobile and M2M applications have additional challenges
  - HTTP remains ideal for requesting data from a known source
    - e.g. a Mobile user *requesting* info
  - But we also need an event-oriented paradigm:
    - Reliably and securely completing *mobile business transactions* over *unreliable networks*
    - Transmitting information *one to many*
    - Listening for events *whenever they happen*
    - Distributing minimal packets of data in *huge volumes*
    - *Pushing* information over *unreliable networks*



Location Aware  
Context Sensitive



- Connecting inside the Enterprise and out to Mobile and M2M





- The growth of mobiles, sensors and intelligent devices demands a change to how we do business
- IBM MessageSight is a secure, easy to deploy appliance-based messaging server that is optimized to address the massive scale requirements of the machine to machine (m2m) and mobile use cases
- Designed to sit at the edge of the enterprise and can extend your existing messaging infrastructure or be used standalone
- Part of the MobileFirst family integrating with BigData and Analytics engines to provide an end to end solution



# IBM MessageSight

## Gateway to the Internet of Things and Mobile

- Extends IBM Messaging family with secure, easy to deploy appliance-based messaging gateway
- Optimized for massive scale Internet of Things and Mobile use cases at edge of enterprise
- Exploits hardware acceleration for high performance
- Can extend existing messaging infrastructure or be used standalone



IBM MessageSight V1.1

*Designed for Things*

- Optimized gateway for Things and Mobile devices
- Efficient open protocol
- Event-driven awareness
- Open and industry agnostic
- Fine-grained security policies

*Developer Friendly*

- Active dev community
- Free dev virtual appliance
- Simple yet powerful APIs
- Simple messaging paradigm
- 40+ MQTT client libraries

*Easy to Deploy*

- Up and running < 30 minutes
- Task oriented UI guides administrator through first steps
- Simple and scalable management through policies

*Form Factor Choice*

- Hardened Appliance Form Factor with secure firmware (signed and encrypted by IBM) and no user-visible, general purpose OS
- Virtual appliance for Dev/Test

*Easy to Integrate*

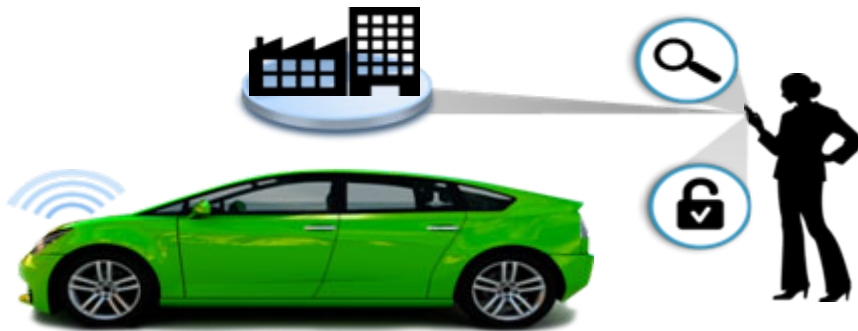
- JMS
- WebSockets
- MQ
- Integration Bus
- Worklight
- InfoSphere Streams
- Workload balancing across Application Servers

*Internet Scale*

- 13M non-persistent msg/sec
- 400K persistent msg/sec
- 1M concurrent connections
- Predictable microsecond latency under load
- Highly available

# Use Cases for Mobile and M2M

Connecting the external world to your infrastructure and your applications



- Find my car
- Predictive parts failure
- Vibration detected, garage notified
- Unlock my car

## Connected Vehicle

- TV notifies of incoming calls
- Millions of homes subscribe and publish events to head office (HQ)
- HQ sends targeted advertising back



## Connected Home



- Collision detected, emergency services notified
- Surrounding vehicles notified
- Traffic lights controlled

## Connected City

# Visiting Nurse Service of New York launches enterprise connectivity

## An enterprise messaging and monitoring system positions staff to better serve patients



### The need:

The Visiting Nurse Service of New York (VNSNY) needed a way to move information securely between systems so that employees could have remote access.

### The solution:

VNSNY implemented IBM® WebSphere® MQ software, which moves data from one application to another over the network, along with Avada Infrared360 software.

### The benefits:

- Gives staff access to VNSNY systems from virtually any location
- Provides robust monitoring capabilities that facilitate properly functioning messaging systems
- Helps VNSNY establish security-rich connections with external organizations, such as Medicare and Medicaid

*“Working with Avada and having this monitoring utility, alerting, reporting and some trending, we can see that the plumbing is working, the messages are going.”*

*—Anders Jacobson, supervisor,  
UNIX system administration,  
Visiting Nurse Service of  
New York*

### Solution components:

- IBM® WebSphere® MQ
- IBM System z10
- IBM Business Partner  
Avada Software

# Why WebSphere MQ ?

**20 years of proven experience**

Leader in Messaging technology & innovation

**Connect virtually anything**

Broad coverage of platforms, technologies, languages  
 Draw skills from a larger pool – use who you have today  
 Over 9,300 certified developers for IBM Messaging alone

**Most widely deployed Messaging Backbone**

Over 10,000 customers using IBM Messaging Backbone  
 Over 90% of the Fortune 50 and 9 of the Fortune 10  
 Over 80% of the Global 25 and 7 of the Global 10

**Scales and performs to the highest levels –  
 Entrusted with 10s of billions of messages  
 each day**

Government client sends 675 million messages per day\*  
 Banking client handles over 213 million messages per day on  
 z/OS alone\*

**Relied on as the mission-critical backbone**

Financial Markets client handles \$1 trillion worth of traffic per  
 day on one MQ network\*  
 Banking client sends \$7-\$35 trillion worth of traffic per day on  
 just one MQ-based SWIFT gateway\*

**Continually investing and innovating**

Over 120 patents and filings within messaging space  
 New WebSphere MQ family products  
 Regular enhancements, updates and new releases