MQSeries Integrator V2 - CheckDuplication Plug-In

Version 1.0

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Thomas Sallantin
MQSeries Engineer
EMEA AIM Technical Sales
IBM Hursley
United Kingdom

sallantt@uk.ibm.com

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This edition applies to Version 1.0 of *MQSeries Integrator V2 - CheckDuplication Plug-In* and to all subsequent releases and modifications unless otherwise indicated in new editions.

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Finally, the author wishes to thank the many people who also helped but who the author has unintentionally omitted from his brief mention.

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Summary of Amendments

Date	Changes
6th July 2001	Initial release

Preface

The purpose of the CheckDuplication node is to check for the possibilty of record duplications in a database by comparing the message ID with the primary key of the database. The user has the opportunity to choose an automatic correction of the ID in the case of a duplication error.

Bibliography

- *IBM MQSeries Integrator for Windows NT Version 2 Installation Guide,* IBM Corporation. SC34-5600.
- *IBM MQSeries Integrator Version 2 Using the Control Center,* IBM Corporation. SC34-5602
- *IBM MQSeries Integrator Version 2 Programming Guide,* IBM Corporation. SC34-5603

Chapter 1. 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

/NT

ia75.pdf

Prerequisites

This SupportPac provides a plug-in node to be used with the IBM MQSeries Integrator Version 2.0.1 and above. For normal use, there are no other prerequisite products other than those required by IBM MQSeries Integrator Version 2.0.1 itself. If any changes are to be made to the plug-in node, an appropriate C++ compiler is required.

Supported Platforms

This SupportPac has been developed and tested in a Microsoft Windows NT.

Installing the plug-in node on broker system

The plug-in '**lil**' file should be installed by copying or moving the appropriate file to the following directory:

- <mqsi_root>\bin (Windows)

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

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.

Use the following to replace the placeholders:

<hostname> - TCP/IP hostname

<CM QMName> - Configuration Manager's queue manager name

Filename	Copy to location
CheckDuplication	\Tool\repository\private\<hostname>\<CM QMName>\MessageProcessingNodeType
CheckDuplication.wdp	\Tool\repository\private\<hostname>\<CM QMName>\MessageProcessingNodeType
CheckDuplication.gif	\Tool\images
CheckDuplication.gif	\Tool\images
CheckDuplication.gif	\Tool\images
CheckDuplication.gif	\Tool\images
CheckDuplication.gif	\Tool\images
CheckDuplication.properties	\Tool\com\ibm\ivm\mqitool\extensions

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.

1. 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.
2. Select the Message Flows view.
3. Select an existing Message Flow Category, or create a new one.
4. Right-click the selected category, and select *Add->Message Flow*.

   A list box is displayed showing all existing IBM-supplied primitive nodes and any defined message flows you have installed following the instructions provided.
5. Select the message flow (the node).

   This node now appears within the message flow category you selected in the tree view in the left-hand pane.
6. Select your new node, and right-click. Select *Check In*.
7. Right-click again, and select Lock. Then right-click again and select Check In for a second time. After this check, the interface and ***.wdp** definition files disappear from the local directory and go into the shared repository, where they are available to all users of the Control Center. However, user can only use this new node if they have installed the additional files (icons, properties files, and so on) on their own system.

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[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 2. Using the plug-in node

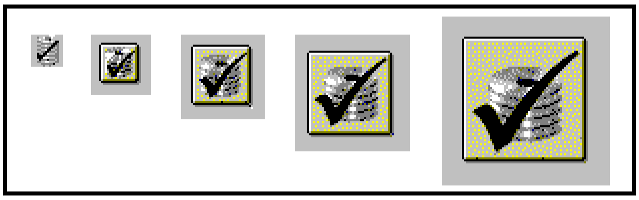
Description

This document describes the **CheckDuplication** add-on node for the MQSI V2 product. The general purpose of this node is to provide the ability to check for the probability of record duplications in a database by comparing the message ID with the primary key of the database. It provides the ability to select a compatible new message ID, where it is relevant, and inserting this in the message within the message flow.

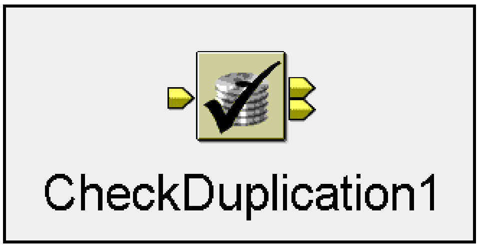
One of its interesting functions is that if you don't specify any value in you message ID root, the CheckDuplication plug-in will insert automatically a value inside the message ID root compatible with the database. Precisely, the plug-in searches for the maximum value, adds 1 to this value and finally inserts it in the message ID root.

Primitive icons

Once installed, the Checkduplication node can be added to any message flow. The node has the following primitive icons:



When displayed in a message flow, it appears as the following icon:



Plug-in node terminals

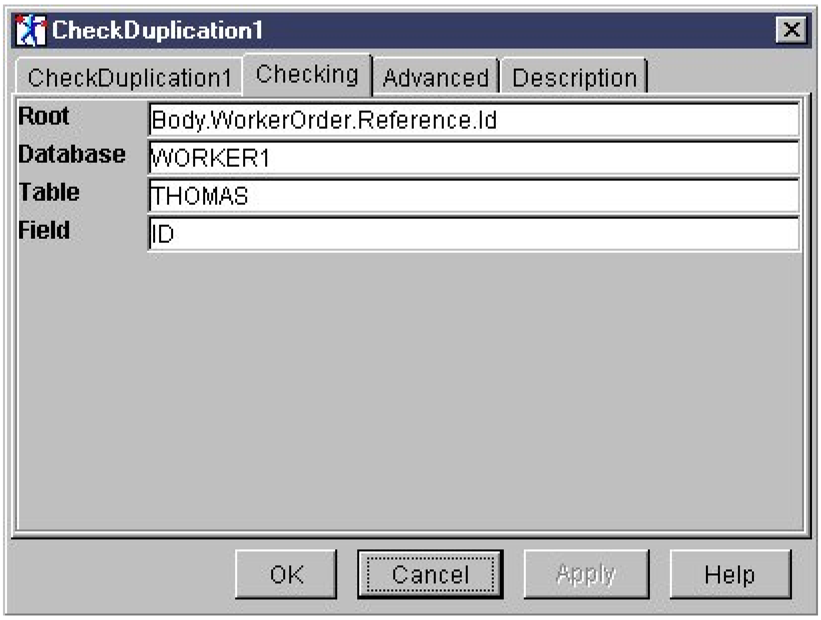
Terminal	Description
In	The input terminal that accepts a message for processing by the node.
Out	The output terminal outputs either the original or the modified message.
Failure	The output terminal outputs the message if a failure has been detected during checking duplication database. a new tag “CheckDuplicationError” will be added explaining more details about the error.

Plug-in node properties

These properties are displayed when you right click a CheckDuplication node entry in the Message Flow Types pane, and click Properties. Values displayed are example properties for this instance of the node.

Checking dialog box property

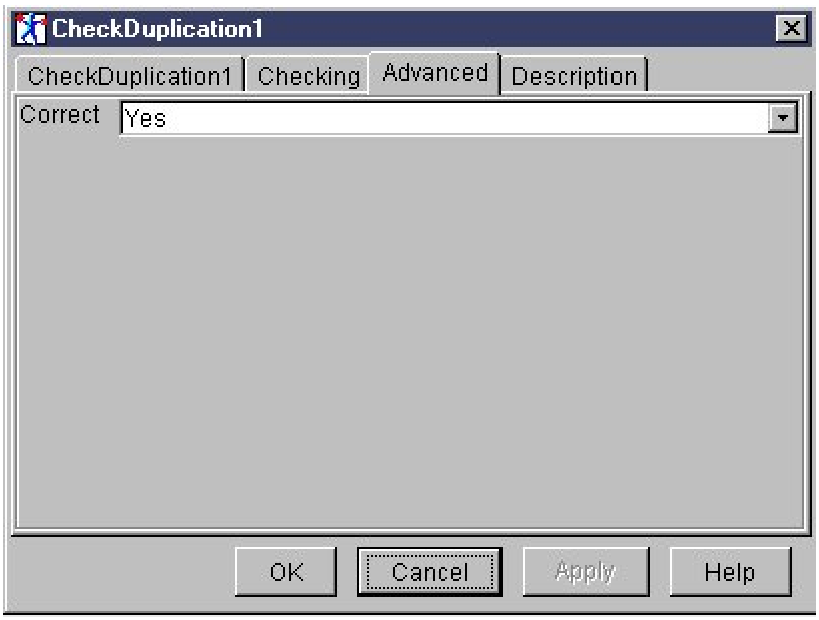
Root	Specifies the root of the element in the message to be compared to the primary key of a database. This root must be the message ID used to insert data in the database.
Database	Specifies the name of the database.
Table	Specifies the name of the table with in the specified database.
Field	Specifies the name of the field that will be checked with in the node.



Root: Body.WorkerOrder.Reference.Id
Database: WORKER1
Table: THOMAS
Field: ID

Advanced dialog box property

Correct	Boolean specifies wether the message ID must be corrected automatically to prevent duplication errors. By default, the value is No.



Correct: Yes

Constraints

- The primary key in the database must have an **INTEGER** format and so does the message ID.
- Furthermore, the value of the message ID must have **no spaces** inside the value (one future possible enhancement would be to remove the spaces).
- Because the value can only be integer, the max value to insert in the database is: **2147483647**.
- The database checking by the plug-in must have the good authorities or if not you must specify the schema in the “Table” field.

Take care!!! When a message ID value is corrected, we take the max + 1 in the database. If the max is a value close to 2147483647, there will be a problem.

This plug-in has been tested on the **Windows NT environment** and with the **DB2 database**.

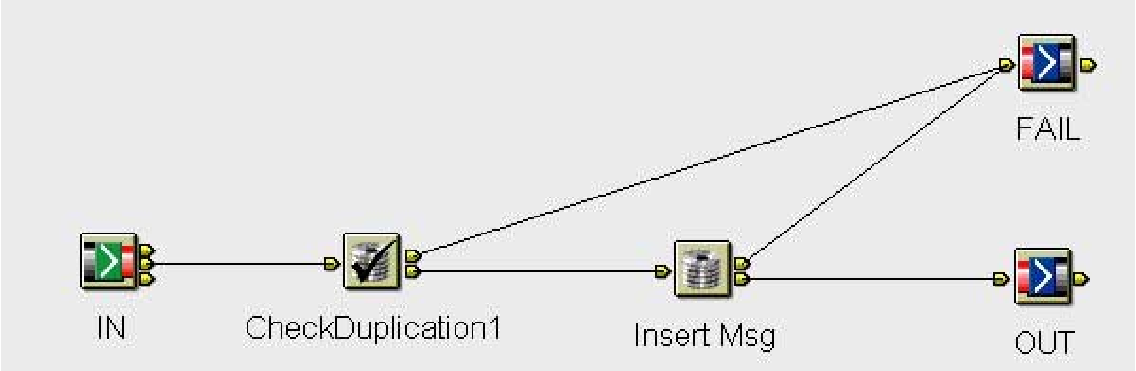
All these constraints have been tested and send back a message error.

Chapter 3. Example using the plug-in node

Here the CheckDuplication node provides capabilities to check if there will be duplication errors when a message passes through the message flow.

If there is a failure, the message is sent to the Fail node. An xml error tag is added at the end of the message to explain the failure.

If there is no failure, the message passes through the CheckDuplication node, and on to the “Insert Msg” database node in order to be computed.



Example 1:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?><WorkerOrder><Reference><Id></Id><FirstName>Thomas</FirstName><LastName>Sallantin</LastName><City>Southampton</City><Country>England</Country></Reference></WorkerOrder>
```

This message goes through the CheckDuplication node and it has no value specified.

Here the CheckDuplication node will check automatically if a free ID in the specified database (it means that it takes the maximum value in the database and adds 1).

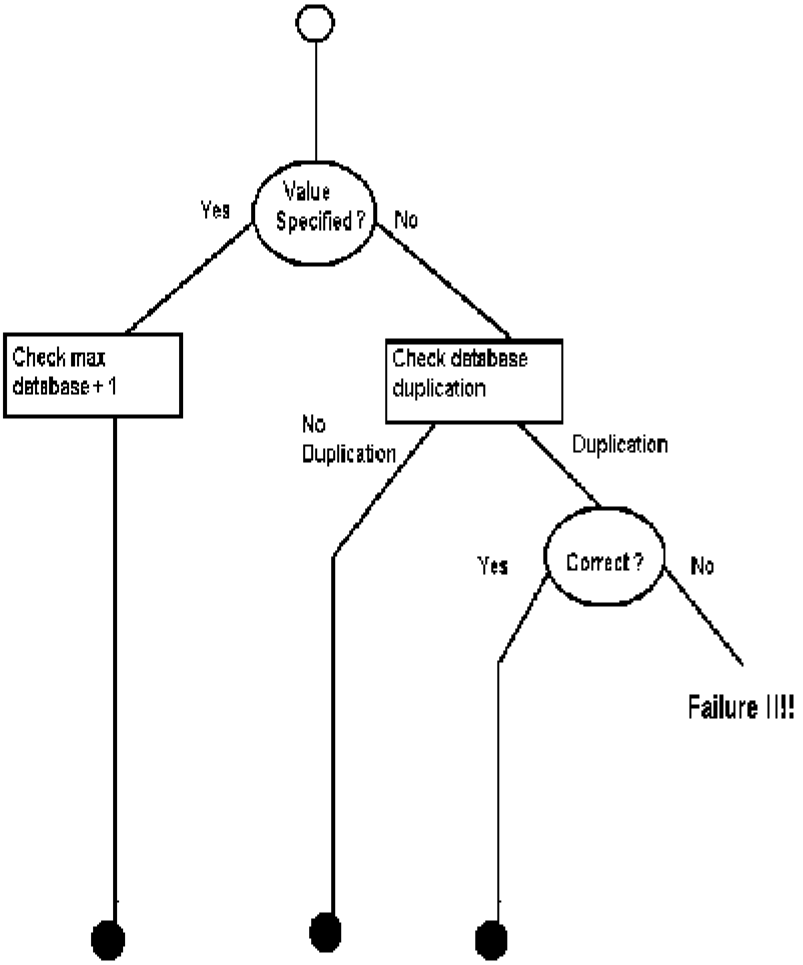
(For example: the maximum ID value in the database is 35 and it concerned John. The next value added in the database for Thom will be 36)

Example 2:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?><WorkerOrder><Reference><Id>123456</Id><FirstName>Thomas</FirstName><LastName>Sallantin</LastName><City>Southampton</City><Country>England</Country></Reference></WorkerOrder>
```

Here the CheckDuplication node will check if this value already exists in the database. If not, the message is sent to the out terminal. If the value exists, it will go to the failure terminal if the “correct” property is NO. Otherwise the message will be corrected by adding 1 to the maximum value within the database.

Sample diagram to explain several capabilities of the plug-in



Chapter 4. Error tracking

When an error is found and no further correction is possible, the message is sent to the failure terminal.

But an xml error message tag is added at the end of the message and it is called <CheckDuplicationError>.

```
<?xml version="1.0" encoding="UTF-8"
standalone="yes"?><WorkerOrder><Reference><Id>60000000000</Id><FirstName>Th</FirstName>
<LastName>Sa</LastName><City>Southampton</City><Country>England</Country></Reference></
WorkerOrder><CheckDuplicationError>The maximum we can insert in the database with integer
primary key is 2147483647.</CheckDuplicationError>
```

Examples of message error

Error 1: “The maximum we can insert in the database with integer primary key is 2147483647.”

Error 2: "Database error: the database name does not exist."

Error 3: "Database error: it can be a wrong table or field name, or a bad syntax of the ID value (spaces,character)"

Error 4: "Wrong data type in the database."

Error 5: "Duplication error. And no automatic correction required"

Error 6: "the specified root ID does not exist in the message."

--- End of Document --