MQ Gate

White Paper

INSIDER TECHNOLOGIES

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Introduction

What Is MQ Gate

The IBM MQ product is a middleware solution that allows the transport of information between nominated platforms.

A version of the MQ software is available for the HPE NonStop platform and if configured, MQ can route diagnostic information to the Event Management Services (EMS) logs as events.

Generally, this MQ diagnostic information should be held within the EMS event buffer as a set of discrete tokens. In earlier releases of MQ this was the case but in subsequent versions, relevant information has become embedded in large event text tokens.

By storing all information such as the MQ Manager, Channel Queue within a single text token, it is difficult for users to view, monitor and manager individual issues. This approach makes the error messages difficult to retrieve, process and escalate.

The purpose of the Insider Technologies MQ Gate product is to resolve this problem.

What This Document provides

This paper provides a technical overview of the MQ Gate product.

Who should Read This Document

The document is aimed at people with a technical background.

Monitoring MQ EMS Events

The MQ Gate product relies upon the native HPE NonStop logging system EMS (Event Management Service) in order to retrieve the source IBM MQ events and parse them into new, unique tokenised events.

Although you do not need to have EMS expertise to implement MQ Gate, this White Paper and our product documentation will refer to some of the terms commonly used in the EMS environment.

The EMS subsystem is installed on every NonStop system. It is started when your machine is loaded and although it is something that you can tune, you cannot shut it down.

It provides the native logging environment for your NonStop system where hardware, operating system, subsystems and IBM MQ (if configured to do so), writes their information.

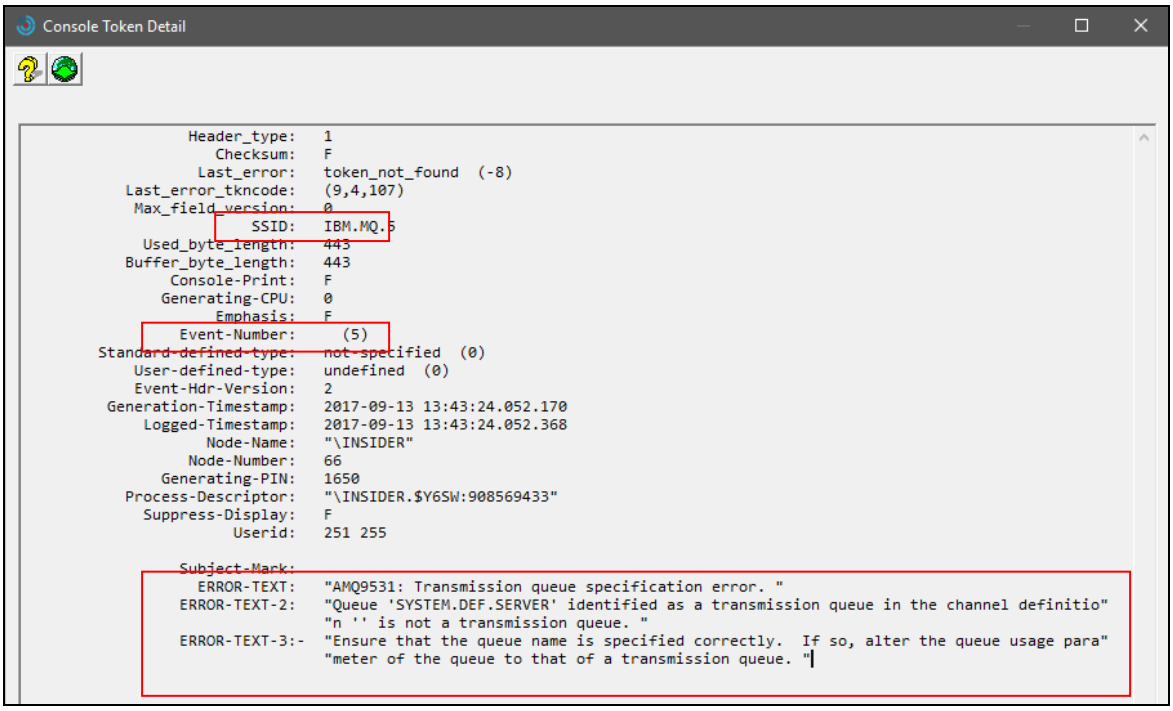
The IBM MQ EMS event messages cover error conditions, state changes, warning information and it would be ideal if MQ wrote its log messages to EMS in the required propriety format. Unfortunately, in certain versions of MQ, this is not the case and to help resolve the monitoring and management of MQ events, MQ Gate provides a solution where it obtains the source MQ events including its lengthy text value, parses them and creates new, unique tokenised EMS events.

Identifying Events

IBM MQ writes its log messages to EMS, where all the necessary information such as the event number, MQ Manager, Channel, Queue and information is contained in an event text token.

Note: IBM MQ issues the same EMS event SSID and Event Number, regardless of the situation being reported – IBM.99 (MQ).5, event number 5.

Ideally, the MQ event should contain individual tokens to reference the Event Number, the MQ Manager, the MQ Queue Name, MQ Channel Name and Event Text. A typical MQ event is provided below, whereby all of the important information is solely supplied within the text token:



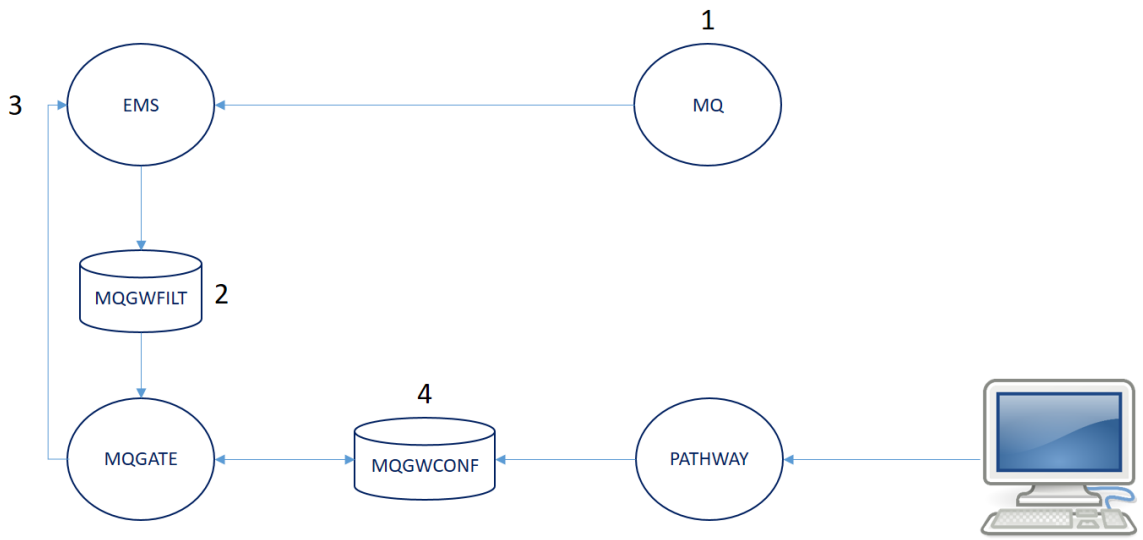
You can see that the event contains the SSID value of 'IBM.MQ.5' and an Event Number value '5. However, the associated EMS event text contains all the important information:

- Event Number – AMQ9531 (event number prefixed with AMQ)
- Queue Name – SYSTEM.DEF.SERVER.
- Information – The remainder of event text

As the same SSID and Event Number 5 is issued for multiple conditions and with all of the important information being contained solely within the EMS event text (including the relevant 'AMQ' event number), it is very difficult to monitor for any alerts and exceptions.

MQ Gate has been designed to address this event limitation.

MQ Gate Functionality



1. IBM MQ issues events to an EMS collector.

2. The MQGATE program utilises a compiled MQGWFILT filter to retrieve nominated source IBM MQ EMS event and associated text from the EMS collector.

3. Based on the content of the configuration file - MQGWCONF - the MQGATE process will create and issue a second event in $0. This event will have a unique event number and in addition any attribute names will be extracted from the body of the text and included in the new event as discrete tokens, e.g. a Subject Token containing the name of the MQ Queue.

4. Deciding on which events to process and whether any new tokens are added, is performed within the MQGWCONF file. A Pathway interface is provided to help maintain this database.

Note: At this release, MQ Gate processes IBM.99 (MQ).0, event 5.

The MQ error code is embedded within the EMS event text, e.g. AMQ9531 (9531 being the error number describing the condition) and this error code is extracted by MQ Gate and used as the event number for the new EMS event.

Any other relevant information such as the Queue Name is also extracted and is included in the event as a new, unique token.

Info: MQ Gate will also retrieve any information sent by MQ to EMS as plain text (i.e. event TANDEM. EMS.0 event 512). The error code prefixed with AMQ, e.g. AMQ9531 will be used as the event number of the new event.

MQ Gate in Operation

A typical scenario is provided below:

1.User accesses the RUNMQSC command line interface

a. User attempts to start a Channel

b. Error is reported back to the RUNMQSC interface

2.The original IBM.99.0, 5 event is issued to EMS

3.A new, tokenised EMS event is issued by MQ Gate

RUNMQSC COMMAND

```
MQSC >STOP CHANNEL(SYSTEM.DEF.SERVER)

     1 : STOP CHANNEL(SYSTEM.DEF.SERVER)

AMQ9531: Transmission queue specification error.
```

ORIGINAL IBM MQ EMS EVENT

The event token detail below, shows that an event, with no subject value is issued and that all of the important information is stored in the event text string.

```
            Header_type:   1
               Checksum:   F
             Last_error:   token_not_found  (-8)
    Last_error_tkncode:   (9,4,107)
     Max_field_version:   0
                  SSID:   IBM.MQ.5
      Used_byte_length:   443
    Buffer_byte_length:   443
         Console-Print:   F
        Generating-CPU:   0
              Emphasis:   F
          Event-Number:     (5)
 Standard-defined-type:   not-specified  (0)
     User-defined-type:   undefined  (0)
     Event-Hdr-Version:   2
  Generation-Timestamp:   2017-09-13 15:05:40.591.947
      Logged-Timestamp:   2017-09-13 15:05:40.592.174
             Node-Name:   "\INSIDER"
           Node-Number:   66
        Generating-PIN:   1650
    Process-Descriptor:   "\INSIDER.$Y6SW:908569433"
      Suppress-Display:   F
                Userid:   251 255

          Subject-Mark:
            ERROR-TEXT:   "AMQ9531: Transmission queue specification error. "
          ERROR-TEXT-2:   "Queue 'SYSTEM.DEF.SERVER' identified as a transmission queue in the channel definitio"
                          "n '' is not a transmission queue. "
          ERROR-TEXT-3:-  "Ensure that the queue name is specified correctly.  If so, alter the queue usage para"
                          "meter of the queue to that of a transmission queue. "
```

NEW TOKENISED EMS EVENT

As can be seen below, MQ Gate has taken the source IBM.99.0, 5 event, parsed it and based on the MQ Gate configuration database, issued a new, unique tokenised event.

This event now has the following unique attributes for improved monitoring:

- SSID – INSIDER.MQEMSG.4
- EVENT NUMBER – 9531
- SUBJECT TOKEN – SYSTEM.DEF.SERVER
- EVENT TEXT – Still retains the original IBM event text

```
          Header_type:   1
             Checksum:   F
           Last_error:   token_not_found  (-8)
   Last_error_tkncode:   (29,4,-447)  Nexttoken
    Max_field_version:   0
                 SSID:   INSIDER.MQEMSG.4
     Used_byte_length:   505
   Buffer_byte_length:   505
        Console-Print:   F
       Generating-CPU:   0
             Emphasis:   F
         Event-Number:     (9531)
tandard-defined-type:   not-specified  (0)
    User-defined-type:   undefined  (0)
    Event-Hdr-Version:   2
Generation-Timestamp:   2017-09-13 15:05:40.597.161
     Logged-Timestamp:   2017-09-13 15:05:40.609.324
            Node-Name:   "\INSIDER"
          Node-Number:   66
       Generating-PIN:   1123
   Process-Descriptor:   "\INSIDER.$MQGWD:908271449"
     Suppress-Display:   F
               Userid:   255 255

         Subject-Mark:
            (1,255,1):   "SYSTEM.DEF.SERVER      "
           ERROR-TEXT:   "AMQ9531: Transmission queue specification error. "
         ERROR-TEXT-2:   "Queue 'SYSTEM.DEF.SERVER' identified as a transmission queue in the channel definitio"
                         "n '' is not a transmission queue. "
         ERROR-TEXT-3:-  "Ensure that the queue name is specified correctly.  If so, alter the queue usage para"
                         "meter of the queue to that of a transmission queue. "
```

MQ Gate Benefits

Now that unique, tokenised EMS events are being issued for MQ via the use of MQ Gate, users can monitor just the specific events they are interested in.

For example, instead of monitoring all the same IBM.99.0, event 5 events and having to scroll through an event viewer such as ViewPoint to review the event text as to what the event is referring to, the unique EMS event structure as generated by MQ Gate allows a user to filter their monitoring software on selected event numbers and/or subject tokens, e.g.

- SSID - INSIDER.MQEMSG.5
- EVENT NUMBER – 8016
- SUBJECT – MQ Channel Name, e.g. INSIDER.TO.LONDON
- EVENT TEXT – 'WebSphere MQ Channel Changed'

Exception alerting is an immediate benefit of MQ Gate, as based on the above, you can specify which events you are interested in. Otherwise, a user needs to monitor ALL IBM.99.0, event 5 events and by doing so, will find it slow and difficult to determine which of these MQ events are a cause for concern.

The product arrives pre-configured with a wide range of converted events and when installed, MQ Gate is actively monitoring the EMS collector for any IBM MQ events.

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