

# **MQSeries Adapter Offering - SAP R/3 4.5 template Version 1.0**

9<sup>th</sup> January 2002

Mish Patel  
IBM  
300 IBM Drive  
Charlotte, NC  
28262  
[mish@us.ibm.com](mailto:mish@us.ibm.com)

Michael Rowell  
IBM  
300 IBM Drive  
Charlotte, NC  
28262  
[mrowell@us.ibm.com](mailto:mrowell@us.ibm.com)

**Property of IBM**

**Take Note!**

Before using this report be sure to read the general information under "Notices".

**First Edition, January 2002**

This edition applies to Version 1.0 of *MQSeries Adapter Offering –SAP R/3 4.5 template* and to all subsequent releases and modifications unless otherwise indicated in new editions.

© **Copyright International Business Machines Corporation 2002**. All rights reserved. Note to US Government Users -- Documentation related to restricted rights -- Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule contract with IBM Corp.

---

## Table of Contents

Notices .....	iv
Trademarks and service marks .....	iv
Summary of Amendments.....	vi
Preface .....	vii
Chapter 1. Overview .....	1
Function Overview .....	1
Chapter 2. Prerequisites .....	2
Chapter 3. File verification and Use .....	3
Contents of the zip file .....	3
Using the Daemons .....	3
OAGIS Business Object Definitions (BODs) .....	4
Chapter 4. Design considerations .....	5
Build time only .....	5
Template Mappings .....	5
Chapter 5. Installation Verification and Execution .....	6
Installing the SupportPac zip file: .....	6
Running the template: .....	7
Chapter 6. Problem Determination .....	9
Reporting problems .....	9

---

## Notices

The following paragraph does not apply in any country where such provisions are inconsistent with local law.

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore this statement may not apply to you.

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates.

Any reference to an IBM licensed program or other IBM product in this publication is not intended to state or imply that only IBM's program or other product may be used. Any functionally equivalent program that does not infringe any of the intellectual property rights may be used instead of the IBM product.

Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, is the user's responsibility.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Director of Licensing, IBM Corporation, 500 Columbus Avenue, Thornwood, New York 10594, USA.

The information contained in this document has not been submitted to any formal IBM test and is distributed AS-IS. The use of the information or the implementation of any of these techniques is a customer responsibility and depends on the customer's ability to evaluate and integrate them into the customer's operational environment. While IBM has reviewed each item for accuracy in a specific situation, there is no guarantee that the same or similar results will be obtained elsewhere. Customers attempting to adapt these techniques to their own environments do so at their own risk.

## Trademarks and service marks

The following terms, used in this publication, are trademarks of the IBM Corporation in the United States or other countries or both:

- IBM
- MQSeries
- MQSeries Adapter Offering
- MQSI

The following terms are trademarks of Microsoft Corporation:

- Windows 2000

The following terms are trademarks of SAP Corporation:

- SAP R/3 4.5

The following terms are trademarks of Sun Microsystems Inc:

- Java
- JDK (Java Development Kit)

---

## **Summary of Amendments**

<b>Date</b>	<b>Changes</b>
January 2002	Initial Release

---

## Preface

MQSeries Adapter Offering provides a “drag and drop” facility that simplifies the development of mappings from one data format to another. This SupportPac is a simple example of a resulting adapter set that maps to and from a SAP R/3 Material Master IDoc to and from an Open Applications Group’s Business Object Document (BOD).

SAP R/3 supports asynchronous communication through its Application Link Enabling Layer through the use of IDocs.

Open Applications Group is an industry consortium that defines open interfaces for business applications up and down a businesses supply chain. These interfaces are XML based.

This SupportPac includes:

- Two Java service adapters
  - One that maps from a SAP R/3 Material Master IDoc (MATMAS02) to an Open Applications Group’s SyncItem BOD.
  - One that maps from an Open Applications Group’s SyncItem BOD to a SAP R/3 Material Master IDoc (MATMAS02)
- Two Daemons (Java classes)
  - An Inbound Daemon that reads a SyncItem BOD from a file and calls the Inbound adapter that converts the BOD to a IDOC and writes the IDOC back out to a file. This IDoc file can then be loaded in to SAP R/3 4.5.
  - An Outbound Daemon that reads a MATMAS02 IDoc file and calls the Outbound adapter that converts the IDoc to a SyncItem BOD. This file can then be viewed or edited in order to pass back into the SAP R/3 system data modifications that maybe needed
- The SyncItem dtd (061\_sync\_item\_005.dtd) and the associated Open Applications Group defined resource files.
- The MATMAS02.dtd (MATMAS02.dtd) used to create both adapters.

Note: SAP does not provide DTD versions of their IDocs. This DTD was created to match the Native IDoc documentation produced by SAP.

- A sample IDoc file (idoc3003).
- A sample SyncItem file (syncitem.xml)

---

## Chapter 1. Overview

---

### Function Overview

IBM's MQSeries Adapter Offering (MQAO) provides a powerful solution to the challenge of formatting and reformatting data. In its simplest form, MQAO takes a description of a message format (layout) and, when presented with messages in this format, can break apart that message into its constituent fields and assemble a message that matches the outbound format.

Many transformations involve input and/or output messages in an XML format. In many cases, a definition of the fields in the XML message is available in a Document Type Definition (DTD) file. MQAO provides a GUI interface that allows DTD files to be imported into the metadata repository. Once this is done it is possible to use the MQAO GUI to build mappings from one format to another. Through the use of Input/Output Terminals the messages can be read from or written to files (as in the templates) or queues in the case of message-oriented-middleware, or any other form of middleware.

MQAO also supports compute node transformations that can be built using drag and drop operations and where needed, it is possible to script additional logic by making use of the ESQL scripting language.

MQAO includes support for database nodes for storing and retrieving lookup tables and message logging.

For the MQSeries Adapter Offering – SAP R/3 4.5 template the input and output terminals are SAP's Material Master IDoc (MATMAS02) and the Open Applications Group's SyncItem005. The mappings have been set to a set of fields that allow visibility to the different mapping capabilities of the MQSeries Adapter Offering. *Notice: In this SupportPac, only the following MATMAS02 segments are utilized: EDI\_DC40 (header detail), E1MAKTM, E1MARAM, E1MARCM, and E1MBEWM.* You may add additional segments using the provided MATMAS02.dtd file.

Also, while MQAO can be fully integrated into the rest of the MQSeries Family of products this SupportPac does not take advantage of that integration in order to show the capabilities of MQAO.

---

## **Chapter 2. Prerequisites**

In order to use this SupportPac the following must be installed on a system:

- Microsoft Windows 2000
- JDK 1.3.1 or later
- IBM MQSeries Adapter Kernel for Multiplatforms Version 1.1.1

While it is possible to test this SupportPac without access to an SAP R/3 system it is recommended that you have access to one in order to test your own IDocs. This SupportPac supports SAP R/3 4.5 with a MATMAS02 IDoc.

This SupportPac can be tested on other platforms provided JDK 1.3.1 or later and the IBM MQSeries Adapter Kernel for Multiplatforms Version 1.1.1 are installed. However, you will not be able to use the provided Inbound and Outbound scripts (mentioned on the following page). The script files were written for the Windows 2000 platform and are not guaranteed to work on other platforms. You may edit the script files in a text editor and make the appropriate changes for your platform.



## **OAGIS Business Object Definitions (BODs)**

The open applications group has developed definitions of a number of common business objects. They have also defined a number of XML formats for these objects. These definitions are available as DTDs that can be downloaded from the open applications group website (<http://www.openapplications.org>). There are close to 200 definitions available as of this writing and more are being added.

---

## Chapter 4. Design considerations

There are a number of important considerations when using this utility.

### Build time only

First, MQAO is designed for the build time environment only. The messages that are produced by MQAO can be used by any generic XML parser or any other XML tool. The adapters produced by MQAO are meant to be used in runtime situations to transform messages. While the templates provided in this SupportPac are simply templates to demonstrate some of the capabilities of MQAO.

### Template Mappings

The attached spreadsheet identifies the mappings used in the set of adapters included here in this SupportPac, and the attached html file identifies the SAP R/3 Matmas02 IDoc structure.



"61 SyncItem  
Blueprint Mapping.xls



Matmas02.htm

## Chapter 5. Installation Verification and Execution

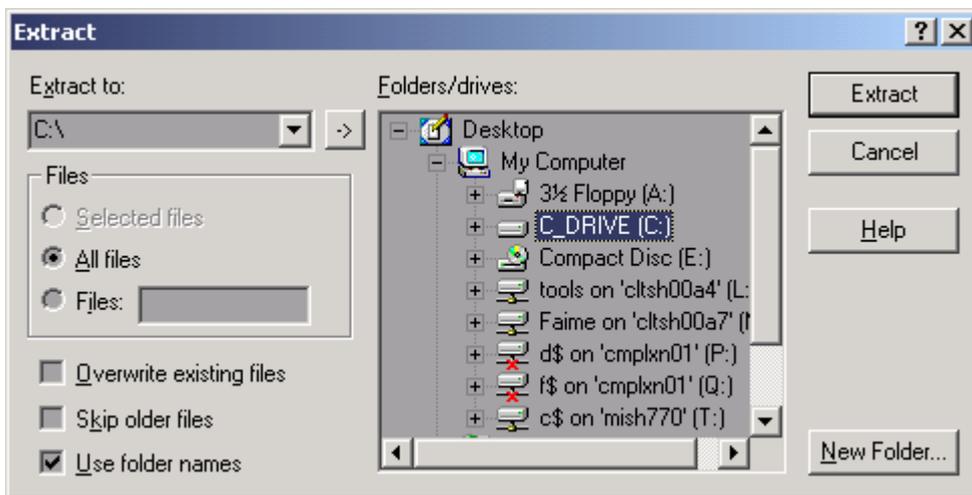
### Installing the SupportPac zip file:

#### Important Note:

It is assumed that you have installed the Java Development Kit 1.2.2 and the IBM MQSeries Adapter Kernel for Multiplatforms Version 1.1

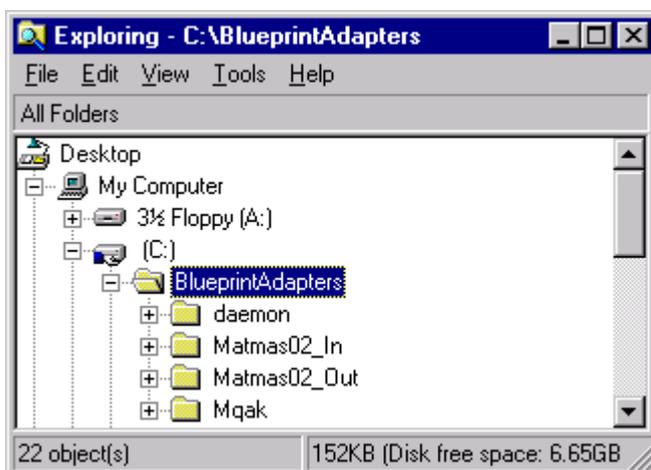
1. Unzip the file and extract to your **C:\** directory. Ensure that you extract *using folder names*. This will ensure that all directory structures are extracted properly. In the example below (Figure 1), Winzip 8.0 has been used. If you extract to any other drive, you must make changes in the following configuration files: *set\_env\_variables.bat* and *aqmsetup*. In each of these files you must change the drive letter **C:\** to your the drive letter where you extracted the zip file.

Figure 1



2. Verify the extraction. Your directory structure should be like Figure 2 with your respective drive letter. Remember, you must make changes in the following configuration files: *set\_env\_variables.bat* and *aqmsetup* if you did not extract to drive C:\.

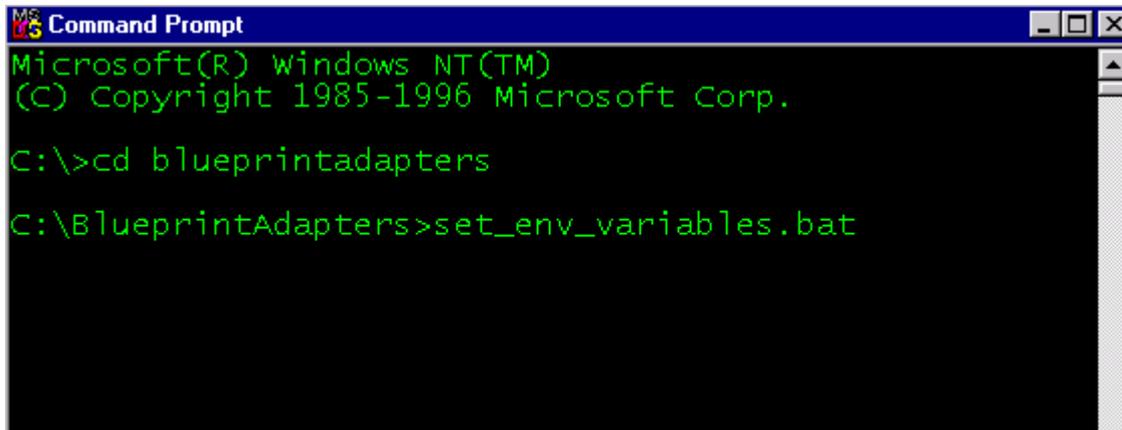
Figure 2



## Running the template:

1. Launch a MS-DOS window. Change directory to BlueprintAdapters and run the set\_env\_variables batch file (Figure 3). This will set the variables for testing. Remember, the variables are in effect while the DOS window is open. If you exit the DOS window, you will have to run the batch file again.

Figure 3



```

Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

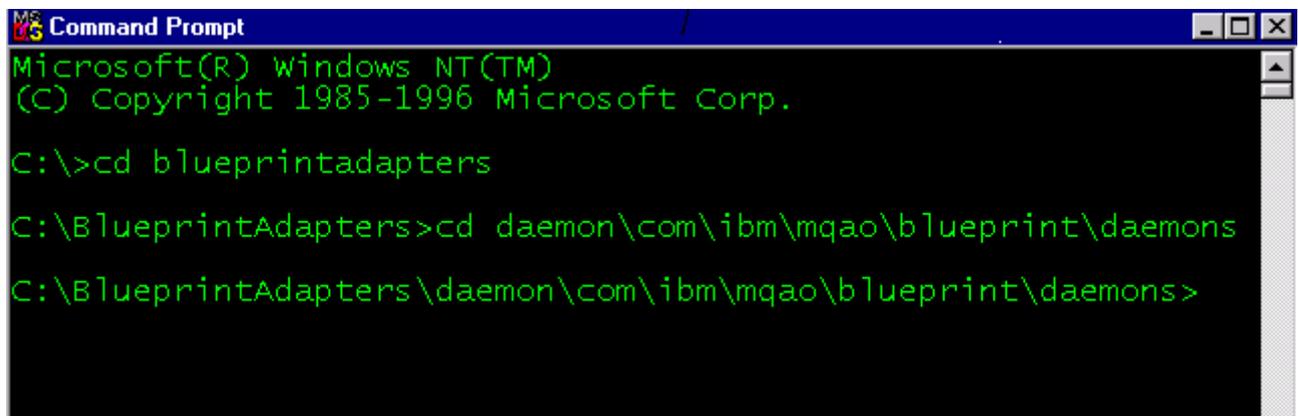
C:\>cd blueprintadapters

C:\BlueprintAdapters>set_env_variables.bat

```

2. Now, change directory to BlueprintAdapters\daemon\com\.....\daemons (Figure 4). In this directory I have provided two batch utility files for testing. One is called **outbound.bat** and the other is **inbound.bat**.

Figure 4



```

Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

C:\>cd blueprintadapters

C:\BlueprintAdapters>cd daemon\com\ibm\mqao\blueprint\daemons

C:\BlueprintAdapters\daemon\com\ibm\mqao\blueprint\daemons>

```

**Note:** Trace files, which are mentioned below, will provide all error messages encountered during testing.

3. Run the **outbound.bat** first. This test simulates a SAP R/3 IDoc (txt format) mapped by the adapter (Matmas02\_Out) to an OAG SyncItem XML BOD. The batch file will run the MQAOBlueprintOut (C:\BlueprintAdapters\daemon\com\.....\daemons) program which will call the adapter and use the **idoc3003** (SAP R/3 sample Matmas02 IDoc, C:\BlueprintAdapters) file as input. After the file execution has completed, you should have a trace file, **outbound\_trace.txt** (C:\BlueprintAdapters\daemon\com\.....\daemons) and your XML output, **outbound.xml** (C:\BlueprintAdapters) which will be used for the inbound test. The XML file can be viewed using Internet Explorer.

4. After verifying your outbound result, you can run **inbound.bat**. This test simulates an OAG SyncItem XML BOD mapped by the adapter (Matmas02\_In) to a SAP R/3 IDoc (txt format). The batch file will run the MQAObBlueprintIn (C:\BlueprintAdapters\daemon\com\.....\daemons) program which will call the adapter and use 2 input files: **MQAObBlueprintInCfg.xml** and **outbound.xml** (C:\BlueprintAdapters). The MQAObBlueprintInCfg.xml file (Figure 5) is used to provide information specific to your SAP R/3 4.5 system. You can edit this file in Notepad with your SAP R/3 system information (ensure Word Wrap is OFF). You do not need to change any of the sender information. The second input file, outbound.xml, was generated from the first test. After the file execution has completed, you should have a trace file, **inbound\_trace.txt** (C:\BlueprintAdapters\daemon\com\.....\daemons) and your TXT output, **inbound.txt** (C:\BlueprintAdapters). The inbound.txt file is your SAP R/3 IDoc file (view in Notepad with Word Wrap OFF) to load into your SAP R/3 system.

**Figure 5**

```
<?xml version="1.0" ?>
<!DOCTYPE BluePrintIn (View Source for full doctype...)>
- <MQAObBlueprintInConfiguration>
  <client>020</client>
  <documentRelease>45B</documentRelease>
  <date>20010824</date>
  <time>150125</time>
  <serial>20010711150108</serial>
- <sender>
  <partnerPort>BLUEPRINT</partnerPort>
  <partnerType>LS</partnerType>
  <partnerFunction />
  <partner>BLUEPRINT</partner>
</sender>
- <receiver>
  <partnerPort>SAPSFA</partnerPort>
  <partnerType>LS</partnerType>
  <partnerFunction />
  <partner>CLIENT020</partner>
</receiver>
</MQAObBlueprintInConfiguration>
```

---

## **Chapter 6. Problem Determination**

### **Reporting problems**

The author is interested in any reports of problems encountered when using this SupportPac. The author's email address is given on the front page of this document. To assist in problem diagnosis, the author will probably require the following:

- Description of the problem
- General description of the environment
- Screenshots or trace files indicating Java runtime errors

End of Document