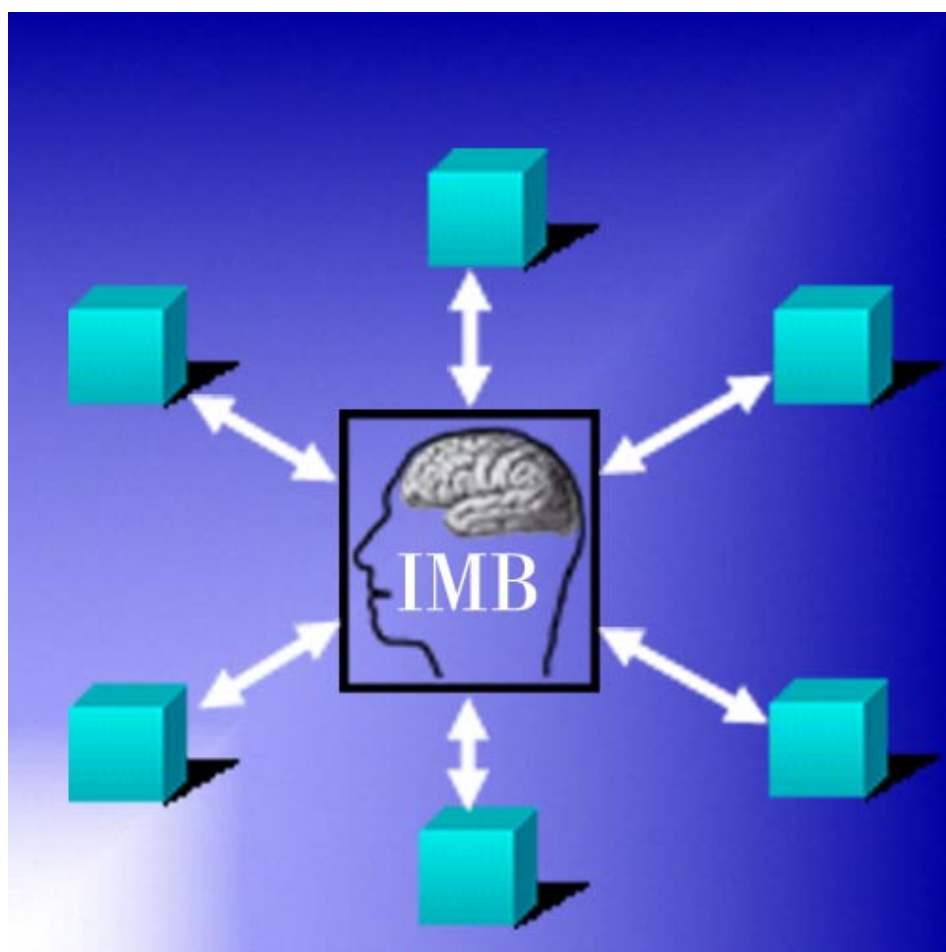


General Information

Version 1 Release 0



Intelligent Message Broker
for z/OS



General Information

Version 1 Release 0

Note!

Before using this information and the product it supports, be sure to read the general information under “Notices” on page iii.

First Edition (April 2002)

This edition applies to Version 1, Release 0 of Intelligent Message Broker for z/OS (product number 5799-GPR) and to all subsequent versions, releases, and modifications until otherwise indicated in new editions. Make sure you are using the correct edition for the level of the product.

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IBM Global Services
Sortemosevej 21
DK-3450 Allerød
Denmark

☎ + (45) 45 23 30 00
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E-mail SPOC@dk.ibm.com

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Preface

About this book

This book is intended to help you learn about and evaluate the Intelligent Message Broker for z/OS solution.

Who should read this book

This book is for managers, system planners, architects, and developers building extended enterprise solutions.

Conventions and terminology used in this book

In this book, Intelligent Message Broker for z/OS is referred to as "Intelligent Message Broker" or simply "IMB" where the context makes the meaning clear.

Note about version and release numbering

Where the documentation for Intelligent Message Broker - in particular the *Installation Guide* - refers to the actual contents of the product, e.g. dataset names, it will refer to Version 4, Release 5. This is because this product has a history of being distributed internally within IBM for a number of years. Within IBM it has matured to a Version/Release level of 4.5.

Where to find more information

You can find more information about IMB in these books:

<i>Intelligent Message Broker for z/OS General Information</i>	GC27-1580
<i>Intelligent Message Broker for z/OS Facilities Guide</i>	SC27-1584
<i>Intelligent Message Broker for z/OS Installation Guide</i>	GC27-1581
<i>Intelligent Message Broker for z/OS Application Programming Guide</i>	SC27-1583
<i>Intelligent Message Broker for z/OS System Administration Guide</i>	SC27-1582
<i>Intelligent Message Broker for z/OS User Administration Guide</i>	SC27-1585

Futher copies of the Intelligent Message Broker for z/OS publications can be downloaded from the product web site:

<http://www.ibm.com/software/ad/imb>

How to send your comments

Your feedback is important in helping to provide the most accurate and highest quality information. If you have any comments about this book or any other IMB documentation:

- Send your comments by email to *SPOC@dk.ibm.com*. Be sure to include the name of the book, the part number of the book, the version of IMB, and, if applicable, the specific location of the text you are commenting on (for example, a page number or table number).
- Mail or fax your comments to the address at the front of this book.

Intelligent Message Broker

Intelligent Message Broker (IMB) is a service solution from IBM Global Services. It is a mainframe-based solution that helps you to achieve Business Integration by connecting disparate platforms in a heterogeneous network.

IMB is a true message broker because it provides added value to the transport function.

IMB provides:

- Security against intrusion
- An audit trail for every message
- Alert functions
- Resend facilities
- A comprehensive online registration facility

IMB runs in CICS on an OS/390 platform and extensively uses MQSeries and DB2 facilities. IMB can also run in a CICSplex.

History of IMB

IMB was developed by IBM Denmark in response to internal IBM IT requirements. In 1997 IMB was chosen by IBM Corporation to be the message broker for the IBM Internal Worldwide Fulfillment re-engineering projects.

When IBM Worldwide Distribution needed to re-engineer their IT processes, they defined these key requirements for a new gateway:

- To efficiently communicate with many Trading Partners
- To allow legacy co-existence with new technology
- To provide a migration path to new solutions
- To allow business processes to continue during transitions
- To allow many-to-many interfaces
- To enable interface complexities to a centralised interface broker

Having analysed different solutions, IBM Distribution decided to use IMB as the foundation of their Data Services Gateway.

IMB contains much function that was previously coded as part of new applications. By extending the scope of reuse, not only is the implementation time greatly reduced, the cost of implementing new applications can also be significantly reduced.

Will you benefit from IMB?

Yes, if you run a large IBM IT complex and need to :

- Re-engineer the IT processes by implementing new, decentralised platforms such as SAP, or
- Reduce your maintenance cost, or
- Do business with other IT organisations using different platforms and standards, or

- Implement EDI in your main business processes, or
 - Respond to user demand for Internet connectivity to legacy applications
- while enduring constant pressure to meet your budgets.

IMB advantages

IMB is a set of middleware components, that enables and controls the communication between client and servers. Instead of direct connections between clients and servers, the IMB middleware acts as the host-based gateway.

The advantages of this design are:

Reduced cost

Instead of workload processing being carried out at the various organizations where the servers are situated, gateway processing is managed on a small number of gateways, reducing development, maintenance and service delivery effort.

Increased responsiveness

When new functions are requested by users (for example TCP/IP or Lotus Notes connectivity), all existing servers on all existing Nodes can be made accessible immediately, by implementing the new requirement once—in the gateway.

With the IMB SAP Bridge it is possible to offer any SAP user immediate access to all existing host based legacy systems. It is also possible to offer any distributed user a secure and controlled online connection to newly-developed SAP servers.

Minimized Service Delivery impact

Defining and maintaining all the required network definitions on all the platforms can be very complicated when implementing a large, distributed client/server environment. By using a host gateway, these network registrations are reduced dramatically. From a network standpoint, all the clients are communicating with one remote node—the gateway. Additionally, the servers are only communicating with one, or a few IMB instances, instead of with many LANs.

Megacenter philosophy

Because IMB has implemented Multi-Country Operation (MCO), and National Language Support (NLS), it is well suited for a *Megacenter* scenario. One IMB platform can be both cross-country and cross-language.

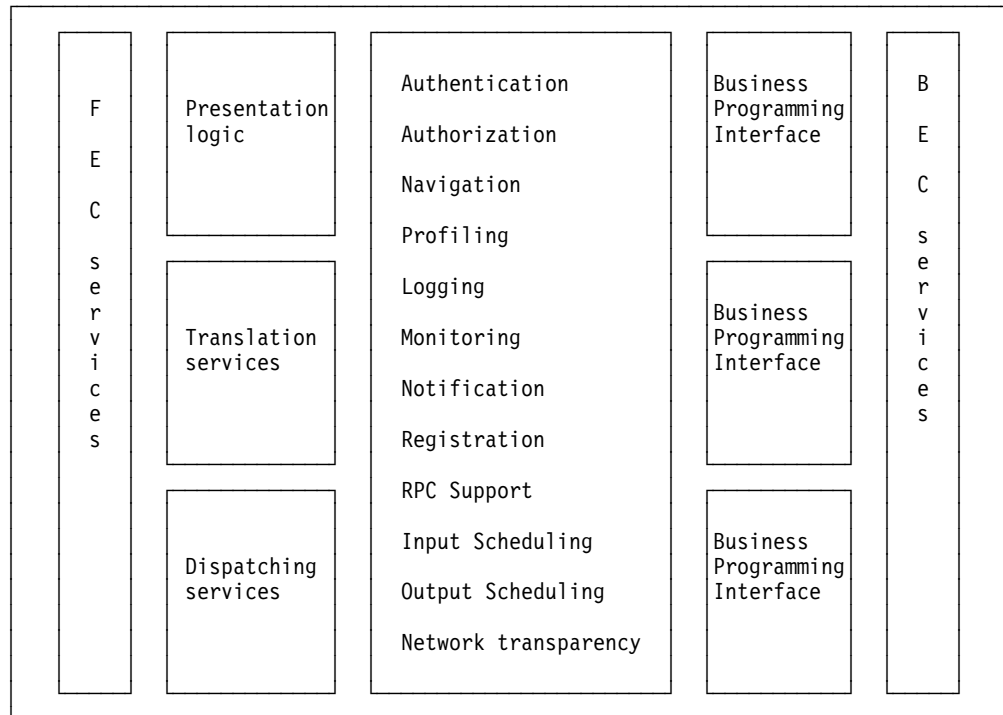


Figure 1. IMB architecture and services

IMB functionality

IMB consists of front-end and back-end services, providing the services shown in Figure 1 for clients and servers.

Transport independence

IMB provides complete transport transparency between the transport methods or protocols used by senders or receivers. Among the transport methods IMB supports are MQSeries, SAP R/3, IBM Information Exchange, e-mail, and fax in any combination between senders and receivers. You can even use IMB to translate incoming faxes using optical character recognition (OCR). By using *thin clients* on a variety of platforms, IMB provides connectivity using either APPC or TCP/IP.

Rule-based fanning

For most messages the routing in IMB is statically defined using the subscription dialogues. Rule-based routing can also be used. In this case, IMB analyses the incoming message and decides upon the routing based on simple, predefined table-based boolean logic. Fanning is a method used to send one incoming message to many recipients—like a distribution list.

Routing

Routing functions enable all communication processing to be handled outside of the application. IMB routes messages to destinations using the correct protocol, based on information that has been recorded by the IMB administrator. Dynamic routing is possible where the application data contained in the message dictates where the message is to be routed.

Data conversion

Exits are provided to allow business applications process, and to optionally update messages.

The remapping of messages can be done by application code, or MQSeries Integrator (MQSI) can be used to do the actual mapping. Support for the Mercator mapping tool is also fully integrated in IMB.

There is specific, generalised support for remapping of XML messages into a more easy to handle flat file format.

EDI mapping is handled by IBM DataInterchange, which is an integral part of the IMB tool box.

The message repository

IMB provides audit trail and resend facilities. When a message is received by IMB, it is immediately stored *as is* and can be monitored any time. If an exit changes the contents in any way, the new version is also stored and linked to the original. Using the repository it is also possible to resend a message if the receiving application (or Business Partner) should need to.

Security and authentication

IMB lets internal and external users integrate their business. IMB uses standard RACF protection of its resources. Internal users must provide a user ID and password for authentication. External users must pass additional gateway controls ensuring extended user authentication. All users must be pre-registered. User access is limited to the specific authorizations that exist for every user.

Profiling

For workstation clients IMB provides an API that returns an *access list* providing authorizations for signed-on users. This information can be used to *personalize* the user interface on the workstation, for example, to make certain options non-selectable on pull-down menus, if the current user is not authorized to perform them.

It has also shown to be a great advantage to be able to handle security in this centralised manner on the mainframe, instead of at the many decentralised server instances.

Navigation

This makes the location of application and data servers transparent to the client application. The location is known only by the table-driven IMB components. When the location of a server changes, only one entry in a controlling table in IMB need be changed.

Not all servers need to be accessible from each IMB system. With the appropriate registrations, it is also possible to route a request to another control and service layer.

Network transparency

Programmers need not issue direct calls to APPC or TCP/IP. Instead, they issue a call to a local server, providing a logical transaction name and related data as parameters.

Logging

Extended online logging and archiving facilities allow for auditing and billing requirements to be satisfied. A starter-set of QMF queries for reconciliation is provided with IMB

Proactive monitoring and notification

IMB continuously scans its own processes in the background, enabling end-to-end control, both at the business application level, and at the transport level.

Network protocol conversion

The front-end and back-end communication services can handle a variety of network protocols, allowing client applications to access IMB using one set of protocols, while IMB accesses the business integration servers using another set of protocols. This allows the internal environment to remain stable while extending client connectivity options with, for example, TCP/IP, or Lotus Notes connectivity.

Input Scheduling

IMB can hold information about expected input frequency as well as server-application planned down-time. This can be used to check that input is arriving as expected, and to alert the appropriate group if a transmission is missing.

Output Scheduling

Asynchronous server requests can be momentarily stopped in the MailRoom and scheduled for later delivery to their respective destinations. IMB automatically holds output messages and releases them according to registered schedules.

Multiple access modes to business applications

IMB enables non-programmable terminal (NPT) access, interactive client/server processing, and asynchronous, queued processing for the same business applications.

Asynchronous, queued processing is handled by the MailRoom component of IMB.

MailRoom is also used for EDI implementations, as well as to *batch* on-line transactions, while waiting for an application to be released.

The different access modes exist concurrently, facilitating transition from legacy applications to distributed solutions.

An advantage of IMB supporting three access modes is that the interactive service can strengthen the generic EDI service and vice versa.

E.g. the progress of the (asynchronous) EDI process can be queried by an external partner organization using interactive services, while an interactive service can be used to request an asynchronous upload of data using generic MailRoom services.

Client/server design

The business applications are activated as a server in a layered client/server chain initiated by the user client.

Modularity

IMB is scalable, and additional function can easily be added. Additional services include generic error and information message service, generic help services, and statistics gathering.

NPT development environment

IMB has an extensive application development platform, providing application skeletons, tools packages, and application design guidance to enable a rapid application development process.

Some IMB solutions

Here are some examples of how IMB can help your organisation.

Using IMB as an EDI subsystem with SAP R/3

From the moment the message leaves SAP, all further processing is handled by IMB. The IMB process is event driven, which means that the EDI message reaches the Business Partner's mailbox immediately. Because not all Business Partners are enabled, IMB can also route messages to fax or e-mail, based on registrations in IMB. This occurs transparently to the SAP R/3 business process—it is part of the IMB *value add*.

The Internet

In another case it was decided to implement Internet access to a legacy ordering application.

The IMS-based legacy application was already EDI-enabled with IMB, so the Internet option was implemented between the Internet server and IMB. IMB then connected to the IMS system while preserving the existing (EDI) interfaces—the new Internet option was implemented without any IMS application modifications—this is part of the IMB *value add*.

WebSphere

IMB development is currently involved in a WebSphere project where the architecture involves a WebSphere Application Server (WAS) 4.0, running on an OS/390 host. The Java applets, running on the host is communicating directly to IMB on the same LPAR, resulting in a very efficient end-to-end path, with a minimum number of 'nodes'.

All user registration/authorisation is handled centrally on IMB and the Java applets rely on the IMB profiling API to provide the information, necessary to handle the GUI 'personalisation' for each user.

This is also part of the IMB *value add*.

Hardware prerequisites

Hardware prerequisites are determined by your CICS level. For the hardware prerequisites for your level of CICS, refer to *CICS Transaction Server for OS/390 Release Guide*.

Software prerequisites

The software levels detailed here are the minimum levels required.

IMB base

For the IMB base product:

- OS/390 Version 2 Release 6
- CICS Transaction Server for OS/390 1.3
- DB2 Version 5 Release 1
- CSP/370 Runtime Services Version 2 Release 1

MailRoom

For MailRoom support:

- expEDItE/CICS Version 4.5.0
- DataInterchange/MVS-CICS Version 3 Release 1
- ECMVS TIE release Release 2.2
- MQSeries for MVS/ESA Version 2 Release 1
- Mercator Execution Engine 1.4.03

For Mailman:

- VM/ESA Version 2 Release 1
- CMS Pipelines

OS/2 APPC Client support

For OS/2 APPC Client support:

- CIS-CSCS Version 2 Release 1 (optional—included with IMB)
- CICS OS/2 Version 2 (optional—not included with IMB)
- A2AIF (optional—a subset of A2AIF is included with IMB)

And an OS/2 environment consisting of:

- OS/2 Version 2.11 or higher, including Warp version 3 and version 4 (Merlin)
- Communication Manager/2 Version 1.1 or higher, or Communications Server 4 or higher

OS/2 TCP/IP Client support

For OS/2 TCP/IP Client support, in addition to OS/2:

- TCP/IP Version 3

Windows Client support

For Windows TCP/IP Client support, any of these:

- Windows NT Version 4
- Windows 2000
- Windows 98
- Windows 95

AIX TCP/IP Client support

For AIX TCP/IP Client support:

- AIX Version 4 Release 1

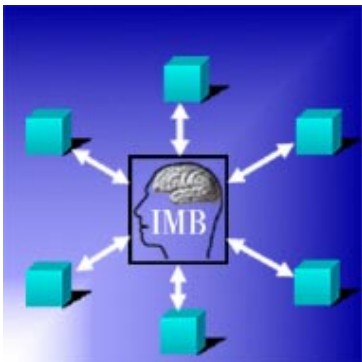
SAP R/3 Client support

For SAP R/3 Client support:

- AIX Version 4 Release 1
- SAP R/3 Version 3 Release 0F



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