MQSeries Integrator - Compression Plug-in

Version 1.0

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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 Integrator - Compression Plug-in* and to all subsequent releases and modifications unless otherwise indicated in new editions.

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Acknowledgments

Portions of the source to these nodes are based on code written by Neil Kolban, IBM Dallas.

The compression engine used in these nodes is the zlib library written by Jean-loup Gailly and Mark Adler. Used in accordance with the terms in zlib. They are reproduced here for convenience. If the text here differs with that in zlib.h, the text in zlib.h stands.

/* zlib.h -- interface of the 'zlib' general purpose compression library
version 1.1.3, July 9th, 1998
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The data format used by the zlib library is described by RFCs (Request for
Comments) 1950 to 1952 in the files ftp://ds.internic.net/rfc/rfc1950.txt
(zlib format), rfc1951.txt (deflate format) and rfc1952.txt (gzip format).
*/

Summary of Amendments

Date	Changes
03 August 2001	Version 0.9 Submitted for consideration by Plug-in nodes review team
20 September 2001	Version 1.0 Initial Release

Preface

The CompressionNode SupportPac provides a pair of nodes: the compression node and the decompression node. The compression node takes a BLOB input stream or a portion of an input message and produces a compressed representation of the data. The decompression node performs the reverse operation.

Bibliography

- *IBM MQSeries Integrator Version 2 Programming Guide,* IBM Corporation. SC34-5603
- Internet RFC 1950 Zlib Format
- Internet RFC 1951 Deflate Format
- zlib.h

Chapter 1. Introduction

Overview

The compression and decompression nodes provide a way to reduce the bandwidth and storage requirements of MQSeries messages whilst making their contents available to the MQSeries Integrator message broker.

The nodes can be used in two distinct ways

1) Compression of BLOB data. In its default form, the compression node will take an input BLOB bitstream and replace it with a compressed representation. The purpose of this mode of operation is to compress the output data of a message flow before passing the message to an output or warehouse node. This allows the size of messages passing over an MQSeries network to be significantly reduced and for the storage requirements of a warehouse node to be more easily managed. In a similar manner, the decompression node will, by default, treat an incoming BLOB bitstream as a compressed message and replace it with the decompressed version.

Furthermore, this mode of operation is of significant benefit to users of the MQSeries Everyplace and MQIsdp (SCADA) transports - where message size is a significant concern.

2) Element manipulation. The compression and decompression nodes allow an input and output element to be specified. In this way, it is possible to modify a message owned by the MRM parser, for example. Specifically, a byte array can be replaced with its (de)compressed equivalent - or the message can be augmented with its other representation.

Chapter 2. Installing the Plug-in node

SupportPac contents

The supplied zip file should be unzipped in a temporary directory. The following files and sub-directories will be created:

/source

/source/EOL_adjusted_source

/NT

/Solaris

license2.txt

ia0n.pdf

Prerequisites

This SupportPac provides a plug-in node to be used with the IBM MQSeries Integrator Version 2.0.2 and above.

On Sun Solaris, libz.so is required. On Windows, there are no other prerequisite products other than those required by IBM MQSeries Integrator Version 2.0.2. If any changes are to be made to the plug-in node, an appropriate C compiler is required.

For compilation, Perl is required on Solaris platforms to successfully build the message catalogues.

Supported Platforms

Whilst this SupportPac has been developed and tested in Microsoft Windows NT and Sun Solaris environments, it is unsupported.

Installing the plug-in node on broker system

The plug-in 'lil' file can be installed by copying or moving the following files to the appropriate directories

Windows

Copy the following files into <MQSI-DIR>\bin

- CompressionNode.lil, compression.dll, rgbnodeutils.dll, zlib.dll

Solaris

Copy the following files into <MQSI-DIR>/lib

- libcompression.so, librgbnodeutils.so

Copy the following file into <MQSI-DIR>/lil

- CompressionNode.lil

You must stop and restart the broker to enable it to detect the existence of the new 'lil'.

The nodes require the zlib library to be installed on the system. Sun Solaris typically ships with libz.so so the plugin should run without problem. For Windows, zlib.lib is provided to build against and zlib.dll is provided for run-time operation.

Integrating the plug-in node into the Windows Control Center

The necessary files for integrating the plug-in into the Windows Control Center are provided in the /NT directory.

Use the following table to copy the files to their correct location. These locations should already exist providing you have deployed at least one message flow. Append your <MQSI V2 root install path> to the Copy to location value. Repeat for “Decompression”

Filename	Copy to location
Compression.gif	\Tool\images
Compression30.gif	\Tool\images
Compression42.gif	\Tool\images
Compression58.gif	\Tool\images
Compression84.gif	\Tool\images

Defining the node to the configuration repository

When you have installed the files in the appropriate directories, as described in the previous section, you must make these definitions available to the Control Center.

Start the Control Center. The user ID you are using must be a member of the MQSeries Integrator group ***mqbrdevt***. You are recommended to use the superuser ***IBMMQSI2*** to complete this task[1]. This causes your new node to be locked under the same user ID as all the supplied IBM primitive nodes. If you do not use this user ID, the definition files in the configuration repository might be accidentally locked, and therefore open to unauthorized update.

1. Select the Message Flows view. Repeat the following steps for Compression and Decompression node
2. Right-click on the Message Flows key in the left hand column
3. Select “Create plugin node...”
4. Set Node label and Node identifier to “Compression” (or “Decompression” for the second node)
5. The “in” terminal is labelled “in”. The only output terminal is “out”
6. Click next...
7. The only two attributes to add are “inputSource” and “outputSource”
8. All other entries on this pane should be left with their default values
9. Click next...
10. Set the default values to be Root.BLOB.BLOB in both cases
11. Click next...
12. You can define optional resources if you wish. However, none are required or supplied
13. Click finish.
14. Check in the nodes
15. You can now use the nodes in your message flows.

---

[1] You must take care if you change logon IDs to complete this task. Changing logon IDs can effect the operation of the Configuration Manager's queue manager if it is on this system, but not running as a Windows NT service. See the *MQSeries Integrator Administration Guide* for more information about queue manager operation (Chapter 2) and the superuser *IBMMQSI2* (Chapter 4).

Chapter 3. Using the plug-in node

Description

Plug-in node terminals

Terminal	Description
In	The input terminal that accepts a message for processing by the node
Out	The output terminal that outputs the original message

The compression and decompression nodes throw exceptions in the event of a serious error. A later version of this SupportPac will provide the option of routing the message to a failure terminal in event of failure. If error handling is required, the use of a try-catch node is recommended.

Plug-in node properties

There are two properties: inputSource and outputSource. These attributes tell the node where to locate the input byte stream and where to place the output data. The default value: Root.BLOB.BLOB ensures that the whole message is used in both cases. If the values differ, the output message will contain the original data (in its original position) and the transformed data in the output location. A subsequent compute node can be used to remove the original data if required. If the values are the same, the incoming data is replaced with the transformed version.

Chapter 4. Compiling the plug-in node

Windows NT

We assume GNU Make and Microsoft Visual C++ V6 are installed. Ensure the command line is configured for compiling (that is, ensure that entering ‘cl’ on the command line produces the Microsoft compiler message. If not, read the Microsoft Documentation for information on how to configure a command line environment)

Edit the Makefile.nt file to ensure that MQSIDIR is correctly set.

Type:

make -f Makefile.nt to compile the nodes

make -f Makefile.nt install to copy the files into location (this step should be performed with the broker stopped).

You must now install the message catalogue. The name of the catalogue is CompressorCatalogue and the catalogue dll is compressorcat.dll. Instructions on how to install the event source are given in the MQSeries Integrator Programming guide.

Sun Solaris

Edit the makefile.sol file to ensure that MQSIDIR is correctly set

Type *make -f makefile.sol* to build the nodes

As root, type *make -f makefile.sol install* to copy the nodes into location and install the message catalogue

If compile problems are experienced, first try deleting zlib.h and zconf.h to allow the compiler to pick up the operating system-supplied versions.

The build step for Solaris includes steps to convert the Windows message catalogue file into one suitable for Solaris. This step requires Perl.

-- End of Document --