

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

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Mish Patel
IBM
300 IBM Drive
Charlotte, NC
28262
mish@us.ibm.com

Michael Rowell
IBM
300 IBM Drive
Charlotte, NC
28262
mrowell@us.ibm.com

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Take Note!

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

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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.

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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

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Summary of Amendments

Date	Changes
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.

Chapter 3. File verification and Use

Contents of the zip file

This SupportPac is delivered as a single file in a standard zip format. When the file is unzipped, several directories and files should be produced, as follows:

- | | |
|--------------------------|--|
| • aa02.pdf | This document |
| • license2.txt | License file |
| • inbound.bat | Inbound Script |
| • outbound.bat | Outbound Script |
| • DTDs | OAG, 061_sync_item_005, Matmas02, MQAOBlueprintInCfg |
| • Sample XMLs and IDoc | syncitem.xml, MQAOBlueprintInCfg.xml, idoc3003 |
| • MQAOBlueprintIn.class | Inbound Daemon |
| • MQAOBlueprintOut.class | Outbound Daemon |
| • Matmas02_In (package) | Inbound Adapter |
| • Matmas02_Out (package) | Outbound Adapter |
| • MQAOSAP45.zip | MQAB workspace and repository |

The two daemon files above are the executable program for the SupportPac. They drive the respective adapters in order to demonstrate the data transformation.

inbound.bat and *outbound.bat* are two utilities scripts that simplify the process of running the daemons. These files setup the appropriate environment variables needed to support the daemons and adapters. They run their respective daemons while allowing the user to specify the source and target files to be used.

MQAOBlueprintIn.class is the daemon class the drives the Inbound Adapter.

MATMAS02.class and *MATMAS02\$Content.class* are support classes that help in the transformation to the flat IDOC text file.

MQAOBlueprintOut.class is the daemon class the drives the Outbound Adapter.

DOMPrint.class is a support class that serializes the XMLized IDOC.

Matmas02_In is the package which contains the Java code and mappings for the Inbound Adapter.

Matmas02_Out is the package which contains the Java code and mappings for the Outbound Adapter.

MQAOSAP45.zip is the MQSeries Adapter Builder workspace and repository used to create the adapters.

The remaining files are the sample files that are used in the installation verification example described in detail in Chapter 5. This provides a complete working example of the importation and use of a DTD in a message flow.

Using the Daemons

The MQAO Adapter daemons are Java classes that can be used to execute the Java adapters used in the data transformation. The utility should be run in a 32-bit Windows environment under Windows 2000. The utility must be run on a system with Java JDK 1.3.1 or later.

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

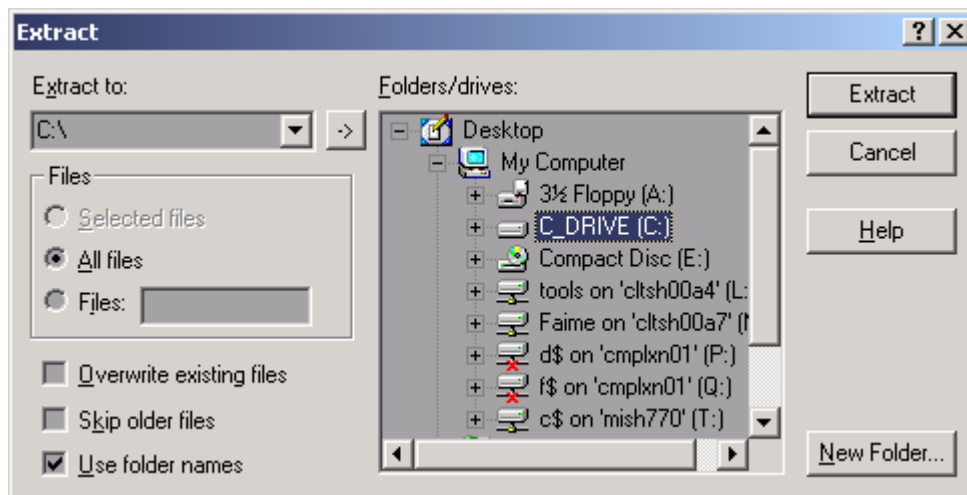
Installing the SupportPac zip file:

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

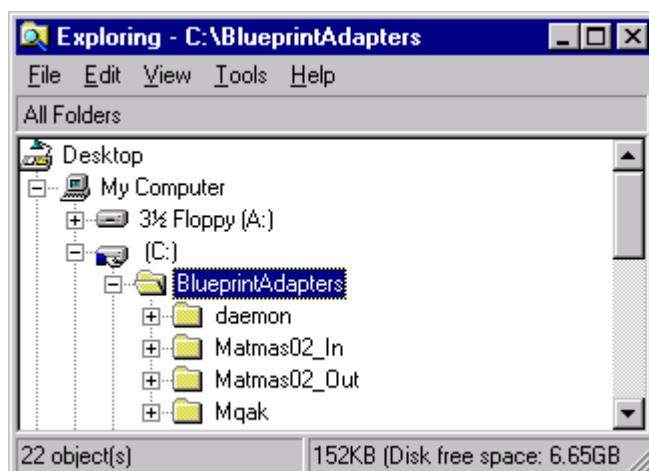
1. Unzip the file and extract to your **C:** directory. Ensure that you extract *using folder names*. This will ensure that all directory structures are extracted properly. In the example below (Figure 1), Winzip 8.0 has been used. If you extract to any other drive, you must make changes in the following 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:\.

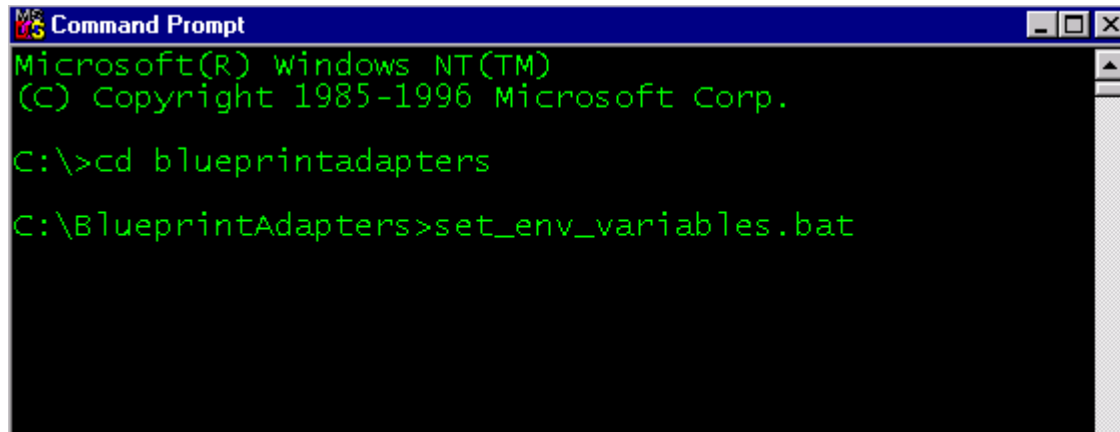
Figure 2



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



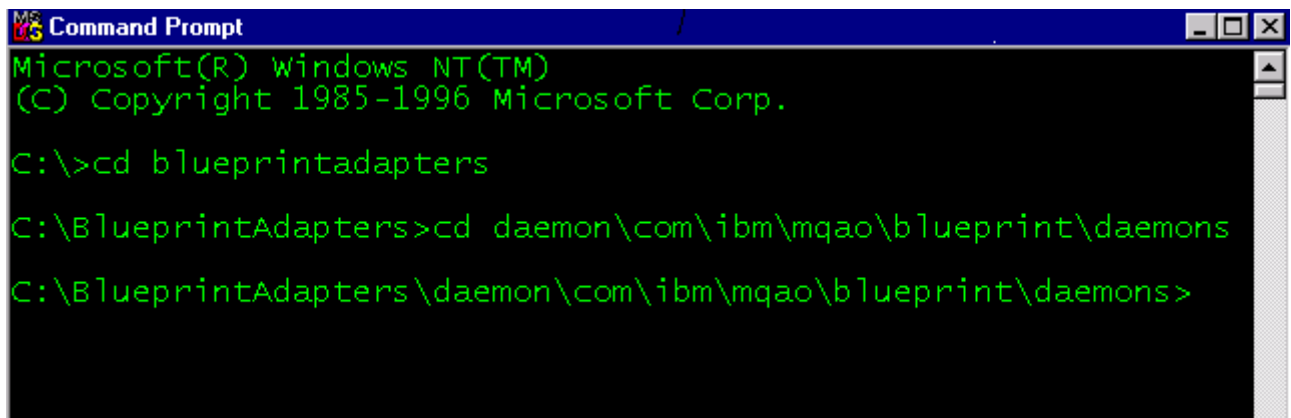
```

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)
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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 MQAOBlueprintIn (C:\BlueprintAdapters\daemon\com\.....\daemons) program which will call the adapter and use 2 input files: **MQAOBlueprintInCfg.xml** and **outbound.xml** (C:\BlueprintAdapters). The MQAOBlueprintInCfg.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...)>
- <MQAOBlueprintInConfiguration>
  <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>
</MQAOBlueprintInConfiguration>
```

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