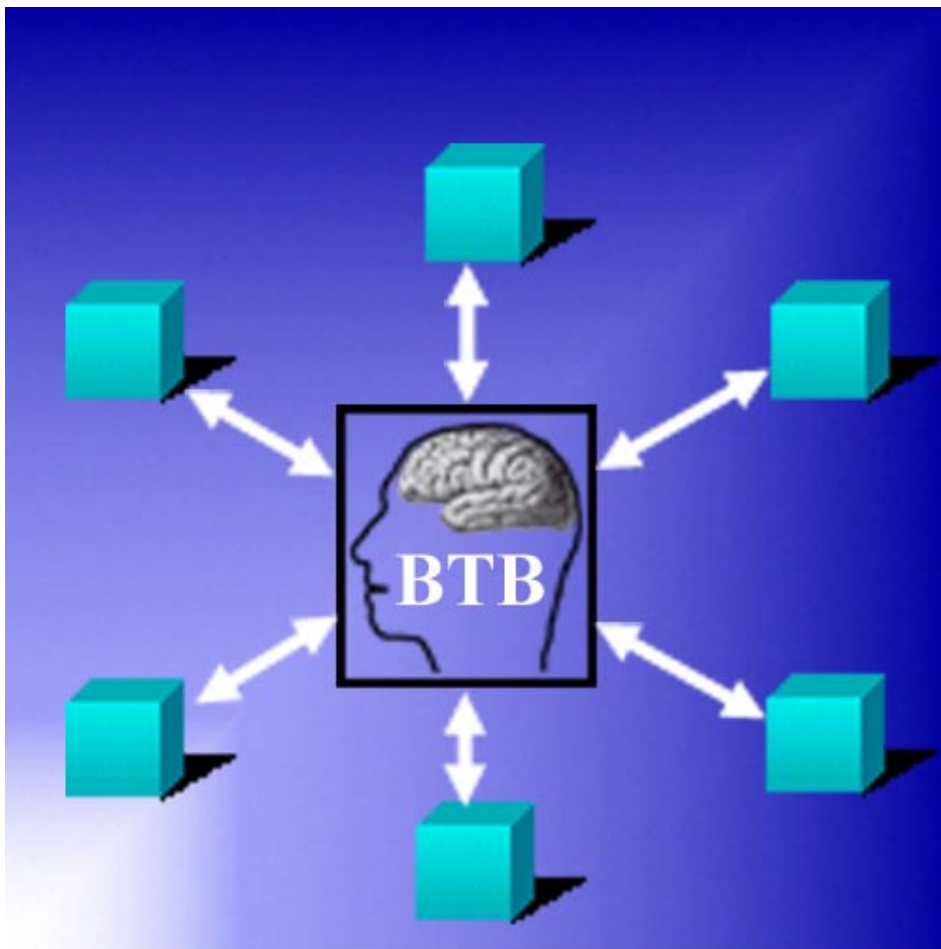Business Transaction Broker
for z/OS

IBM

General Information

Version 1 Release 0

Business Transaction Broker
for z/OS

IBM

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.

Second Edition (September 2002)

This edition applies to Version 1, Release 0 of Business Transaction 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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Preface

About this book

This book is intended to help you learn about and evaluate the Business Transaction Broker for z/OS (BTB) solution.

IBM Business Transaction Broker for z/OS helps address brokering requirements and helps enable enterprises to implement brokering solutions with confidence. While IBM Business Transaction Broker for z/OS is designed to facilitate Application-to-Application (A2A) brokering for interchange between internal applications within a customer's enterprise, the dominant strength of this product is revealed and appreciated when implementing Business-to-Business (B2B) brokering for the external interchange outside of the customer's enterprises.

To better emphasize its B2B brokering capabilities, the IBM program product formerly known as Intelligent Message Broker for z/OS has now been renamed Business Transaction Broker for z/OS (BTB).

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, Business Transaction Broker for z/OS is referred to as "Business Transaction Broker" or simply "BTB" where the context makes the meaning clear.

Note about version and release numbering

Where the documentation for Business Transaction 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 as Intelligent Message Broker (IMB) for a number of years. Within IBM the product has matured to a Version/Release level of 4.5.

Where to find more information

You can find more information about BTB in these books:

Business Transaction Broker for z/OS General Information	GC27-1580
Business Transaction Broker for z/OS Facilities Guide	SC27-1584
Business Transaction Broker for z/OS Installation Guide	GC27-1581
Business Transaction Broker for z/OS Application Programming Guide	SC27-1583
Business Transaction Broker for z/OS System Administration Guide	SC27-1582
Business Transaction Broker for z/OS User Administration Guide	SC27-1585

Futher copies of the Business Transaction 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 BTB 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 BTB, 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.

Business Transaction Broker

Business Transaction Broker (BTB) 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.

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

BTB provides:

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

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

History of BTB

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

When IBM Worldwide Distribution neded 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-existance 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 BTB as the foundation of their Data Services Gateway.

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

Will you benefit from BTB?

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 pressue to meet your budgets.

BTB advantages

BTB 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 BTB 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 BTB 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 BTB instances, instead of with many LANs.

Megacenter philosophy

Because BTB has implemented Multi-Country Operation (MCO), and National Language Support (NLS), it is well suited for a *Megacenter* scenario. One BTB platform can be both cross-country and cross-language.
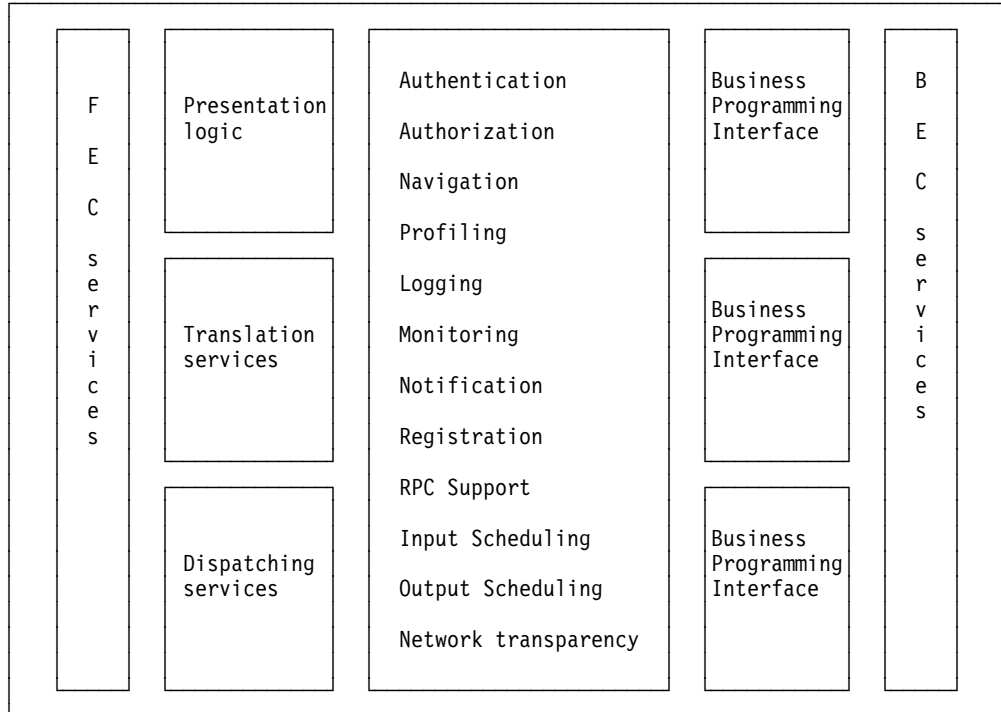
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Figure 1. BTB architecture and services

BTB functionality

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

Transport independence

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

Rule-based fanning

For most messages the routing in BTB is statically defined using the subscription dialogues. Rule-based routing can also be used. In this case, BTB 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. BTB routes messages to destinations using the correct protocol, based on information that has been recorded by the BTB 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 BTB.

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 BTB tool box.

The message repository

BTB provides audit trail and resend facilities. When a message is received by BTB, 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

BTB lets internal and external users integrate their business. BTB 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 BTB 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 BTB components. When the location of a server changes, only one entry in a controlling table in BTB need be changed.

Not all servers need to be accessible from each BTB 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 BTB

Proactive monitoring and notification
BTB 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 BTB using one set of protocols, while BTB 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
BTB 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. BTB automatically holds output messages and releases them according to registered schedules.

Multiple access modes to business applications
BTB 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 BTB.

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 BTB 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

BTB 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

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

Some BTB solutions

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

Using BTB as an EDI subsystem with SAP R/3

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

WebSphere

Business Transaction Broker development is currently involved in a WebSphere project where the architecture involves a WebSpere Application Server (WAS) 4.0, running on an OS/390 host. The Java applets, running on the host is communicating directly to BTB 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 BTB and the Java applets rely on the BTB profiling API to provide the information, necessary to handle the GUI 'personalisation' for each user.
This is also part of the BTB *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.

BTB base

For the BTB 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 BTB)
- CICS OS/2 Version 2 (optional—not included with BTB)
- A2AIF (optional—a subset of A2AIF is included with BTB)

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

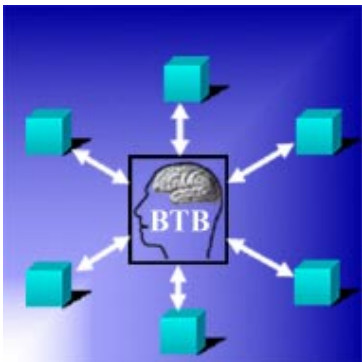For AIX TCP/IP Client support:

- 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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