



IBM WebSphere MQ for z/OS V5.3 Maintains the Standard for Messaging and Queuing

Overview

This new release has been renamed to WebSphere® MQ for z/OS™ (from MQSeries® for OS/390®).

New and Improved Function

- Persistent shared-queue messages
- Out-of-the-box channel security, provided by the secure sockets layer (SSL), across all WebSphere MQ queue managers and clients at the V5.3 level
- Delivery of the MQSeries classes for Java™ and the MQSeries classes for Java message service (JMS) as a free, separately-installable feature of the WebSphere MQ for z/OS product (previously available in SupportPac™ MA88)
- Improved performance, availability, and usability
- Increased similarity to WebSphere MQ products on distributed platforms

Key Prerequisites

OS/390 V2.9, Coupling Facility Level 9, and DB2® 6.1, or later.

Refer to the **Hardware Requirements** and **Software Requirements** sections.

Planned Availability Date

June 28, 2002

At a Glance

Further family consistency, enterprise technology enablement, plus improved performance, availability, and usability:

- Message grouping
- Report message options
 - Include the full message body in the report message
 - Discard the message if it cannot be put to its target queue
- Browse with lock
- Message channel agent (MCA) exit chaining
- Optional removal of the channel process definition
- Improved STOP CHANNEL command
- Application Message Interface (AMI) policy handlers
 - AMI object access from an LDAP directory
 - MQSeries link for SAP R3 link header
- Enterprise technology enablement
 - Improved performance for the WebSphere MQ classes for Java and the addition of WebSphere MQ classes for JMS
 - SSL
 - Persistent shared queue messages
 - Notification of a configuration change to an event queue
 - Support for the extended Simplified Chinese code page (GB18030) and additional code page conversions
- Increased queue manager performance, availability, and usability
- Improved channel performance, availability, and usability

For ordering, contact:

Your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at

800-IBM-CALL

Reference: LE001

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Description

Family Harmonization

This release implements more of the function already available on the distributed platforms.

- Message grouping — Support for private and shared queues

It does not implement message segmentation. It introduces a new type of indexed queue, `INDXTYPE(GROUPID)`, which you must use if you want to MQGET group messages in logical order. It also introduces some restrictions compared with the full-function support on the distributed platforms, to enable efficient and economic implementation on private and shared queues. Applications cannot use message priorities 0 and 1 (the lowest priority values) with group messages (messages with priorities 0 and 1 are stored as if they had priority 2). Applications cannot MQGET shared queue group messages using `MsgId` or `CorrelId` as selectors. Also, applications can only MQGET group messages in physical order if they use an unqualified MQGET or an MQGET qualified by `GroupId` or `GroupId` and `MsgSeqNumber`.

- Report messages with full data — Allows you to set up report message options so that WebSphere MQ for z/OS will include the full message body in report messages (report messages generated for Confirm on arrival (COA), confirm on delivery (COD), expiry, and exception) as an alternative to no message body or just the first 100 bytes of the message body.

A report option tells the message channel agent to discard the message rather than MQPUT it to the dead letter queue if the message channel agent cannot MQPUT the message to the target queue (for example, if the target queue is full or disabled).

You can combine these options to return invalid messages to their sender rather than MQPUT them to the dead letter queue.

- Browse with lock — Allows you to lock a single private queue or shared queue message retrieved by an MQGET browse, so that another thread cannot perform a destructive MQGET on the message.

Each successive MQGET browse with lock unlocks the prior locked message.

- MCA exit chaining — Extends the send, receive, and message channel exits from **one exit program** per exit point to **eight exit programs** per exit point.

This differs a little from the distributed platforms, which allow more than eight exit programs per exit point. Customer feedback suggests that eight is an adequate maximum.

- Remove channel process definition — Simplifies resource definition by removing the need for a process object to trigger a channel when messages arrive on a transmission queue.

The only useful information in the process object is the channel name, which you can instead specify on the definition of the transmission queue.

- Improved STOP CHANNEL command — Lets you selectively stop one of several channel instances with the same channel name by specifying the target connection name or target remote queue manager.

- AMI (application message interface) policy handlers — Supports policy handlers (exits). Customers and vendors can extend AMI policies with extra value-added function.
- AMI objects from LDAP — Lets you save AMI objects, such as policy and service objects, in an LDAP repository.

The AMI runtime function on the distributed platforms can directly retrieve referenced objects from LDAP, thereby simplifying object distribution. This is not possible on OS/390 or z/OS because of CICS® restrictions. Instead, we extend the utility that builds the AMI cache (the load module containing the AMI objects) to optionally access these objects from LDAP.

- SAP R3 support — Defines the MQSeries link for SAP R3 link header into WebSphere MQ for z/OS. It also adds standard data conversion for this header to the base product.

Enterprise Technology Enablement

Enhanced technology is now available to the WebSphere MQ enterprise network and its use by WebSphere Application Server.

- Java support — Improved performance for the WebSphere MQ classes for Java.

It also adds WebSphere MQ classes for Java message service (JMS) to the OS/390 and z/OS platforms, by delivering the latest version of SupportPack MA88 as a free feature (ordered separately).

Transactional Java support is added for users of WebSphere Application Server V4.0.1 for z/OS and OS/390. This supports the Java transactional model, which allows Java connections to participate in either local or global units of work.

- Secure sockets layer (SSL) — Out-of-the-box channel authentication, message integrity, and message privacy across all WebSphere MQ V5.3 queue managers and clients.

SSL, a well-established standard, uses the public key infrastructure (PKI) and the associated certificates to authenticate channel partners and to exchange a secret key for ongoing message encryption. You can choose whether to have just partner authentication (a one-off cost at channel startup) or partner authentication and message encryption (an ongoing cost on every message).

You can also control who is allowed to connect to a receiver channel by matching distinguished name data in a received certificate with data specified in a template, including wildcard capability.

Resource Access Control Facility (RACF®) certificate name filtering can associate a channel user ID with a received certificate by matching the received distinguished name against a template held in RACF or other external security manager that supports the SAF interface, again with wildcard capability.

In addition, a new attribute `NLTYPE` for the `NAMELIST` object, is needed by the SSL item to clearly indicate that a `NAMELIST` object is a list of names of `AUTHINFO` objects. It also helps error checking for other object types. Its defaults work in such a way that existing `NAMELIST` objects (that do not contain the `NLTYPE` attribute) work without change.

- Persistent shared queue messages — Recovery of Coupling Facility (CF) application structures that contain persistent shared queue messages from periodic nondisruptive fuzzy backups of the persistent messages in the CF structure and WebSphere MQ logging of shared queue operations. Each backup is held on the WebSphere MQ recovery log of the queue manager that took the backup, and the details of the backup time, size, and location are held in the shared queue DB2 repository for two levels of backup per CF structure.

BACKUP CRSTRUCT(name) commands initiate fuzzy backups of each CF application structure periodically, probably through operations automation outside WebSphere MQ. If a CF application structure should fail, you can use a RECOVER CFSTRUCT (for example, name1, name2) command to start structure recovery.

The recovery is done by a single queue manager, by replaying the recovery logs of all the queue managers in the queue sharing group (QSG) in a backwards direction in timestamp sequence. When the recovery process gets to the time of the latest backup of a CF application structure it replays that backup.

The replay process remembers each MQGET, which it cancels when it encounters the matching MQPUT so that only unmatched MQPUTs are restored to the CF.

Commands:

- Display the status of each CF application structure and its associated backup
- Define a CF application structure as recoverable and eligible for persistent shared-queue messages
- Help with log tail deletion

This item also provides a mechanism for different queue manager releases to coexist in the same queue sharing group, and removes the MQSeries for OS/390 V5.2 restriction that all queue managers connected to a CF application structure immediately terminate if that CF structure should fail.

- Configuration change notification — Optionally generates new configuration event messages to a new event queue when a WebSphere MQ object is defined, altered, or deleted.

The event message header contains context information on the date and time of the object definition change, and the identity of the application and user that initiated this change.

The message payload includes the object definition in the format that would be returned by a PCF INQUIRE against that object. A single “after” event message is generated for define and delete, and both a “before” and an “after” event message are generated for an alter.

A queue manager attribute enables or disables configuration event messages. A command generates configuration event messages for objects of a specified type, generic name, and time interval since their last change. Use the configuration event queue as an audit log. Vendor system management products would use it to maintain their private repository of queue manager objects.

- More code page conversions — Supports extended simplified Chinese code page (GB18030) and support for additional code page conversions

Queue Manager Performance, Availability, and Usability

New function improves the operational characteristics of queue managers on WebSphere MQ for z/OS.

- Removes the need for operating system IPLs to upgrade a queue manager — IPLing the system can be very disruptive because it stops all programs running on an operating system image. Today, an increasing number of customers do an IPL once every one to two years, which makes it hard to upgrade your queue manager!

A new REFRESH QMGR TYPE(EARLY) command upgrades the WebSphere MQ early code to a new level without an IPL.

You will still need an IPL to install the WebSphere MQ for z/OS 5.3 of this early code that now includes the above REFRESH QMGR command.

- More dynamic queue manager configuration — Provides MQSC SET SYSTEM, SET ARCHIVE, and SET LOG commands. These commands can be used to set many of the queue manager attributes you currently set through the CSQZPARMS parameter module at queue manager startup. Modify these queue manager attributes while your queue manager is running.

DISPLAY SYSTEM, DISPLAY ARCHIVE, and DISPLAY LOG commands display both the original value of each parameter from the CSQZPARMS module and the latest value established by a SET command.

- More timely and efficient message expiry — Currently, obsolete messages are only expired when they are encountered by an MQGET or MQGET browse. Obsolete messages can remain on a queue for a long time, especially if the queue is accessed by Msgld or Correlld. This item runs a periodic background tasks to scan all queues for expired messages.
- Index rebuild after queue manager start — Currently, the index for queues defined with INDXTYPE(Msgld | Correlld) is built during queue manager startup. This requires a sequential scan of each indexed queue, and can thus significantly increase the elapsed time for queue manager startup.

Improve the situation by starting index build for the indexed queues in queue manager startup. The index then can build to complete after startup has finished and the queue manager is available for normal processing.

A lock suspends MQPUT and MQGET calls against an indexed queue until its index is fully built. This may result in application timeout errors that did not previously happen; if this is a concern, you should avoid this new option.

- Up to 16 buffer pools — Improves your ability to tune your queue manager by increasing the number of buffer pools from 4 to 16.

Group together queues with similar access patterns to ensure that required pages are more likely to be in the buffer pool rather than on the pageset data set.

- Easier pageset removal, replacement, and compression — Provides new options to avoid queue manager restart attempting to recover a pageset from the queue manager’s log.

Take a pageset offline and then reintroduce that pageset without the queue manager needlessly replaying recovery logs for the offline period. This technology simplifies the process for reducing the disk space allocated to a pageset. This is important because a pageset may have grown unusually large when a channel was down, and on returning to normal you want to recover the extra disk space that the pageset no longer needs.

- **Suspend queue manager logging for easier point-in-time recovery** — Introduces new commands to SUSPEND and later RESUME WebSphere MQ logging.

All queue manager activity stops while the logging is suspended, allowing you to take snapshot copies of your pageset and log data sets for transport to a remote disaster recovery site.

If needed, you can use these snapshot copies to quickly recover to a consistent state at the point in time when the logging was suspended. Units of work will be correctly backed out or committed during queue manager restart at the disaster recovery site.

- **Log preformat utility** — Preformats new active log data sets. Without this utility, the first WebSphere MQ use of an active log data set is very slow because each log control interval (CI) is written with a format-write.
- **Security improvements** — Adds context security at the queue level.

It also provides more effective management of the resource-related security control blocks that the MQSeries security manager caches for improved performance.

Channel Performance, Availability, and Usability

New function improves the operational characteristics of the channel initiator on WebSphere MQ for z/OS.

- **Improved channel availability through TCP/IP keepalive** — Supports TCP/IP keepalive at the channel level, allowing different keepalive intervals for different channels.

The keepalive interval drives a TCP/IP heartbeat that detects partner channel failure. If the partner has failed, WebSphere MQ closes the channel, which will result in an automatic channel retry for sender channels.

This item adds the KAIN keyword to the DEFINE and ALTER CHANNEL commands.

- **Improved channel availability through batch heartbeat support** — Adds an extra heartbeat interval just before the sender channel sends the flow that asks the receiver channel to commit the message batch, and hence place the batch in doubt. Sending this extra flow reduces the duration of the in-doubt window.
- **Source TCP/IP address of a channel for firewall penetration** — Adds the LOCLADDR keyword to the DEFINE and ALTER CHANNEL commands.

The LOCLADDR keyword specifies the local communications address for the channel. The value you specify depends on the transport type (TRTYPE) to be used.

Using such a specific address for an outbound channel makes it easier to penetrate a firewall.

- **Improved cluster recovery** — Simplifies the removal of a queue manager from a cluster in the scenario where there are multiple queue managers with the same name.

Specify the unique queue manager identifier as an alternative to the nonunique queue manager name.

Optionally, you can remove all the cluster queues owned by a queue manager from the cluster. You can reset a queue manager in all the clusters of which it is a member, and also optionally refresh its view of the available full repositories. This helps you recover from clusters damaged by operations errors or other causes.

Business Integration

The WebSphere platform for e-business includes business integration products and solutions that can help integrate just two applications, a single department, or the entire enterprise; reaching across business channels, trading partners and Web customers.

The WebSphere platform for e-business includes information connectivity and integration products, which can be combined selectively or built up, one upon the other, to provide more powerful and efficient integration, including:

- **WebSphere MQ, V5.3** the core of the MQSeries family, integrates over 35 platforms. Providing the base messaging functions for servers and clients, and assuring once only message delivery, it can be used alone or with other members of the family.
- **WebSphere MQ Everyplace™** brings the benefits of assured message delivery and rock-solid security to the failure-prone environment of mobile working.
- **WebSphere MQ Integrator (formerly MQSeries Integrator)** — a powerful information broker, includes a one-to-many connectivity model plus transformation, intelligent routing, and information flow modelling across multiple, disparate business systems.
- **MQSeries Workflow** — a business process management system, enables the definition, execution, and swift change of complete business processes that span systems, applications, and people.
- **WebSphere MQ Adapter Offering** — provides the framework and tools to build and customize MQSeries adapters for existing and new, prepackaged, or custom-developed applications.

IBM offers more products to support business integration, such as its WebSphere Adapters (including many additional CrossWorlds Adapters) and WebSphere Business Integrator.

Accessibility by People with Disabilities

The following features support use by people with disabilities:

- Operation by keyboard alone
- Optional font enlargement and high-contrast display settings
- Screen readers and screen magnifiers tested for use by people with visual impairment
- Speech recognition products tested for use by people with mobility impairment
- Optional display of audio alerts for people with hearing impairment

Product Positioning

WebSphere MQ Family

The family of products, based on IBM's industry-leading WebSphere MQ software, helps companies:

- Address business integration issues quickly and economically
- Become more agile
- Stay flexible
- Maintain customer orientation
- Gain — and maintain — competitive position

The WebSphere MQ family allows companies to maximize e-business opportunities by:

- Leveraging existing resources
- Improving speed-to-market
- Anticipating IT changes as their business changes

Hardware and Software Support Services

SmoothStart™ /Installation Services

SmoothStart Services

SmoothStart Service for WebSphere MQ provides customers with planning and installation services for WebSphere MQ Solutions to ensure that their WebSphere MQ Commercial Messaging environment is quickly up and running. Depending on customer requirements, an IBM specialist works with the customer's technical and programming staff to increase productivity and accelerate implementation of WebSphere MQ licensed software.

Planning Services for WebSphere MQ Solutions

IBM Planning Services for WebSphere MQ Solutions is a customizable service designed to help customers with a plan to implement a WebSphere MQ Solution within an organization. With this service, IBM can create the plan by collecting the necessary business requirements and infrastructure information, or can work with customer staff to customize and create the WebSphere MQ plan. In addition, IBM Planning Services WebSphere MQ Solutions assists in designing system network architecture, developing deployment and application migration plans, and recovery planning of MQSeries objects and data.

Design Services for WebSphere MQ Applications

IBM Design Services for WebSphere MQ Applications helps customers produce high- and low-level designs for your WebSphere MQ applications including assistance in modifying or writing applications to take full advantage of your WebSphere MQ environment. This offering is customizable and may include assistance in evaluating your test plans and making sure your applications perform effectively.

IBM High Availability Services for WebSphere MQ helps customers with an assessment of, and recommendation for, their WebSphere MQ High Availability environment, including IBM's WebSphere MQ and WebSphere MQ Integrator products.

The offering includes:

- An understanding of the customer's WebSphere MQ business and high availability requirements.
- An assessment of the customer's current WebSphere MQ environment.
- Recommendations on implementing a WebSphere MQ High Availability resilient environment to help ensure that the customer's WebSphere MQ high availability requirements are met and that messages are delivered and handled promptly.

For further information visit:

<http://www.ibm.com/services/>

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IBM US Announcement Supplemental Information

April 9, 2002

Education Support

For details of WebSphere® MQ courses, refer to:

<http://www.ibm.com/software/mqseries>

Call IBM Education and Training at 800-IBM-TEACH (426-8322) for catalogs, schedules, and enrollments.

Technical Information

Hardware Requirements: Any System/390® or IBM® zSeries 900 (z900) processor capable of running the required level of operating system with enough storage to meet the combined requirements of the software prerequisites, WebSphere MQ for z/OS™, the access methods, and the application programs.

Software Requirements: The Program Directory shipped with the product normally contains the latest level of information, particularly concerning APAR/PTF levels of supported products.

The following programs, or equivalents, at the specified **minimum levels:**

- OS/390® (5647-A01) V2.9 or z/OS (5694-A01) V1.1
- Shared queues: OS/390 V2.9, with Resource Recovery Services (RRS) activated, CF level 9, and DB2® (5655-DB2) V6.1
- Secure Sockets Layer (SSL) requires the OS/390 Cryptographic Services System SSL function (FMID HCPT2A0)
- CICS applications: CICS/ESA® (5655-018) 4.1 or CICS® Transaction Server (CTS) (5655-147) V1.3
- IMS™ applications: IMS (5695-176) 6.1
- DB2 applications: DB2 (5655-DB2) 6.1
- If you choose to use Unicenter TCPAccess Communications Server from Computer Associates, Inc., in place of IBM TCP/IP, you need V4.1 or, for OESockets, you need V5.2
- PL/I applications:
 - IBM PL/I for MVS™ and VM (5688-235) V1.1.1
 - VisualAge® PL/I for OS/390 and VM (5655-B22) V2.2
- COBOL applications:
 - IBM COBOL for OS/390 and VM (5688-197) V2.1
 - IBM COBOL for MVS and VM (5688-197) V1.2

• Java™ users:

- IBM Developer Kit for OS/390, Java 2 Technology Edition, Version 1.3.1 (5655-D35)
- WebSphere Application Server V4.0.1 for z/OS and OS/390

OS/390 includes appropriate levels of Language Environment®, TCP/IP, VTAM®, SMP/E, TSO/E, JES, C/C++, DFSMS / DFP, Security Server, High Level Assembler, ISPF, and ICSS.

Compatibility: WebSphere MQSeries® for z/OS, V5.3 is upwardly compatible with programs written for MQSeries for MVS/ESA™ V1.2, MQSeries for OS/390 V2.1, and MQSeries for OS/390 V5.2. Regression testing is performed to ensure compatibility.

WebSphere MQ Platforms: WebSphere MQ supports more than 35 IBM and non-IBM platforms. Some platforms do not support all of the functions available in this product.

Performance Considerations: Performance information is made available via the MQSeries SupportPac™ library on the Web.

<http://www.software.ibm.com/mqseries/txppacs/mqguides.html>

User Group Requirements: This announcement satisfies or partially satisfies requirements from one or more of the worldwide user group communities. Groups include Australasian SHARE/GUIDE (ASG), COMMON, COMMON Europe, GUIDE International, G.U.I.D.E. Europe, Japan GUIDE/SHARE (JGS), Guide Latin American (LAG), SHARE EUROPE, and SHARE Incorporated.

Planning Information

Installability: For reference, it should be noted that the CICS Mover function will be deleted from WebSphere MQ for z/OS the next time that re-versioning occurs.

Packaging: The following is supplied:

WebSphere MQ for z/OS, V5.3 on two 9-track magnetic tapes, 6250 bpi, two 3480 1/2-inch tape cartridges, or two 4-mm DAT cartridges, dependent on which feature number is selected.

Optionally, if ordered, the Client Attachment feature on 9-track magnetic tape, 6250 bpi, 3480 1/2-inch tape cartridge or 4-mm DAT cartridge, dependent upon which feature number is selected.

The tape or cartridge labelled 1 of 2 contains the WebSphere MQ for z/OS product code. The tape or cartridge labelled 2 of 2 contains the WebSphere MQ classes for Java and Java message service feature code.

This announcement is provided for your information only. For additional information, contact your IBM representative, call 800-IBM-4YOU, or visit the IBM home page at: <http://www.ibm.com>.

One copy of the WebSphere MQ Clients CD-ROM is supplied with the Client Attachment feature.

One printed copy of each of the following books:

Title	Order Number
WebSphere MQ for z/OS Program Directory	GI10-2548
WebSphere MQ for z/OS License Program Specifications	GC34-6181
WebSphere MQ for z/OS Concepts and Planning Guide	GC34-6051
WebSphere MQ for z/OS Problem Determination Guide	GC34-6054
WebSphere MQ for z/OS Messages and Codes	GC34-6056

The WebSphere MQ Documentation: Information Center and PDF CD-ROM (SK3T-6942) and the WebSphere MQ Documentation: HTML CD-ROM (SK3T-6943) are provided with the product if feature numbers 7133 and 7134 are specified.

System Integrity

IBM will accept APARs where installation of WebSphere MQ for z/OS V5R3 introduces an exposure to the system integrity of OS/390 or z/OS. This program is intended to run authorized.

Security, Auditability, and Control

The announced program uses the security and auditability features of the operating system software. The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Customer Financing

IBM Global Financing offers attractive financing to credit-qualified commercial and government customers and Business Partners in more than 40 countries. IBM Global Financing is provided by the IBM Credit Corporation in the United States. Offerings, rates, terms and availability may vary by country. Contact your local IBM Global Financing organization. Country organizations are listed on the Web at:

<http://www.financing.ibm.com>

Ordering Information

Current Licensees

Current licensees of MQSeries for OS/390 V5.2 will be informed of the availability of WebSphere MQ for z/OS V5.3.

New Licensees

Orders for new licenses can be placed now.

Shipment will not occur before availability date.

New users of WebSphere MQ for z/OS should specify type 5655 and model F10.

Basic License: To order a basic license, specify the program number and feature number 9001 for asset registration.

Entry Support License (ESL): To order an ESL license, specify the program number, feature number 9001 for asset registration, and the applicable ESL one-time charge (OTC) feature number. Also specify the feature number of the desired distribution medium.

Description	ESL OTC Feature Number
5655-F10 WebSphere MQ for z/OS, V5.3	0024
Client Attachment Feature	0065

ESL machines can be determined by referring to the IBM Entry End User/390 Attachment (Z125-4379).

Parallel Sysplex® License Charge (PSLC) Basic License: To order a basic license, specify the program number and feature number 9001 for asset registration. Specify the PSLC Base feature. If applicable, specify the PSLC Level A and PSLC Level B, and PSLC Level C, and PSLC Level D features and quantity.

If there is more than one program copy in a Parallel Sysplex, the charge for all copies is associated to one license by specifying the applicable PSLC feature numbers and quantity represented by the sum of the Service Units in Millions (MSUs) in your Parallel Sysplex. For all other program copies, specify the PSLC No-Charge (NC) Identifier feature on the licenses.

Also, specify the feature number of the desired distribution medium.

Machine MSU Capacity	PSLC Feature Number	PSLC Basic License MLC Feature Description
1	0001	PSLC Base, 1 MSU
2	0002	PSLC Base, 2 MSUs
3	0003	PSLC Base, 3 MSUs
4 — 45	0004	PSLC Level A, 1 MSU
	0005	PSLC Level A, 42 MSUs
46 — 175	0006	PSLC Level B, 1 MSU
	0007	PSLC Level B, 10 MSUs
	0008	PSLC Level B, 50 MSUs
176 — 315	0009	PSLC Level C, 1 MSU
	0010	PSLC Level C, 10 MSUs
	0011	PSLC Level C, 50 MSUs
316 or more	0012	PSLC Level D, 1 MSU
	0013	PSLC Level D, 50 MSUs
NA	0014	PSLC NC IDENTIFIER

Example 1: For a single machine with 11 MSUs, the PSLC features would be:

- 0003 — quantity 1
- 0004 — quantity 8

Example 2: For two machines in a Parallel Sysplex, which have an aggregation of 60 MSUs, the PSLC features would be:

- PSLC chargeable license #1:
 - 0003 — quantity 1
 - 0005 — quantity 1
 - 0006 — quantity 5
 - 0007 — quantity 1
- PSLC no-charge license #2:
 - 0023 — quantity 1

Variable Workload License Charge (WLC) Basic License: To order a basic license, specify the program number and feature number 9001 for asset registration. Specify the WLC Base feature. If applicable, specify the WLC Level 1, WLC Level 2, WLC Level 3 and WLC Level 4 features with the appropriate quantity.

Also, specify the feature number of the desired distribution medium.

Variable WLC Aggregation: When z/OS is installed on two or more System/390 or zSeries 900 (z900) machines comprising a sysplex, Variable WLC aggregation applies to z/OS and the S/390® software programs which have Variable WLC.

Whether there is only one license or more than one license of the program in the sysplex, the charge for all licenses is associated to the “aggregation license” by specifying the applicable WLC feature numbers and quantity represented by the sum of the MSUs in the sysplex. The “aggregation license” is an additional program license which is ordered and serialized, although there is no shipment associated with it.

For the actual licenses, the charge is reflected as \$0.00 by specifying the applicable “registration” Variable WLC feature numbers and the quantity equal to the MSUs of that license running on the designated machine.

For WebSphere MQ for z/OS, V5.3 (5655-F10), the Variable WLC feature numbers are as follows:

MSU Capacity	WLC Feature Number	WLC Basic License MLC ¹ Feature Description
0 — 45	0028	WLC Base, 45 MSU
46 — 175	0029	WLC L1, 1 MSU
176 — 315	0032	WLC L2, 1 MSU
316 — 575	0034	WLC L3, 1 MSU
	0036	WLC L3, 50 MSU
576 or more	0038	WLC L4, 1 MSU
	0040	WLC L4, 50 MSU
MSU Capacity	WLC Reg Feature Number	WLC Basic License No-Charge Registration Feature Description
0 — 1	0030	WLC Base, 1 MSU Reg
2 — 175	0031	WLC L1, 1 MSU Reg
176 — 315	0033	WLC L2, 1 MSU Reg
316 — 575	0035	WLC L3, 1 MSU Reg
	0037	WLC L3, 50 MSU Reg
576 or more	0039	WLC L4, 1 MSU Reg
	0041	WLC L4, 50 MSU Reg

¹ Monthly License Charge

Example 1: For a single machine with the program running at 220 MSUs, the Variable WLC features would be:

- 0028 — quantity 1
- 0029 — quantity 130
- 0032 — quantity 45

Example 2: If there are 2 machines in a sysplex, and a program is running on machine #1 at 190 MSUs and on machine #2 at 140 MSUs, the Variable WLC feature numbers and quantities to be ordered would be:

- License on machine #1 for 190 MSUs:
 - 0030 — quantity 1
 - 0031 — quantity 174
 - 0033 — quantity 15
- License on machine #2 for 140 MSUs:
 - 0030 — quantity 1
 - 0031 — quantity 139
- Aggregation license for a total of 330 MSUs:
 - 0028 — quantity 1
 - 0029 — quantity 130
 - 0032 — quantity 140
 - 0034 — quantity 15

S/390 Usage Pricing (Usage License Charge) Basic License: To order a basic license, specify the appropriate program and feature number, if required, for asset registration. Specify the applicable S/390 Usage Pricing feature. Also, specify the feature number of the desired distribution medium.

Charges will be based upon the Peak MSUs. Usage reported between thresholds of features 1, 2, or 3, will be rounded up to the next MSU level. Above 1.0 MSU, usage will be rounded to the nearest whole MSU. For example, 2.4 MSUs would round to 2.0 MSUs for pricing, and 2.5 MSUs would round to 3.0 MSUs for pricing.

The customer pricing will be determined by selecting either:

- Feature 1 (if usage is below 0.25 MSU)
- Feature 2 (if usage is between 0.26 and 0.50)
- Feature 3 (if usage is between 0.51 and 1.0)
- Feature 3+ (# MSUs from 2-11 times the charge associated with feature number 4) + (# MSUs from 12-44 times the charge associated with feature number 5) + (# MSUs from 45-78 times the charge associated with feature number 6) + (# MSUs above 78 times the charge associated with feature number 7 —if applicable)

Description	Usage Pricing Feature Number
0 to 0.25 MSU Base	0015
0.26 to 0.5 MSU Base	0016
0.51 to 1.0 MSU Base	0017
Level A Chg/MSU (2 to 11 MSUs)	0018
Level B Chg/MSU (12 to 44 MSUs)	0019
Level C Chg/MSU (45 to 78 MSUs)	0020
Level D Chg/MSU (Above 78 MSUs)	0021
Level D Chg/MSU Per 50 MSUs for machine capacity of 79 or more MSUs	0022
N/C ID Feature	0023

Examples for ordering: A customer with a measured usage (from the IBM Measured Usage report) of 0.3 MSU would:

Order quantity 1 of the 0.26 to 0.5 MSU base feature

A customer with 6.6 MSUs (from the IBM Usage report) would:

Be rounded up to 7.0 MSUs

Order quantity 1 of the "0.51 to 1.0 MSU" base feature
Order quantity 6 of the Level A 1 MSU feature

A customer with 15 MSUs (from the IBM Usage report) would:

Order quantity 1 of the "0.51 to 1.0 MSU" base feature
Order quantity 10 of the Level A 1 MSU feature
Order quantity 4 of the Level B 1 MSU feature

A customer with 50 MSUs (from the IBM Usage report) would:

Order quantity 1 of the "0.51 to 1.0 MSU" base feature
Order quantity 10 of the Level A 1 MSU feature
Order quantity 33 of the Level B 1 MSU feature
Order quantity 6 of the Level C 1 MSU feature

A customer with 85 MSUs (from the IBM Usage report) would:

Order quantity 1 of the "0.51 to 1.0 MSU" base feature
Order quantity 10 of the Level A 1 MSU feature
Order quantity 33 of the Level B 1 MSU feature
Order quantity 34 of the Level C 1 MSU feature
Order quantity 7 of the Level D 1 MSU feature

Client Attachment Feature

Client Attachment Feature — S/390 Usage Pricing

Description	Usage Pricing Feature Number
0 to 0.25 MSU Base	0056
0.26 to 0.5 MSU Base	0057
0.51 to 1.0 MSU Base	0058
Level A Chg/MSU (2 to 11 MSUs)	0059
Level B Chg/MSU (12 to 44 MSUs)	0060
Level C Chg/MSU (45 to 78 MSUs)	0061
Level D Chg/MSU (Above 78 MSUs)	0062
Level D Chg/MSU Per 50 MSUs for machine capacity of 79 or more MSUs	0063
N/C ID Feature	0064

Client Attachment Feature — PSLC

Machine MSU Capacity	PSLC Feature Number	PSLC Basic License MLC Feature Description
1	0042	PSLC Base, 1 MSU
2	0043	PSLC Base, 2 MSUs
3	0044	PSLC Base, 3 MSUs
4 — 45	0045	PSLC Level A, 1 MSU
	0046	PSLC Level A, 42 MSUs
46 — 175	0047	PSLC Level B, 1 MSU
	0048	PSLC Level B, 10 MSUs
	0049	PSLC Level B, 50 MSUs
176 — 315	0050	PSLC Level C, 1 MSU
	0051	PSLC Level C, 10 MSUs
	0052	PSLC Level C, 50 MSUs
316 or more	0053	PSLC Level D, 1 MSU
	0054	PSLC Level D, 50 MSUs
NA	0055	PSLC NC IDENTIFIER

Client Attachment Feature — Variable WLC: For the Client Attachment Feature, the Variable WLC feature numbers are as follows:

MSU Capacity	WLC Feature Number	WLC Basic License MLC Feature Description
0 — 45	0069	WLC Base, 45 MSU
46 — 175	0070	WLC L1, 1 MSU
176 — 315	0073	WLC L2, 1 MSU
316 — 575	0075	WLC L3, 1 MSU
	0077	WLC L3, 50 MSU
576 or more	0079	WLC L4, 1 MSU
	0081	WLC L4, 50 MSU

MSU Capacity	WLC Reg Feature Number	WLC Basic License No-Charge Registration Feature Description
0 — 1	0071	WLC Base, 1 MSU Reg
2 — 175	0072	WLC L1, 1 MSU Reg
176 — 315	0074	WLC L2, 1 MSU Reg
316 — 575	0076	WLC L3, 1 MSU Reg
576 or more	0080	WLC L4, 1 MSU Reg

Growth Opportunity License Charge (GOLC): To order a GOLC software, specify the program number, feature number 9001 for asset registration, and the GOLC monthly charge feature number from the table below. Also, specify the feature number for the desired distribution medium.

WebSphere MQ for z/OS

GOLC Category	GOLC Feature Number
H30	0025
H50	0026
H70	0027

Client Attachment Feature

GOLC Category	GOLC Feature Number
H30	0066
H50	0067
H70	0068

Single Version Charging: To elect single version charging, the customer must notify and identify to IBM the prior program and replacement program and the designated machine the programs are operating on.

Basic Machine-Readable Material: As part of the order, select the feature number of the desired distribution medium.

The machine-readable material shipped on the distribution media is common to all languages shipped, and includes messages translated to Japanese and Simplified Chinese. Different distribution medium feature codes are provided by language, but this is only because they cause the appropriate translated hard-copy publications to be shipped with the product tape.

Distribution Medium	Feature Number
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Environment: z/OS

2 x Magnetic Tape 9-track 6250-bpi	5811
2 x 3480 1/2-inch Tape Cartridge	5812
2 x 4-mm DAT Cartridge	6147

Basic Machine-Readable Material with Translated Publications: For an order with hard-copy publications in Japanese (Kanji), select the feature number of the desired distribution medium below, instead of the base feature number:

Distribution Medium	Feature Number
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Environment: z/OS

2 x Magnetic Tape 9-track 6250-bpi, with Japanese publications	5801
2 x 3480 1/2-inch Tape Cartridge, with Japanese publications	5802
2 x 4-mm DAT Cartridge, with Japanese publications	6148

No translated publications in Simplified Chinese are provided for WebSphere MQ for z/OS, V5.3 so there are no Simplified Chinese distribution media feature codes.

Customization Options: Select the appropriate feature numbers to customize your order to specify the delivery options desired. These features can be specified on the initial or MES orders.

Example: If publications are not desired for the initial order, specify feature number 3470 to ship media only. For future updates, specify feature number 3480 to ship media updates only. If, in the future, publication updates are required, order an MES to remove feature number 3480; then, the publications will ship with the next release of the program.

Description	Feature Number
Initial Shipments	
Serial number only (suppresses shipment of media and documentation)	3444
Ship media only (suppresses initial shipment of documentation)	3470
Ship documentation only (suppresses initial shipment of media)	3471

Description	Feature Number
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Update Shipments

Ship Media updates only (suppresses update shipment of documentation)	3480
Ship documentation only (suppresses update shipment of media)	3481
Suppress updates (suppresses update shipment of media and documentation)	3482

Expedite Shipments

Local IBM office expedite (for IBM use only)	3445
Customer expedite process charge (\$30 charge for each product)	3446

Expedite shipments will be processed to receive 72-hour delivery from the time IBM Software Delivery and Fulfillment (SDF) receives the order. SDF will then ship the order via overnight air transportation.

Optional Machine-Readable Material: To order, select the feature number for the desired distribution medium:

Client Attachment Feature

Distribution Medium	Feature Number
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Environment: z/OS

Magnetic Tape 9-track 6250-bpi	5821
3480 1/2-inch Tape Cartridge	5822
4-mm DAT Cartridge	6149

Documentation CD-ROMs: One copy of the WebSphere MQ Documentation: Information Center and PDF CD-ROM (SK3T-6942) will be shipped free of charge with this product if feature number 7133 is specified in the order.

One copy of the WebSphere MQ Documentation: HTML CD-ROM (SK3T-6943) will be shipped free of charge with this product if feature number 7134 is specified in the order.

The publications product kit and collection kit previously ordered via feature numbers 7132 and 7099 have been withdrawn.

Unlicensed Documentation: A program directory and one copy of the following publications are supplied automatically with the basic machine-readable material:

Title	Order Number
WebSphere MQ for z/OS License Program Specifications	GC34-6181
WebSphere MQ for z/OS Problem Determination Guide	GC34-6054
WebSphere MQ for z/OS Messages and Codes	GC34-6056
WebSphere MQ for z/OS Concepts and Planning Guide	GC34-6051

The following publications are translated:

Title	Order Number
Language: Japanese	
WebSphere MQ for z/OS Concepts and Planning Guide	GC88-9216
WebSphere MQ for z/OS Problem Determination Guide	GC88-9219
WebSphere MQ for z/OS Messages and Codes	GC88-9221
WebSphere MQ for z/OS System Administration Guide	SC88-9218
WebSphere MQ for z/OS System Setup Guide	SC88-9217
WebSphere MQ Application Programming Reference	SC88-9225
WebSphere MQ Application Programming Guide	SC88-9226
WebSphere MQ Intercommunication	SC88-9223
WebSphere MQ Script Command (MQSC) Reference	SC88-9220
WebSphere MQ Clients	SC88-9222
WebSphere MQ Using C++	SC88-9229
WebSphere MQ Using Java	SC88-9228
WebSphere MQ Queue Manager Clusters	SC88-9224
WebSphere MQ Application Messaging Interface	SC88-9227
WebSphere MQ Event Monitoring	SC88-9230
WebSphere MQ Security (available after GA)	SC88-9231
WebSphere MQ Glossary and Bibliography	SC88-9259
Language: Chinese	
WebSphere MQ for z/OS System Administration Guide	S152-0262
WebSphere MQ Script Command (MQSC) Reference	S152-0265
WebSphere MQ Clients	S152-0367
WebSphere MQ Using Java	S152-0257
WebSphere MQ Glossary and Bibliography	S152-0339

The *WebSphere MQ for z/OS Program Directory* (GI10-2548) and the *WebSphere MQ for z/OS License Program Specifications* (GC34-6181) are provided in English only.

Licensed Documentation: There is no licensed documentation for WebSphere MQ for z/OS, V5.3.

Subsequent updates (technical newsletters or revisions between releases) to the publications shipped with the product will be distributed to the user of record for as long as a license for this software remains in effect. A separate publication order or subscription is not needed.

Customized Offerings

Most product media is shipped only via Customized Offerings (for example, CBPDO, ServerPac, Systempac®). Non-customized items (CDs, diskettes, source media, media kits) will continue to be shipped via the stand-alone product.

Terms and Conditions

The terms for WebSphere MQ for z/OS, V5R3, as previously announced (Software Announcement Letter 200-347), licensed under the IBM Customer Agreement are unaffected by this announcement.

IBM Operational Support Services — Support Line: Yes

Prices

The pricing structure for this release is unchanged from the previous release (MQSeries for OS/390 V5.2).

Refer to Software Announcement 200-347, dated October 3, 2000.

As from February 19, 2002, zSeries Entry License Charge (zELC) charge features are offered. Refer to Software Announcement 202-036, dated February 19, 2002.

Sub-Capacity Charges Terms and Conditions

zSeries software charges at less than full machine capacity for eligible Variable WLC products apply when z/OS is running in z/Architecture (64-bit) mode on an IBM zSeries 900, no other MVS-based operating system is licensed to that server and the required information is provided by the customer in accordance with the applicable terms.

Sub-capacity charges for a Variable WLC product is based on the product's defined capacity. To obtain charges at less than full machine capacity for Variable WLC products the customer is required to:

- Sign and abide by the terms of the *Attachment for zSeries Workload License Charges — Pre-ILM* (Z125-6516).
- Obtain a copy of the Sub-Capacity Reporting Tool when available.
- Install any Variable WLC product and IBM zSeries 900 Licensed Internal Code (LIC) service required for sub-capacity charging. Required service will be listed on the WLC Web site:

http://www.ibm.com/zseries/wlc_lm

- Collect SMF data as required by the planned Sub-Capacity Reporting Tool. Retain the collected SMF data for a period of not less than six months.
- Use the IBM provided Sub-Capacity Reporting Tool when available to process the collected SMF data. The Sub-Capacity Report produced by the tool is used to determine product defined capacities for the Variable WLC products. "Product defined capacities" are the largest MSU value of a Variable WLC product running concurrently in all LPARs during the reporting period. IBM reserves the right to request the system data that supports these product defined capacity values for a period of up to six months after the data was collected.
- Provide an initial Sub-Capacity Report to begin to receive the benefits of less than full machine capacity charges. Sub-capacity charging will follow submission of a Sub-Capacity Report. There will be no retroactive application of sub-capacity charges.
- Submit Sub-Capacity Reports monthly if product defined capacities have changed and quarterly if product defined capacities have not changed.

- Submit Sub-Capacity Reports for all Variable WLC products with complete data for the entire reporting period to the address, and by the date, specified in the current *Workload License Charge Exhibit* (Z125-6324). Sub-Capacity Reports that reflect a changed product defined capacity will be considered to be orders placed by the customer without further action on the customer's part, and IBM is authorized to make any resulting billing increase or decrease. To place an order for a new license, or to discontinue licenses, move licenses between machines, report a hardware model upgrade, or enable or disable product features, the customer must contact IBM or their IBM Business Partner.
- Configure machine to send weekly Transmit System Availability Data (TSAD) to IBM via the IBM zSeries 900 Remote Support Facility (RSF). If the machine cannot connect via the RSF, provide this TSAD via an alternate means documented in the z/OS publication *Planning for Workload License Charges* at:

http://www.ibm.com/zseries/wlc_lm

Entry Support License OTC:

An OTC authorizes use only on IBM Entry End User/390 Machines. For additional product information, refer to Software Announcement 299-012, dated January 26, 1999.

Order Now

Use Priority/Reference Code: LE001

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 Atlanta, GA 30301-2690

You can also contact your local IBM Business Partner or IBM representative. To identify them, call 800-IBM-4YOU.

Note: Shipments will begin after the planned availability date.

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