New solution to Message Queue Operations

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ABSTRACT

Every smooth-running software system plays a critical role in success of just about all industries. This software system must ensure that all data items are moved in and out of the various divisions of a business on time and unaltered. Any disruption of organizational data can have serious business impacts. Considering the large amount of data items that must be moved in many organizations, keeping a software system up running smoothly presents quite a challenge.

One of such software system is IBM WebSphere MQ which is very critical for large business applications. The responsibility for managing this critical MQ environment falls solely on the shoulders of WebSphere MQ administrators. These certified and skilled technicians must maintain the smooth-running and well-being of the MQ environment. This complexity of MQ environment increases the dependency on MQ experts to maintain large business applications.

Other members of the any software organization — application developers, software testers, software quality assurance personnel, and software application support technicians — need to communicate with the critical MQ environment to perform their daily jobs. But the lack of MQ expertise makes their job difficult and causes risk to critical MQ environment.

This paper presents a solution to the above issues. It discusses how **AeMqVisualizer utility tool** for WebSphere Message Queue, developed in UHG India, empowers the other IT members of the organization to “do it quickly” when accessing MQ objects — without causing the MQ environment to risk (and lot of other useful functionalities like File Aide on windows, XML formatting, various conversion features, etc). The resulting benefits of this utility are significant. By eliminating a large source of delay in software application development, this utility speeds up time to market new applications. This paper helps in analyzing the benefits of this utility over other MQ utilities currently available in market.

CURRENT SITUATION

The role of MQ series in IT Organizations

There are over 10,000 critical business organizations using MQ series and only 9,000 certified developers that cater a daunting challenge for smooth flow of information. This dependency between MQ experts and other IT staff member impacts on project delivery, delaying time to market new applications and more troubleshooting. These applications are of different technology built on disparate platforms.

Issues faced during testing involving MQ series

In various IT organizations we use various web based or desktop based tools for accessing MQ Series objects. These tools are good for particular functionality but are deficit on fundamental features.
We will first see various advantages and disadvantages of currently available MQ tools.

Good Features of web based tools:

1. Web based MQ tools do not requires any installation for using it.

2. Access is controlled through on these tools and every individual has separate profile created on server which controls the MQ view of that user. User has only those objects in his/her home page on which they have access.
3. These tools are good for light weight testing that provides good overview of Objects. Particular messages can be copied to file or moved or copied to another queue.

***Drawbacks of web based tools**:*

1. Performance of most of the web based tools is slow.
2. Browsing functionality has several limitations. To find a message in queue containing particular keyword, user needs to manually browse through all messages one by one i.e. there is not any filtering functionality.
3. Only some limited messages can be viewed at a time. If a queue has large number of messages then browsing this way is irritating and error prone.
4. Only limited amount of messages can be copied to file at a time or moved to another queue.
5. There is no functionality to support Synchronous or asynchronous testing, i.e. if a user want to test a request-response scenario, he/she will have to put manually to queue and then manually browse the reply to queue which is error prone as response time can not be observed this way.
6. There is no functionality to support load testing i.e. more than one message can not be put to queue using these tools at one go.
7. Formatting the queue data is very tedious task. For formatting queue data in XML format user has to waste lot of time and need to provide estimated buffer size which is mostly guess work.
8. If message in queue has Mainframe record, it can not be mapped to copybook. For mapping that record to copybook, message need to be copied to file and that file need to be uploaded to mainframe.

***Good Features of Desktop based tools**:*

1. Messages can be written to queues very efficiently. All MQMD parameters can be configured in request message.
2. Messages can be easily converted to various character formats like EBCDIC, ASCII, etc.
3. Messages can be easily formatted in XML structure.
4. Messages can be mapped to COBOL copybooks. Messages can be converted to HEX as well.
5. Load testing can also be performed using these tools.

Drawbacks of Desktop based tools:

1. It uses MQ client connection. It takes a lot time to launch, i.e. initially it takes few minutes to create connection from MQ which makes these tools slow in performance.
2. No access control is present in desktop based tools.
3. Messages can only be sequentially browsed, there is no functionality to search a message based on some key words.
4. In load testing MQMD can not be configured.
5. Once a message is loaded, it’s not editable.
6. Queue managers can not be changed dynamically.
7. Synchronous testing can not be performed.

REQUIREMENTS FOR A GOOD SOLUTION

Eliminate Installation Headaches

The solution should not require any installation of client software to each user desktop. It should permit users to work from their desktops just by double clicking on an icon. Solution should be easily upgraded by replacing the old files with new files without the headaches of requiring access for new software installation. Also, solution will work consistently on all platforms.

Keep it as simple as possible

Software developers, test engineers and software application support technicians do not necessarily have the knowledge and MQ expertise required to interact with MQ objects using traditional tools. Consequently, a good solution should provide a simpler, more user friendly interface to users.

Highly Customizable

Solution should be highly customizable which can be modified easily as per user requirements. The utility should be easily modified to cater to various customer needs.

Based upon specific user requirements, new functionalities can be added at any point of time.

Log Changes

Change is a mandatory thing in software organizations and it is very important that changes are tracked and recorded. Knowing what changes at what time have been performed, provides very useful information in troubleshooting various software application problems.

Therefore it’s important that the solution should log all changes made at what time and make that information available to the user. This solution writes all the changes done by user while using this tool.

OUR SOLUTION

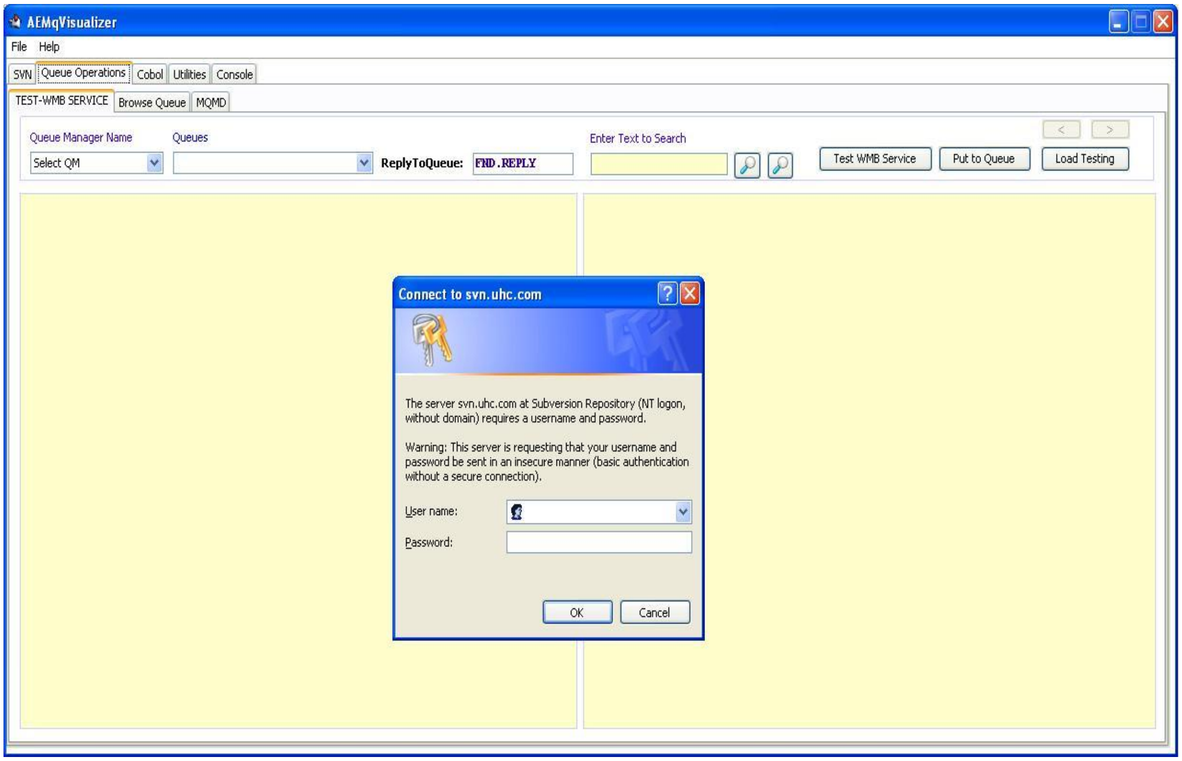
Introduction

AeMqVisualizer is a Java Swing based utility which has most of the functionalities from testing point of view a tester or developer may need for his/her testing. AeMqVisualizer has some unique functionality. AeMqVisualizer is much faster than as it uses a client connection and provides much better browsing experience than Web tools as it caches all the fetched information locally.

It is executable jar file so nothing needs to be installed. It uses a configuration file in XML format, so behavior and capabilities of Tool can easily be controlled through this file. Tool primarily focuses on providing MQ operations and all those functionalities which are needed or are helpful while browsing the queues.

Key features/functionality of AeMqVisualizer:

User Authentication



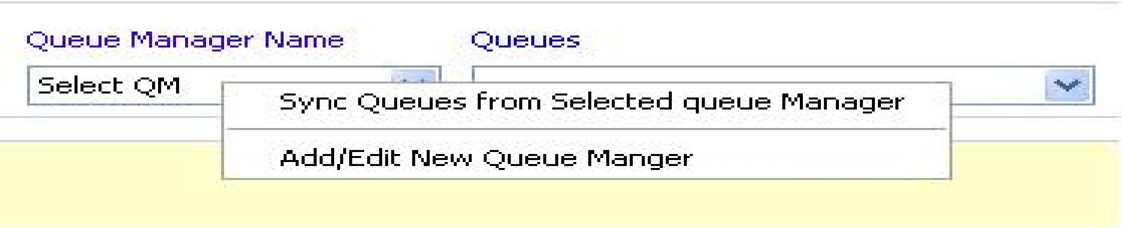
ReplyToQueue: FND.REPLY

The server svn.uhc.com at Subversion Repository (NT logon, without domain) requires a username and password.

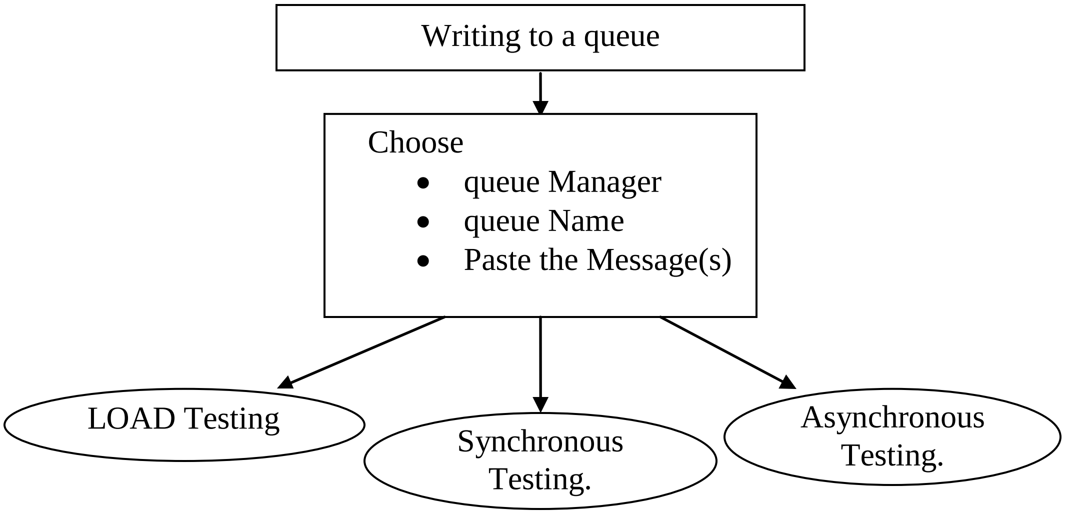
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).

Queue Operations

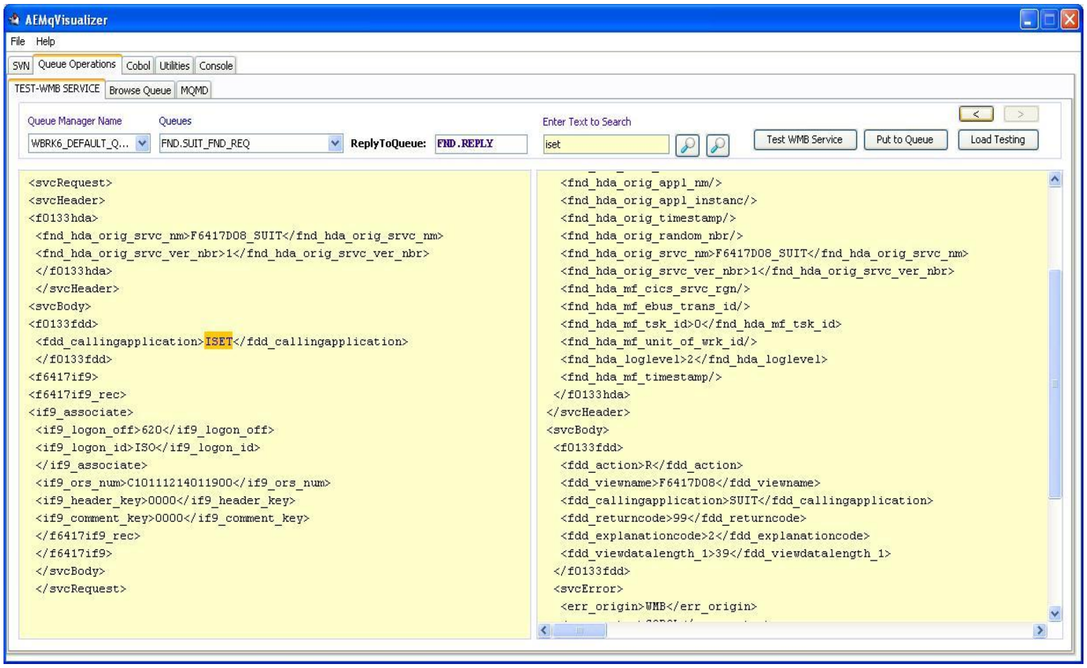
A separate tab has been provided for Queue operations. Mostly in MQ series based testing we either write to queue or read from queue. For write operations there is a "TEST SERVICE" tab under queue operations and for browsing operations there is a "Browse Queue" tab. While coding the application main attention has been given to the performance and ease of operations. Required queue mangers can be preconfigured in configuration files or else they can be added at run time.


Queue Manager Name
Queues
Select QM
Sync Queues from Selected queue Manager
Add/Edit New Queue Manger

1. Write Operation: Test data can be loaded through a file or can be written or modified in request box. Queue mangers and queue can be selected from the drop down box. Data can be written to queue using following three options:



Synchronous Testing: In this option tool writes the test data to Request queue and waits on reply to queue for response. This option can be used for testing request reply scenario. Tool saves the message Id of request message and listens on reply to queue by matching the saved message Id to correlation Id of response messages so that request and reply messages are paired correctly. Reply to queue and wait time both are configurable. MQMD of both request and reply messages can be viewed in MQMD tab.


AEMqVisualizer
File Help
SVN Queue Operations Cobol Utilities Console
TEST-WMB SERVICE Browse Queue MQMD
<
>
Test WMB Service
Put to Queue
Load Testing

Queue Manager Name: WBRK6_DEFAULT_Q...

Queues: FND.SUIT_FND_REQ

ReplyToQueue: FND.REPLY

Enter Text to Search: iset

```
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<svcHeader>
<f0133hda>
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 </svcHeader>
<svcBody>
<f0133fdd>
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```

```
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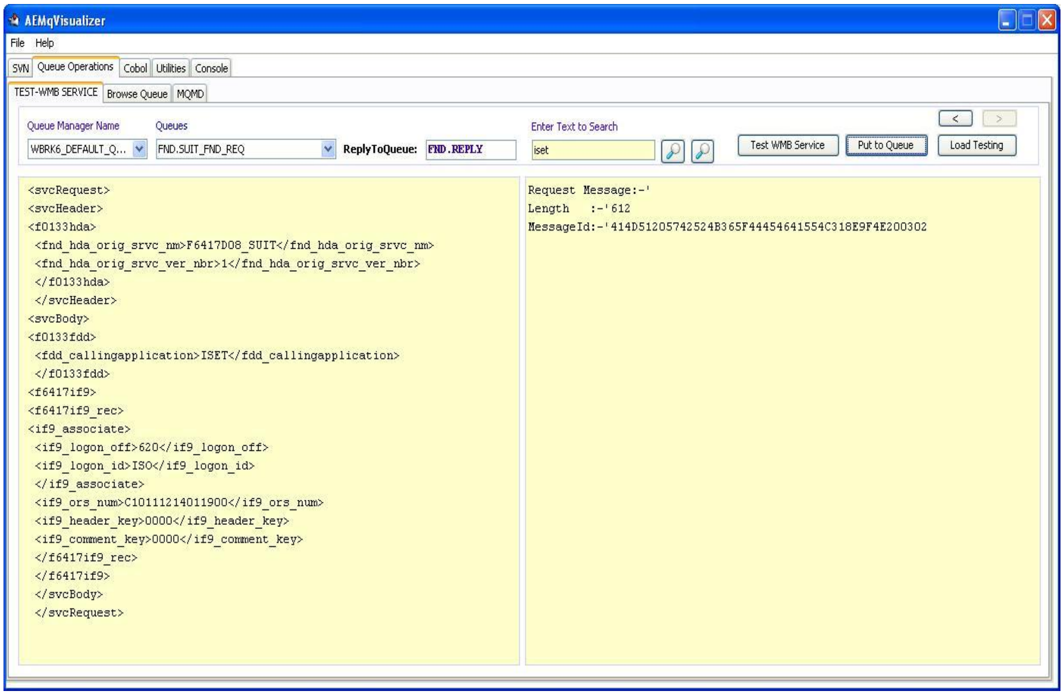
  </f0133fdd>
  <svcError>
   <err_origin>WMB</err_origin>
```

Asynchronous Testing: With this option tool writes the test data in request box to selected queue on selected queue manager. Tool does not wait for response in this option. Reply to queue and other MQMD parameters can also be configured while using this option. Successful put of message is acknowledged by the message Id of request message in response box.



Queue Manager Name: WBRK6_DEFAULT_Q...

Queues: FND.SUIT_FND_REQ

ReplyToQueue: FND.REPLY

Enter Text to Search: iset

```
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<svcHeader>
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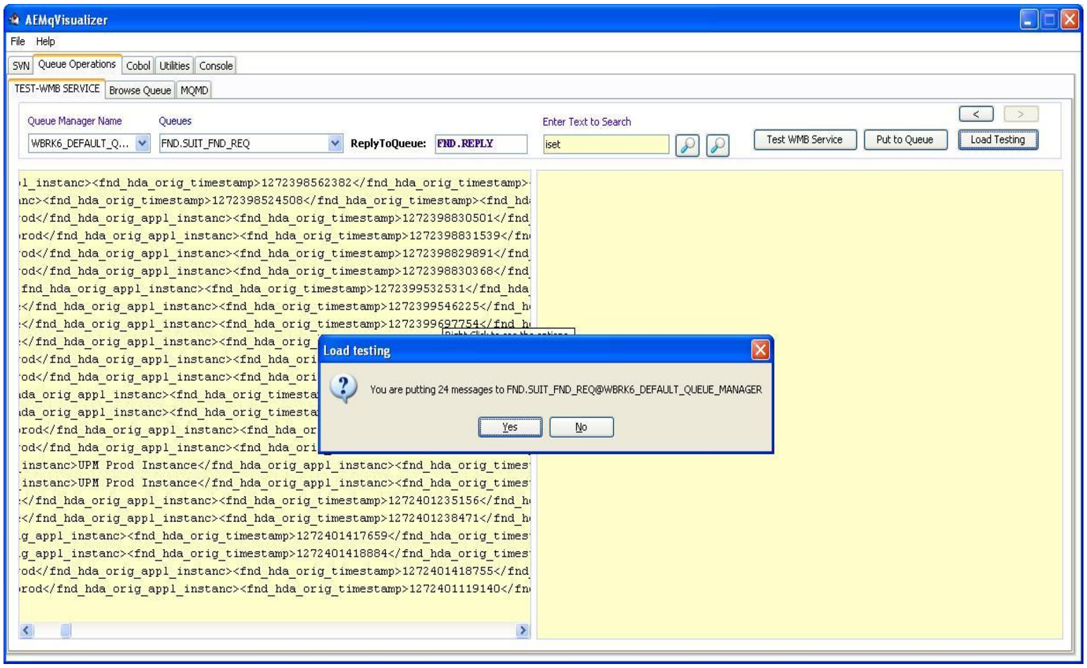
 <if9_header_key>0000</if9_header_key>
 <if9_comment_key>0000</if9_comment_key>
 </f6417if9_rec>
 </f6417if9>
 </svcBody>
 </svcRequest>
```

```
Request Message:-'
Length   :-'612
MessageId:-'414D51205742524B365F44454641554C318E9F4E200302
```

Load Testing: With this option load testing can be performed. A file containing multiple test cases can be loaded to tool. Tool will break this data in different test cases bases on some delimiter. This delimiter can be configured at run time. Even MQMD can also be configured for this bunch of test cases. Even for doing performance testing a single test case can be written multiple times.



Queue Manager Name: WBRK6_DEFAULT_Q...
Queues: FND.SUIT_FND_REQ
ReplyToQueue: FND.REPLY
Enter Text to Search: iset

```
l_instanc><fnd_hda_orig_timestamp>1272398562382</fnd_hda_orig_timestamp>
nc><fnd_hda_orig_timestamp>1272398524508</fnd_hda_orig_timestamp><fnd_hd
od</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272398830501</fnd_
rod</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272398831539</fn
od</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272398829891</fnd_
od</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272398830368</fnd_
fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272399532531</fnd_hda_
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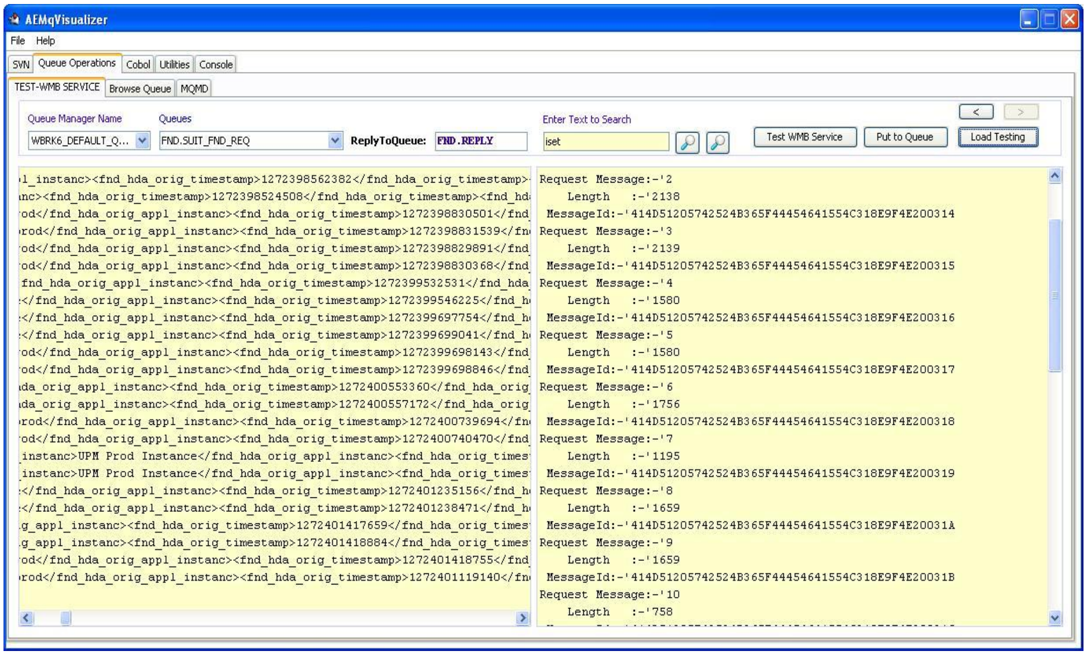
</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272399697754</fnd_h
</fnd_hda_orig_appl_instanc><fnd_hda_orig_
od</fnd_hda_orig_appl_instanc><fnd_hda_ori
od</fnd_hda_orig_appl_instanc><fnd_hda_ori
da_orig_appl_instanc><fnd_hda_orig_timesta
da_orig_appl_instanc><fnd_hda_orig_timesta
rod</fnd_hda_orig_appl_instanc><fnd_hda_or
od</fnd_hda_orig_appl_instanc><fnd_hda_ori
_instanc>UPM Prod Instance</fnd_hda_orig_appl_instanc><fnd_hda_orig_times
_instanc>UPM Prod Instance</fnd_hda_orig_appl_instanc><fnd_hda_orig_times
</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272401235156</fnd_h
</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272401238471</fnd_h
g_appl_instanc><fnd_hda_orig_timestamp>1272401417659</fnd_hda_orig_times
g_appl_instanc><fnd_hda_orig_timestamp>1272401418884</fnd_hda_orig_times
od</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272401418755</fnd_
rod</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272401119140</fn
```

Load testing

You are putting 24 messages to FND.SUIT_FND_REQ@WBRK6_DEFAULT_QUEUE_MANAGER

Successful load testing is acknowledged by the entire message Ids in response:



Queue Manager Name: WBRK6_DEFAULT_Q...
Queues: FND.SUIT_FND_REQ
ReplyToQueue: FND.REPLY
Enter Text to Search: iset

```
l_instanc><fnd_hda_orig_timestamp>1272398562382</fnd_hda_orig_timestamp>
nc><fnd_hda_orig_timestamp>1272398524508</fnd_hda_orig_timestamp><fnd_hd
od</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272398830501</fnd_
rod</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272398831539</fn
od</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272398829891</fnd_
od</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272398830368</fnd_
fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272399532531</fnd_hda_
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_instanc>UPM Prod Instance</fnd_hda_orig_appl_instanc><fnd_hda_orig_times
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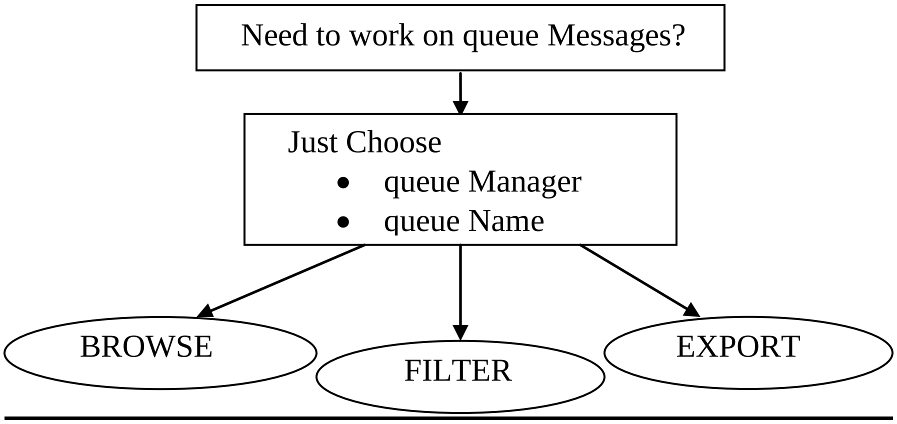
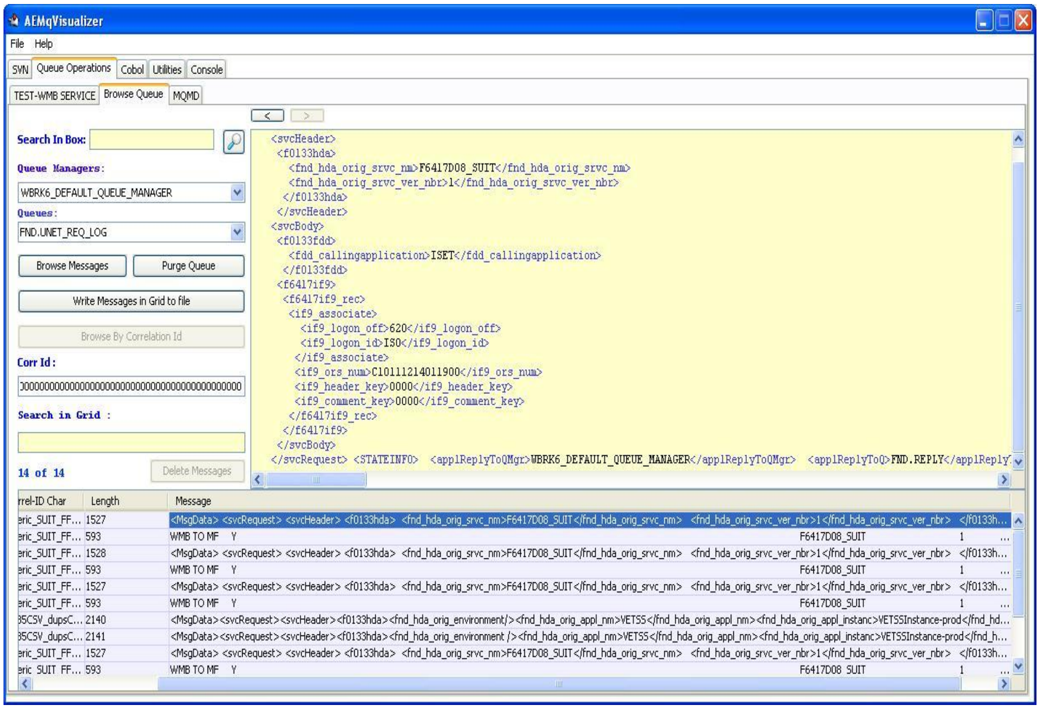
g_appl_instanc><fnd_hda_orig_timestamp>1272401417659</fnd_hda_orig_times
g_appl_instanc><fnd_hda_orig_timestamp>1272401418884</fnd_hda_orig_times
od</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272401418755</fnd_
rod</fnd_hda_orig_appl_instanc><fnd_hda_orig_timestamp>1272401119140</fn
```

```
Request Message:-'2
    Length   :-'2138
 MessageId:-'414D51205742524B365F44454641554C318E9F4E200314
Request Message:-'3
    Length   :-'2139
 MessageId:-'414D51205742524B365F44454641554C318E9F4E200315
Request Message:-'4
    Length   :-'1580
 MessageId:-'414D51205742524B365F44454641554C318E9F4E200316
Request Message:-'5
    Length   :-'1580
 MessageId:-'414D51205742524B365F44454641554C318E9F4E200317
Request Message:-'6
    Length   :-'1756
 MessageId:-'414D51205742524B365F44454641554C318E9F4E200318
Request Message:-'7
    Length   :-'1195
 MessageId:-'414D51205742524B365F44454641554C318E9F4E200319
Request Message:-'8
    Length   :-'1659
 MessageId:-'414D51205742524B365F44454641554C318E9F4E20031A
Request Message:-'9
    Length   :-'1659
 MessageId:-'414D51205742524B365F44454641554C318E9F4E20031B
Request Message:-'10
    Length   :-'758
```

2. *Browse Functionality:* This functionality helps in browsing the queue. A connection is made to queue and all the messages are cached in local machine.



Faster Access: Browsing messages is much faster as all messages are cached in local memory. Session to Queue manger is created for only the time required and then it is closed. Messages are displayed in Message Grid layout in tabular format. Selected message is shown in a message box properly formatted.


AEMqVisualizer
File Help
SVN Queue Operations Cobol Utilities Console
TEST-WMB SERVICE Browse Queue MQMD
Browse Messages
Purge Queue
Write Messages in Grid to file
Browse By Correlation Id
Delete Messages

Search In Box:

Queue Managers: WBRK6_DEFAULT_QUEUE_MANAGER

Queues: FND.UNET_REQ_LOG

Corr Id: 000000000000000000000000000000000000000000000

Search in Grid :

14 of 14

```
<svcHeader>
 <f0133hda>
   <fnd_hda_orig_srvc_nm>F6417D08_SUIT</fnd_hda_orig_srvc_nm>
   <fnd_hda_orig_srvc_ver_nbr>1</fnd_hda_orig_srvc_ver_nbr>
  </f0133hda>
 </svcHeader>
<svcBody>
 <f0133fdd>
   <fdd_callingapplication>ISET</fdd_callingapplication>
  </f0133fdd>
 <f6417if9>
  <f6417if9_rec>
   <if9_associate>
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   </f6417if9_rec>
  </f6417if9>
 </svcBody>
</svcRequest> <STATEINFO>  <applReplyToQMgr>WBRK6_DEFAULT_QUEUE_MANAGER</applReplyToQMgr>  <applReplyToQ>FND.REPLY</applReply
```

rrel-ID Char	Length	Message
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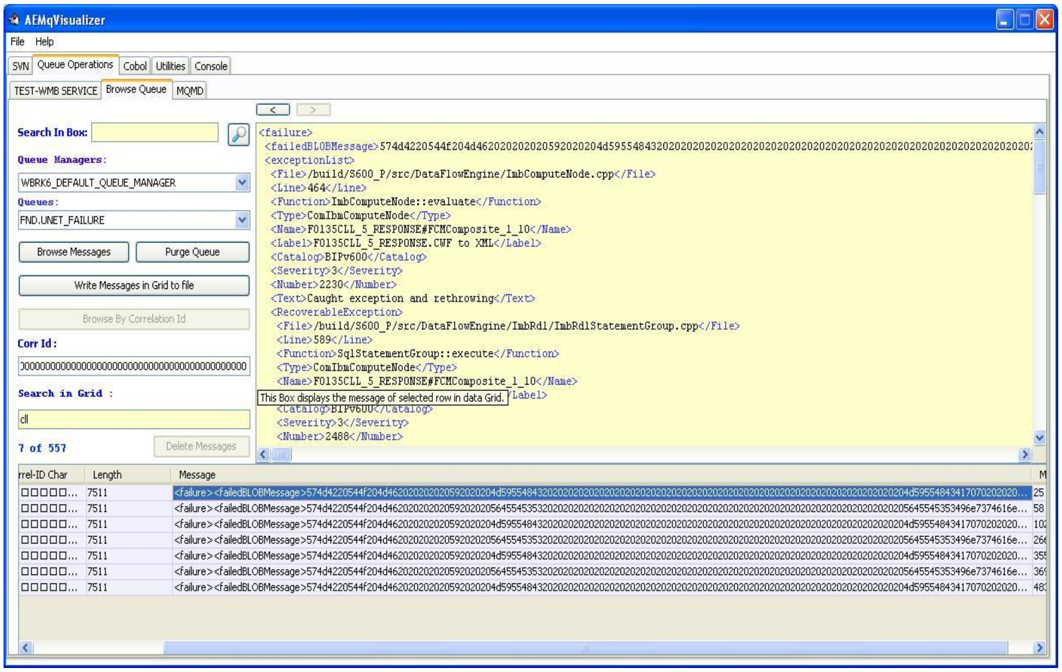
eric_SUIT_FF...	593	WMB TO MF Y F6417D08_SUIT 1 ...
eric_SUIT_FF...	1528	<MsgData> <svcRequest> <svcHeader> <f0133hda> <fnd_hda_orig_srvc_nm>F6417D08_SUIT</fnd_hda_orig_srvc_nm> <fnd_hda_orig_srvc_ver_nbr>1</fnd_hda_orig_srvc_ver_nbr> </f0133h...
eric_SUIT_FF...	593	WMB TO MF Y F6417D08_SUIT 1 ...
eric_SUIT_FF...	1527	<MsgData> <svcRequest> <svcHeader> <f0133hda> <fnd_hda_orig_srvc_nm>F6417D08_SUIT</fnd_hda_orig_srvc_nm> <fnd_hda_orig_srvc_ver_nbr>1</fnd_hda_orig_srvc_ver_nbr> </f0133h...
eric_SUIT_FF...	593	WMB TO MF Y F6417D08_SUIT 1 ...
35CSV_dupsC...	2140	<MsgData><svcRequest><svcHeader><f0133hda><fnd_hda_orig_environment/><fnd_hda_orig_appl_nm>VETSS</fnd_hda_orig_appl_nm><fnd_hda_orig_appl_instanc>VETSSInstance-prod</fnd_hd...
35CSV_dupsC...	2141	<MsgData><svcRequest><svcHeader><f0133hda><fnd_hda_orig_environment /><fnd_hda_orig_appl_nm>VETSS</fnd_hda_orig_appl_nm><fnd_hda_orig_appl_instanc>VETSSInstance-prod</fnd_h...
eric_SUIT_FF...	1527	<MsgData> <svcRequest> <svcHeader> <f0133hda> <fnd_hda_orig_srvc_nm>F6417D08_SUIT</fnd_hda_orig_srvc_nm> <fnd_hda_orig_srvc_ver_nbr>1</fnd_hda_orig_srvc_ver_nbr> </f0133h...
eric_SUIT_FF...	593	WMB TO MF Y F6417D08_SUIT 1 ...

Message Grid: Browsed messages are displayed in Grid layout and messages can be easily filtered based on some keywords.


AEMqVisualizer
File Help
SVN Queue Operations Cobol Utilities Console
TEST-WMB SERVICE Browse Queue MQMD
Browse Messages
Purge Queue
Write Messages in Grid to file
Browse By Correlation Id
Delete Messages

Search In Box:

Queue Managers: WBRK6_DEFAULT_QUEUE_MANAGER

Queues: FND.UNET_FAILURE

Corr Id: 000000000000000000000000000000000000000000000000

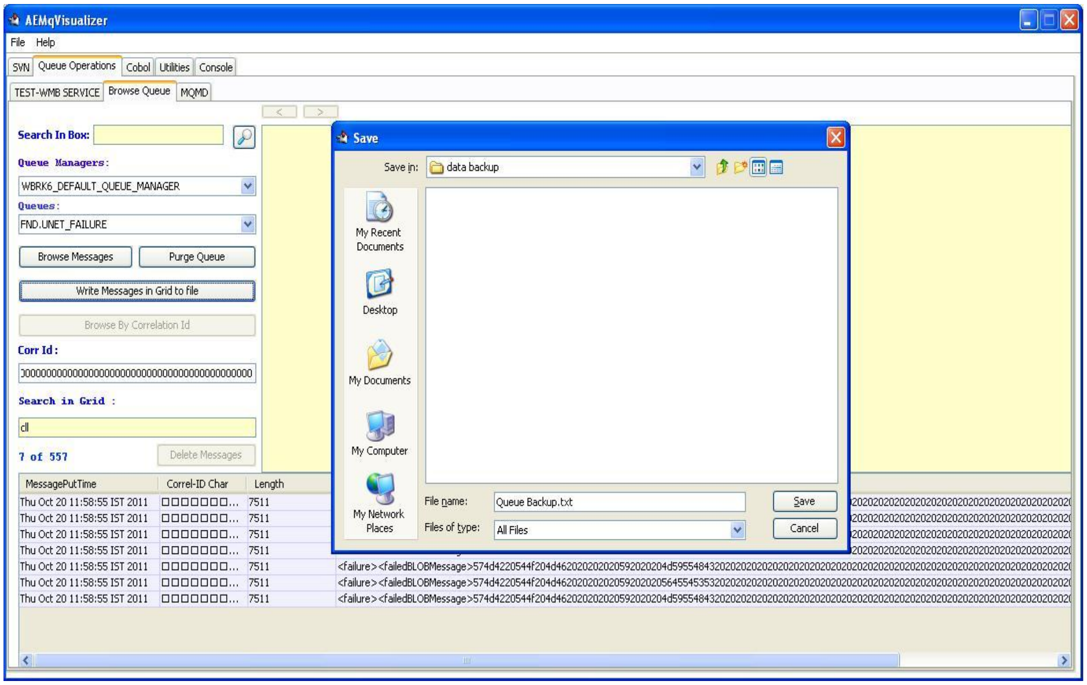
Search in Grid : cll

7 of 557

```
<failure>
 <failedBLOBMessage>574d4220544f204d46202020202059202020204d5955484320202020202020202020202020202020202020202020202020202020202020202020
 <exceptionList>
  <File>/build/S600_P/src/DataFlowEngine/ImbComputeNode.cpp</File>
  <Line>464</Line>
  <Function>ImbComputeNode::evaluate</Function>
  <Type>ComIbmComputeNode</Type>
  <Name>F0135CLL_5_RESPONSE#FCMComposite_1_10</Name>
  <Label>F0135CLL_5_RESPONSE.CWF to XML</Label>
  <Catalog>BIPv600</Catalog>
  <Severity>3</Severity>
  <Number>2230</Number>
  <Text>Caught exception and rethrowing</Text>
  <RecoverableException>
   <File>/build/S600_P/src/DataFlowEngine/ImbRdl/ImbRdlStatementGroup.cpp</File>
   <Line>589</Line>
   <Function>SqlStatementGroup::execute</Function>
   <Type>ComIbmComputeNode</Type>
   <Name>F0135CLL_5_RESPONSE#FCMComposite_1_10</Name>
This Box displays the message of selected row in data Grid. /Label>
   <Catalog>BIPv600</Catalog>
   <Severity>3</Severity>
   <Number>2488</Number>
```

rrel-ID Char	Length	Message	M
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d4620202020205920204d595548432020202020202020202020202020202020202020202020202020202020202020202020204d5955484341707020202020...	25
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d46202020202059202020564554535320202020202020202020202020202020202020202020202020202020202020202020205645545353496e7374616e...	58
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d4620202020205920204d595548432020202020202020202020202020202020202020202020202020202020202020202020204d5955484341707020202020...	10
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d46202020202059202020564554535320202020202020202020202020202020202020202020202020202020202020202020205645545353496e7374616e...	26
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d4620202020205920204d595548432020202020202020202020202020202020202020202020202020202020202020202020204d5955484341707020202020...	35
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d46202020202059202020564554535320202020202020202020202020202020202020202020202020202020202020202020205645545353496e7374616e...	36
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d4620202020205920204d595548432020202020202020202020202020202020202020202020202020202020202020202020204d5955484341707020202020...	48

***Queue Backup**:* Backup of filtered messages can be easily taken to a file. Even all the messages can be easily written to a local file. User can even load the file back to queue without any loss of data. Messages of one queue can also be easily moved/ copied to another queue.



Search In Box:

Queue Managers: WBRK6_DEFAULT_QUEUE_MANAGER

Queues: FND.UNET_FAILURE

Corr Id: 000000000000000000000000000000000000000000000000

Search in Grid : cll

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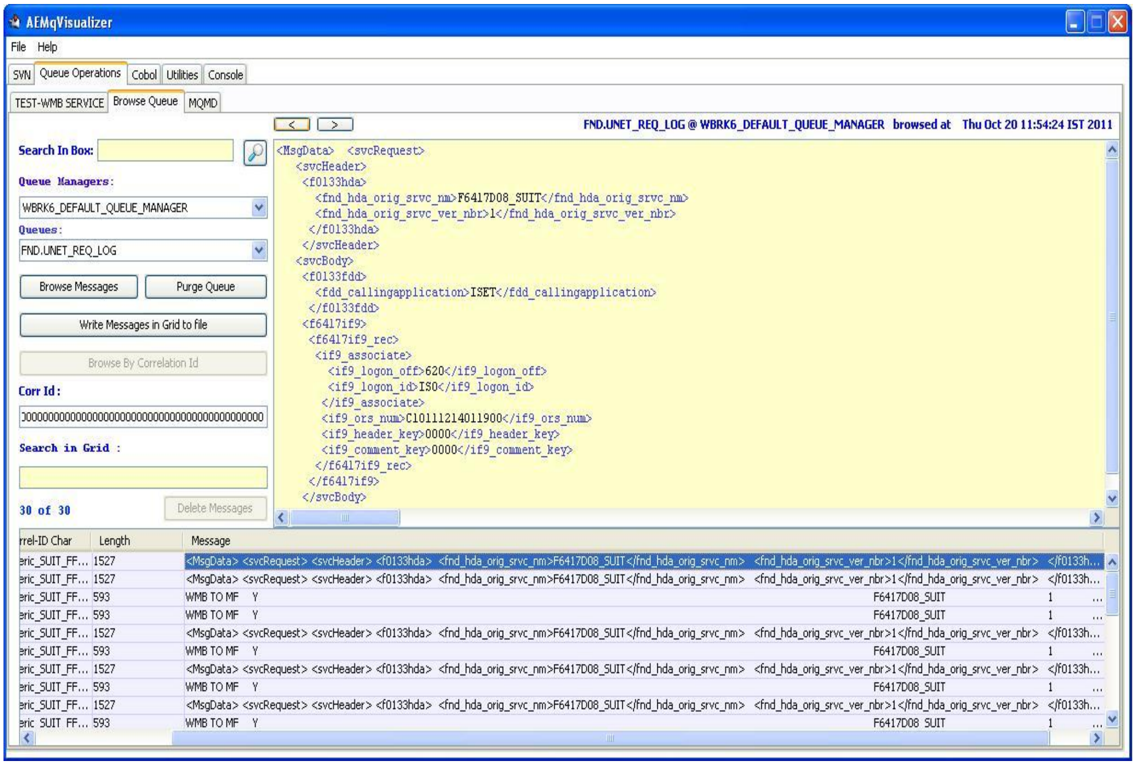
Save in: data backup

File name: Queue Backup.txt

Files of type: All Files

MessagePutTime	Correl-ID Char	Length	
Thu Oct 20 11:58:55 IST 2011	□□□□□□□...	7511	20202020202020202020202020202020202020202020
Thu Oct 20 11:58:55 IST 2011	□□□□□□□...	7511	20202020202020202020202020202020202020202020
Thu Oct 20 11:58:55 IST 2011	□□□□□□□...	7511	20202020202020202020202020202020202020202020
Thu Oct 20 11:58:55 IST 2011	□□□□□□□...	7511	20202020202020202020202020202020202020202020
Thu Oct 20 11:58:55 IST 2011	□□□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d4620202020205920204d5955484320202020202020202020202020202020202020202020202020202020202020202020202020
Thu Oct 20 11:58:55 IST 2011	□□□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d46202020202059202020564554535320202020202020202020202020202020202020202020202020202020202020202020202020
Thu Oct 20 11:58:55 IST 2011	□□□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d4620202020205920204d5955484320202020202020202020202020202020202020202020202020202020202020202020202020

Queue Purging*:* Queues can be easily purged. Messages of Purged queue are automatically loaded to message Grid so that backup can be taken even after clearing the queue.
Queue Browsing History: While browsing a queue, tool automatically saves the browed data messages so that it serves a purpose of snapshot of that queue at that moment. Benefit of this functionality is that user is switching the queues frequently he/she can look in history data instead of browsing same queue again. This reduces the burden on MQ and transfers that workload to tool.



FND.UNET_REQ_LOG @ WBRK6_DEFAULT_QUEUE_MANAGER browsed at Thu Oct 20 11:54:24 IST 2011

Search In Box:

Queue Managers: WBRK6_DEFAULT_QUEUE_MANAGER

Queues: FND.UNET_REQ_LOG

Corr Id : 0000000000000000000000000000000000000000000

Search in Grid :

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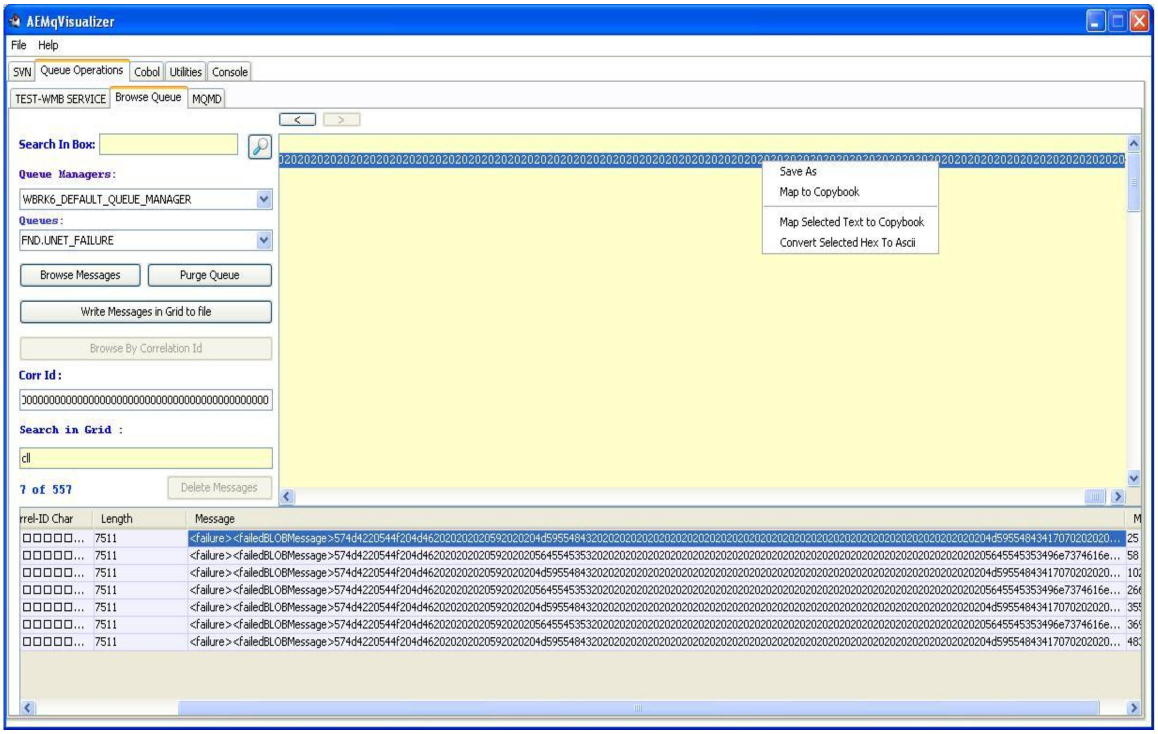
```
<MsgData>  <svcRequest>
   <svcHeader>
    <f0133hda>
      <fnd_hda_orig_srvc_nm>F6417D08_SUIT</fnd_hda_orig_srvc_nm>
      <fnd_hda_orig_srvc_ver_nbr>1</fnd_hda_orig_srvc_ver_nbr>
     </f0133hda>
    </svcHeader>
   <svcBody>
    <f0133fdd>
      <fdd_callingapplication>ISET</fdd_callingapplication>
     </f0133fdd>
    <f6417if9>
     <f6417if9_rec>
      <if9_associate>
        <if9_logon_off>620</if9_logon_off>
        <if9_logon_id>ISO</if9_logon_id>
       </if9_associate>
       <if9_ors_num>C10111214011900</if9_ors_num>
       <if9_header_key>0000</if9_header_key>
       <if9_comment_key>0000</if9_comment_key>
      </f6417if9_rec>
     </f6417if9>
    </svcBody>
```

rrel-ID Char	Length	Message
eric_SUIT_FF...	1527	<MsgData> <svcRequest> <svcHeader> <f0133hda> <fnd_hda_orig_srvc_nm>F6417D08_SUIT</fnd_hda_orig_srvc_nm> <fnd_hda_orig_srvc_ver_nbr>1</fnd_hda_orig_srvc_ver_nbr> </f0133h...
eric_SUIT_FF...	1527	<MsgData> <svcRequest> <svcHeader> <f0133hda> <fnd_hda_orig_srvc_nm>F6417D08_SUIT</fnd_hda_orig_srvc_nm> <fnd_hda_orig_srvc_ver_nbr>1</fnd_hda_orig_srvc_ver_nbr> </f0133h...
eric_SUIT_FF...	593	WMB TO MF Y F6417D08_SUIT 1 ...
eric_SUIT_FF...	593	WMB TO MF Y F6417D08_SUIT 1 ...
eric_SUIT_FF...	1527	<MsgData> <svcRequest> <svcHeader> <f0133hda> <fnd_hda_orig_srvc_nm>F6417D08_SUIT</fnd_hda_orig_srvc_nm> <fnd_hda_orig_srvc_ver_nbr>1</fnd_hda_orig_srvc_ver_nbr> </f0133h...
eric_SUIT_FF...	593	WMB TO MF Y F6417D08_SUIT 1 ...
eric_SUIT_FF...	1527	<MsgData> <svcRequest> <svcHeader> <f0133hda> <fnd_hda_orig_srvc_nm>F6417D08_SUIT</fnd_hda_orig_srvc_nm> <fnd_hda_orig_srvc_ver_nbr>1</fnd_hda_orig_srvc_ver_nbr> </f0133h...
eric_SUIT_FF...	593	WMB TO MF Y F6417D08_SUIT 1 ...
eric_SUIT_FF...	1527	<MsgData> <svcRequest> <svcHeader> <f0133hda> <fnd_hda_orig_srvc_nm>F6417D08_SUIT</fnd_hda_orig_srvc_nm> <fnd_hda_orig_srvc_ver_nbr>1</fnd_hda_orig_srvc_ver_nbr> </f0133h...
eric_SUIT_FF...	593	WMB TO MF Y F6417D08_SUIT 1 ...

Conversion/Mapping Functionalities for Browsed data: Queues many time bridge the disparate systems due to which data may be in many different formats and encoding. To make it more readable tool has implicit conversion code to convert data to readable ASCII format. Hex data can be easily converted to ASCII:



Search In Box:

Queue Managers: WBRK6_DEFAULT_QUEUE_MANAGER

Queues: FND.UNET_FAILURE

Corr Id: 000000000000000000000000000000000000000000000

Search in Grid : cll

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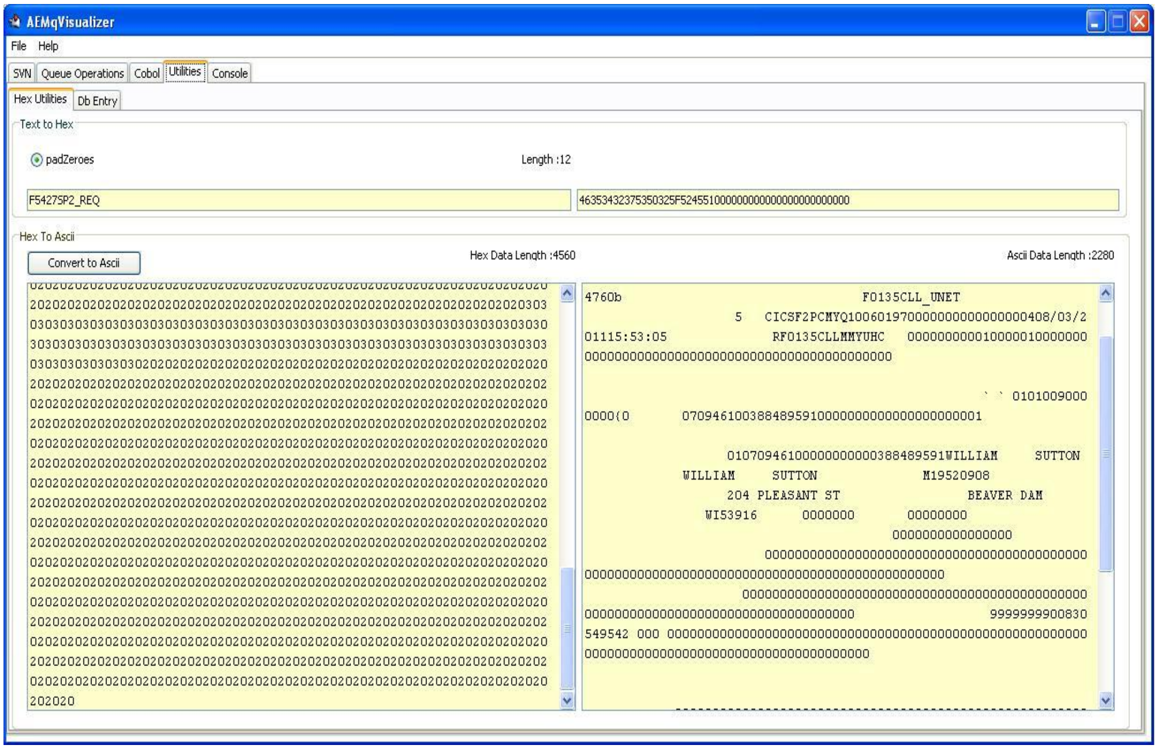
```
0202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020202020
```

rrel-ID Char	Length	Message	M
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d46202020202059202020204d5955484320202020202020202020202020202020202020202020202020202020202020202020202020202020202020204d5955484341707020202020...	25
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d4620202020205920202056455453532020202020202020202020202020202020202020202020202020202020202020202020202020202020202020564554535353496e7374616e...	58
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d46202020202059202020204d5955484320202020202020202020202020202020202020202020202020202020202020202020202020202020202020204d5955484341707020202020...	102
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d4620202020205920202056455453532020202020202020202020202020202020202020202020202020202020202020202020202020202020202020564554535353496e7374616e...	266
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d46202020202059202020204d5955484320202020202020202020202020202020202020202020202020202020202020202020202020202020202020204d5955484341707020202020...	355
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d4620202020205920202056455453532020202020202020202020202020202020202020202020202020202020202020202020202020202020202020564554535353496e7374616e...	369
□□□□□...	7511	<failure><failedBLOBMessage>574d4220544f204d46202020202059202020204d5955484320202020202020202020202020202020202020202020202020202020202020202020202020202020202020204d5955484341707020202020...	483

Converted data can be viewed in Hex tab:



● padZeroes Length :12

F5427SP2_REQ 46353432375350325F524551000000000000000000000000

Hex Data Length :4560 Ascii Data Length :2280

```
020202020202020202020202020202020202020202020202020202020202020202020
202020202020202020202020202020202020202020202020202020202020202020303
030303030303030303030303030303030303030303030303030303030303030303030
303030303030303030303030303030303030303030303030303030303030303030303
030303030303030202020202020202020202020202020202020202020202020202020
202020202020202020202020202020202020202020202020202020202020202020202
020202020202020202020202020202020202020202020202020202020202020202020
202020202020202020202020202020202020202020202020202020202020202020202
020202020202020202020202020202020202020202020202020202020202020202020
202020202020202020202020202020202020202020202020202020202020202020202
020202020202020202020202020202020202020202020202020202020202020202020
202020202020202020202020202020202020202020202020202020202020202020202
020202020202020202020202020202020202020202020202020202020202020202020
202020202020202020202020202020202020202020202020202020202020202020202
020202020202020202020202020202020202020202020202020202020202020202020
202020202020202020202020202020202020202020202020202020202020202020202
020202020202020202020202020202020202020202020202020202020202020202020
202020202020202020202020202020202020202020202020202020202020202020202
020202020202020202020202020202020202020202020202020202020202020202020
202020202020202020202020202020202020202020202020202020202020202020202
020202020202020202020202020202020202020202020202020202020202020202020
202020
```

```
4760b                                F0135CLL_UNET
                          5   CICSF2PCMYQ10060197000000000000000000408/03/2
01115:53:05              RF0135CLLMMYUHC   00000000001000001000000
000000000000000000000000000000000000000000


                                                              ` ` 0101009000
0000(0       07094610038848959100000000000000000000001

                          0107094610000000000003884895 91WILLIAM     SUTTON
                 WILLIAM     SUTTON                    M19520908
                        204 PLEASANT ST                      BEAVER DAM
                     WI53916       0000000        00000000
                                                  0000000000000000
                                0000000000000000000000000000000000000000000
000000000000000000000000000000000000000000000000
                             000000000000000000000000000000000000000000000
00000000000000000000000000000000000                          9999999900830
549542 000 00000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000

             -------------------------------------------------------------
```

File Aide on Windows

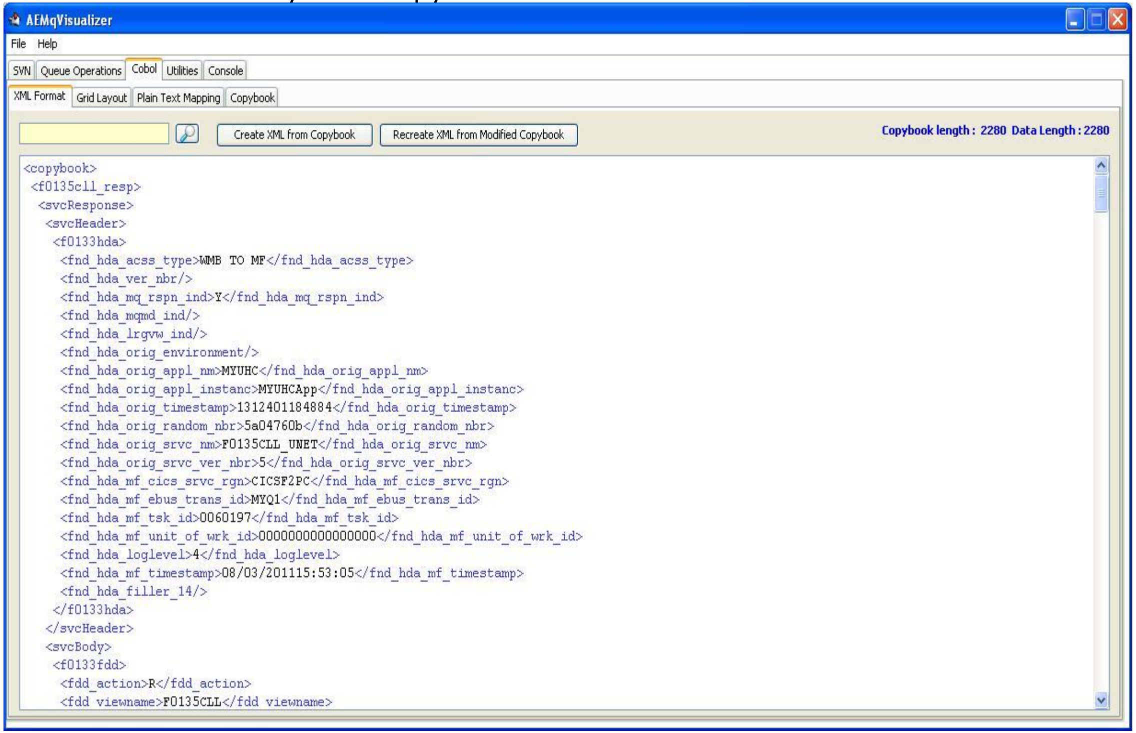
Many times data in queue is in plain text format and can be understood properly only if it is mapped to appropriate copybook. For mapping a test data to copybook File Aide is used which is a mainframe tool, i.e. just for mapping purpose that data need to be uploaded to Mainframe and then opened by File Aide. In this tool there is a separate tab for COBOL operations which provide functionalities parallel to file aide.

A message in queue can easily be mapped to a copybook. A user can provide the copybook by following three options:

- Copybook file can directly be loaded by browsing the files from local disk. Many teams have these copybooks on their hard disk and this functionality would be useful for such scenarios.
- Copybook can be directly loaded from any version control (SVN, VSS, etc) link. If a user has access to a version control link, then that link can be directly opened in inbuilt browser of tool.
- **User can also get the copybook from mainframe at run time. If user has access to mainframe PDS, then he/she can provide the path of PDS in tool itself and it will be picked at run time from mainframe**.

There are four sub-tabs in COBOL tab which display the mapped data in different formats.

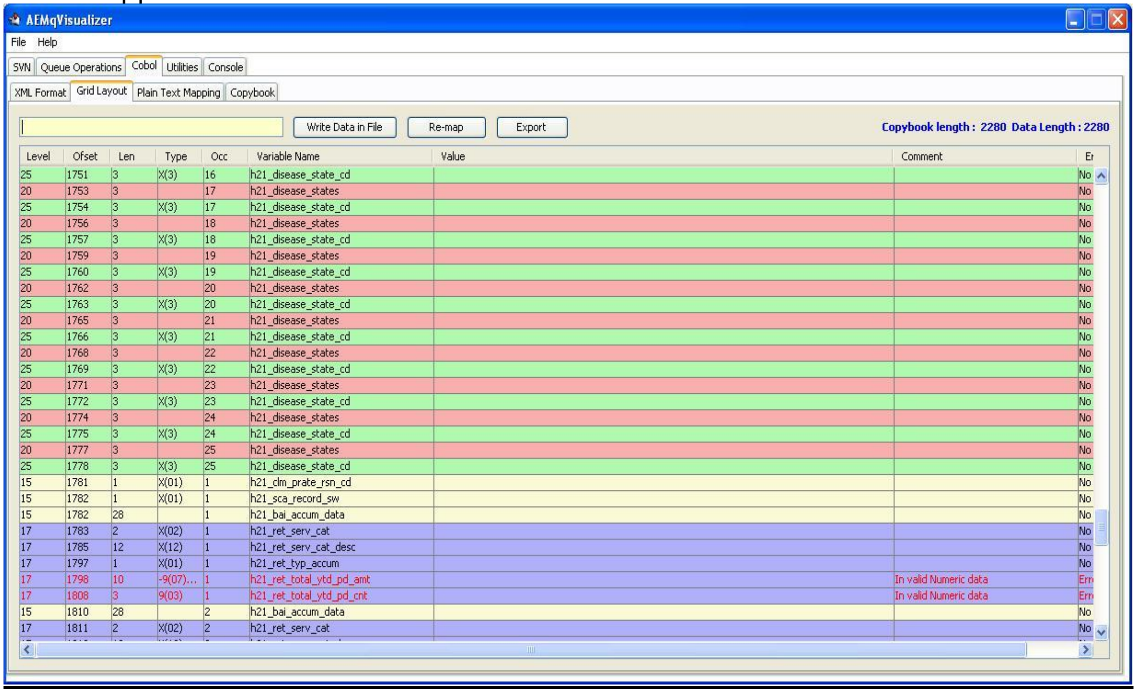
- ***XML Format:*** In this tab mapped data is displayed in XML format. Tool generates the same tag name as copybook field names. A sample XML can also be created directly from copybook.



Copybook length : 2280 Data Length : 2280

```
<copybook>
 <f0135cll_resp>
  <svcResponse>
   <svcHeader>
    <f0133hda>
     <fnd_hda_acss_type>WMB TO MF</fnd_hda_acss_type>
     <fnd_hda_ver_nbr/>
     <fnd_hda_mq_rspn_ind>Y</fnd_hda_mq_rspn_ind>
     <fnd_hda_mqmd_ind/>
     <fnd_hda_lrgvw_ind/>
     <fnd_hda_orig_environment/>
     <fnd_hda_orig_appl_nm>MYUHC</fnd_hda_orig_appl_nm>
     <fnd_hda_orig_appl_instanc>MYUHCApp</fnd_hda_orig_appl_instanc>
     <fnd_hda_orig_timestamp>1312401184884</fnd_hda_orig_timestamp>
     <fnd_hda_orig_random_nbr>5a04760b</fnd_hda_orig_random_nbr>
     <fnd_hda_orig_srvc_nm>F0135CLL_UNET</fnd_hda_orig_srvc_nm>
     <fnd_hda_orig_srvc_ver_nbr>5</fnd_hda_orig_srvc_ver_nbr>
     <fnd_hda_mf_cics_srvc_rgn>CICSF2PC</fnd_hda_mf_cics_srvc_rgn>
     <fnd_hda_mf_ebus_trans_id>MYQ1</fnd_hda_mf_ebus_trans_id>
     <fnd_hda_mf_tsk_id>0060197</fnd_hda_mf_tsk_id>
     <fnd_hda_mf_unit_of_wrk_id>0000000000000000</fnd_hda_mf_unit_of_wrk_id>
     <fnd_hda_loglevel>4</fnd_hda_loglevel>
     <fnd_hda_mf_timestamp>08/03/201115:53:05</fnd_hda_mf_timestamp>
     <fnd_hda_filler_14/>
    </f0133hda>
   </svcHeader>
   <svcBody>
    <f0133fdd>
     <fdd_action>R</fdd_action>
     <fdd_viewname>F0135CLL</fdd_viewname>
```

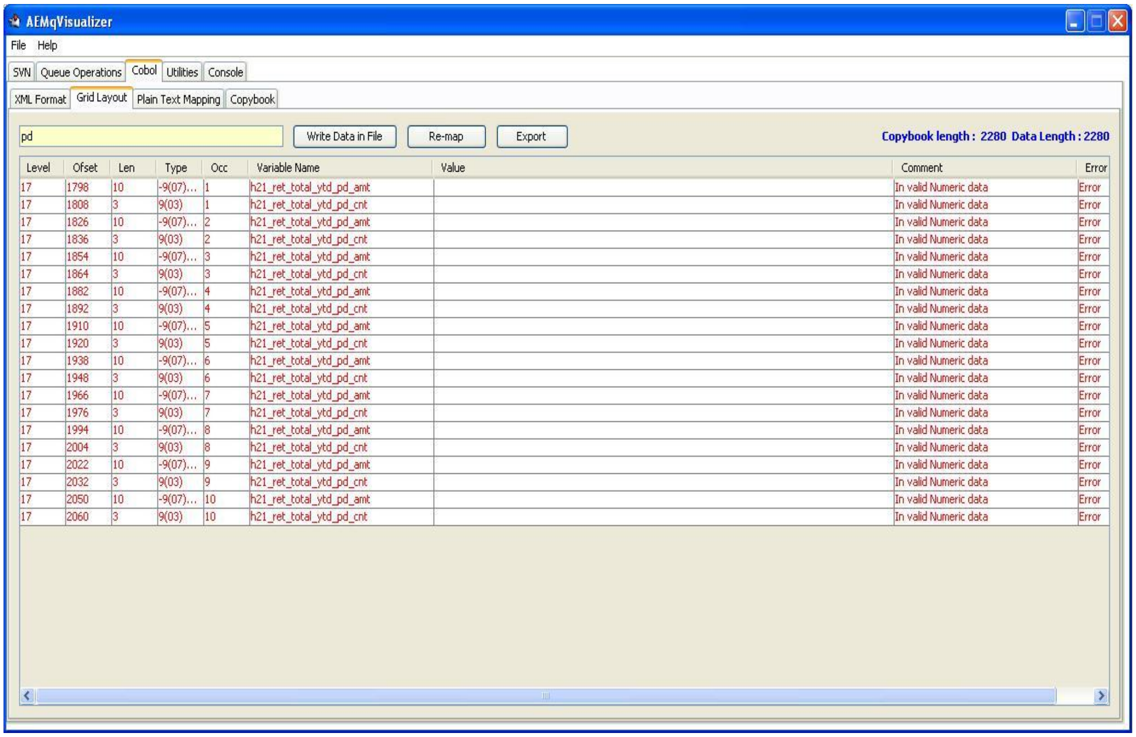
- ***Grid Layout:*** It is mostly used sub-tab under COBOL tab. In this tab mapped data is displayed in tabular grid layout. Different levels have different colors associated with them, i.e. all the rows with same level will have same background color. All numeric fields are displayed in blue font. Any field not mapping properly is displayed in red font. There is lot of dynamic mapping functionality in this tab. For testing purpose data can be modified and remapped in this tab itself. Modified data can be saved to file as well.



Copybook length : 2280 Data Length : 2280

Level	Ofset	Len	Type	Occ	Variable Name	Value	Comment	Er
25	1751	3	X(3)	16	h21_disease_state_cd			No
20	1753	3		17	h21_disease_states			No
25	1754	3	X(3)	17	h21_disease_state_cd			No
20	1756	3		18	h21_disease_states			No
25	1757	3	X(3)	18	h21_disease_state_cd			No
20	1759	3		19	h21_disease_states			No
25	1760	3	X(3)	19	h21_disease_state_cd			No
20	1762	3		20	h21_disease_states			No
25	1763	3	X(3)	20	h21_disease_state_cd			No
20	1765	3		21	h21_disease_states			No
25	1766	3	X(3)	21	h21_disease_state_cd			No
20	1768	3		22	h21_disease_states			No
25	1769	3	X(3)	22	h21_disease_state_cd			No
20	1771	3		23	h21_disease_states			No
25	1772	3	X(3)	23	h21_disease_state_cd			No
20	1774	3		24	h21_disease_states			No
25	1775	3	X(3)	24	h21_disease_state_cd			No
20	1777	3		25	h21_disease_states			No
25	1778	3	X(3)	25	h21_disease_state_cd			No
15	1781	1	X(01)	1	h21_clm_prate_rsn_cd			No
15	1782	1	X(01)	1	h21_sca_record_sw			No
15	1782	28		1	h21_bai_accum_data			No
17	1783	2	X(02)	1	h21_ret_serv_cat			No
17	1785	12	X(12)	1	h21_ret_serv_cat_desc			No
17	1797	1	X(01)	1	h21_ret_typ_accum			No
17	1798	10	-9(07)...	1	h21_ret_total_ytd_pd_amt		In valid Numeric data	Err
17	1808	3	9(03)	1	h21_ret_total_ytd_pd_cnt		In valid Numeric data	Err
15	1810	28		2	h21_bai_accum_data			No
17	1811	2	X(02)	2	h21_ret_serv_cat			No

Filtering can also be performed on data grid. Data in data Grid can also be exported to excel sheet.

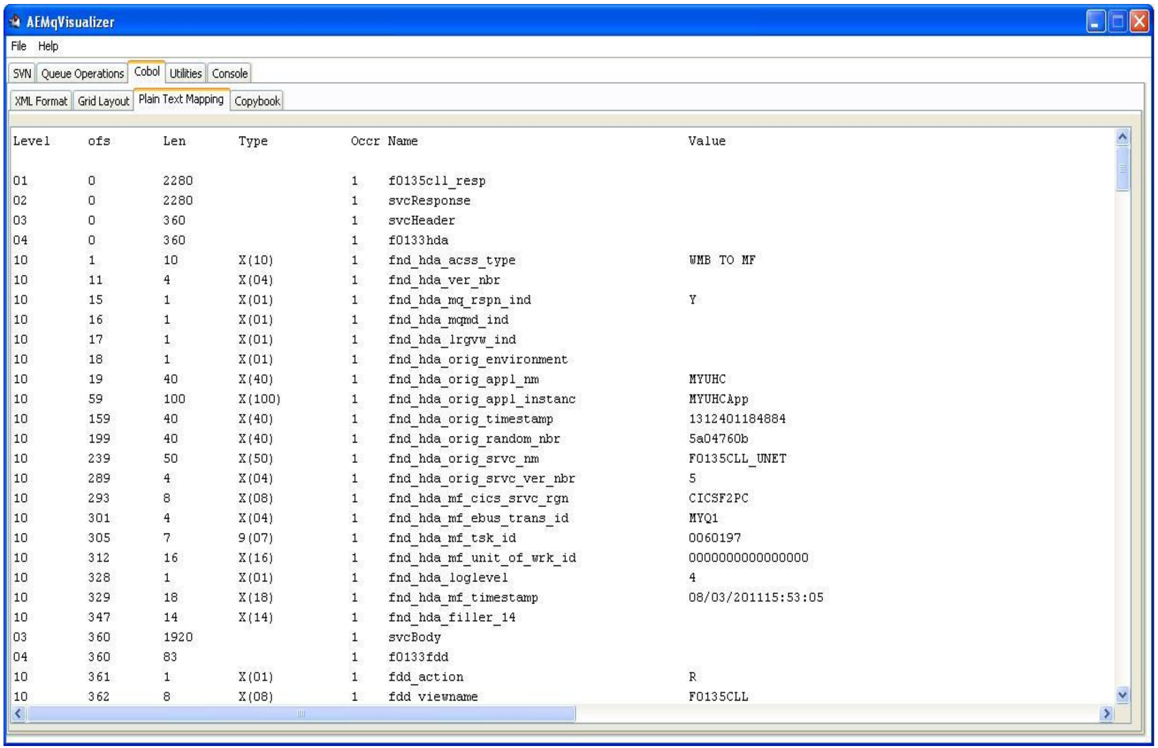


pd

Copybook length : 2280 Data Length : 2280

Level	Ofset	Len	Type	Occ	Variable Name	Value	Comment	Error
17	1798	10	-9(07)...	1	h21_ret_total_ytd_pd_amt		In valid Numeric data	Error
17	1808	3	9(03)	1	h21_ret_total_ytd_pd_cnt		In valid Numeric data	Error
17	1826	10	-9(07)...	2	h21_ret_total_ytd_pd_amt		In valid Numeric data	Error
17	1836	3	9(03)	2	h21_ret_total_ytd_pd_cnt		In valid Numeric data	Error
17	1854	10	-9(07)...	3	h21_ret_total_ytd_pd_amt		In valid Numeric data	Error
17	1864	3	9(03)	3	h21_ret_total_ytd_pd_cnt		In valid Numeric data	Error
17	1882	10	-9(07)...	4	h21_ret_total_ytd_pd_amt		In valid Numeric data	Error
17	1892	3	9(03)	4	h21_ret_total_ytd_pd_cnt		In valid Numeric data	Error
17	1910	10	-9(07)...	5	h21_ret_total_ytd_pd_amt		In valid Numeric data	Error
17	1920	3	9(03)	5	h21_ret_total_ytd_pd_cnt		In valid Numeric data	Error
17	1938	10	-9(07)...	6	h21_ret_total_ytd_pd_amt		In valid Numeric data	Error
17	1948	3	9(03)	6	h21_ret_total_ytd_pd_cnt		In valid Numeric data	Error
17	1966	10	-9(07)...	7	h21_ret_total_ytd_pd_amt		In valid Numeric data	Error
17	1976	3	9(03)	7	h21_ret_total_ytd_pd_cnt		In valid Numeric data	Error
17	1994	10	-9(07)...	8	h21_ret_total_ytd_pd_amt		In valid Numeric data	Error
17	2004	3	9(03)	8	h21_ret_total_ytd_pd_cnt		In valid Numeric data	Error
17	2022	10	-9(07)...	9	h21_ret_total_ytd_pd_amt		In valid Numeric data	Error
17	2032	3	9(03)	9	h21_ret_total_ytd_pd_cnt		In valid Numeric data	Error
17	2050	10	-9(07)...	10	h21_ret_total_ytd_pd_amt		In valid Numeric data	Error
17	2060	3	9(03)	10	h21_ret_total_ytd_pd_cnt		In valid Numeric data	Error

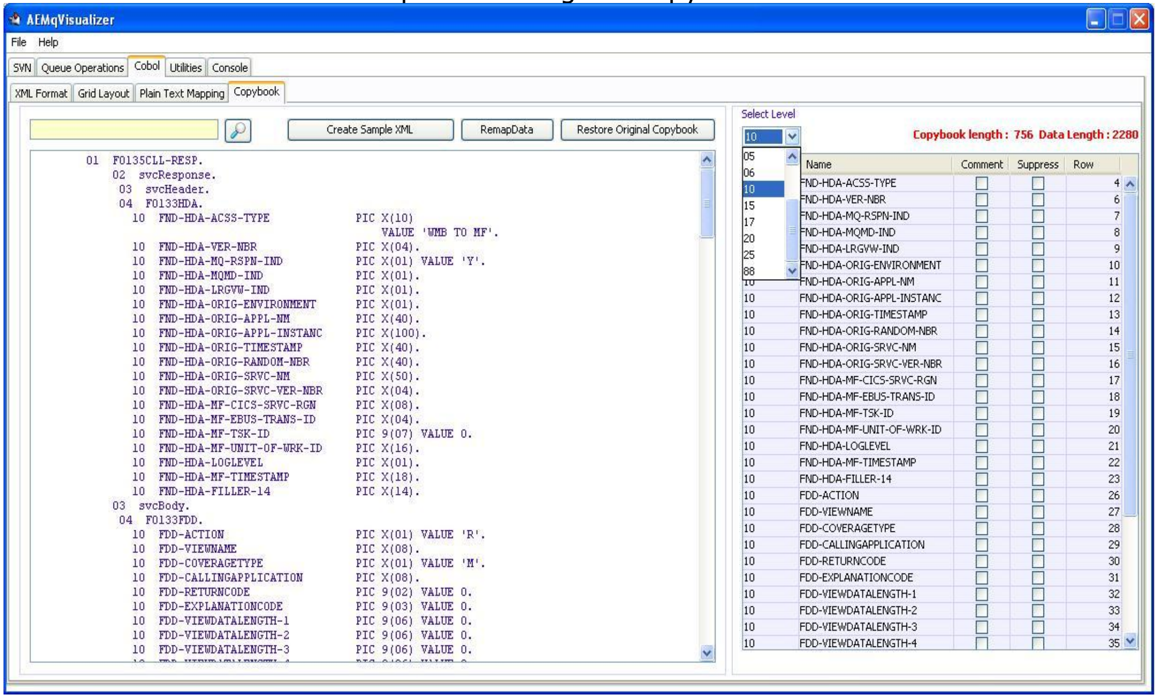
- ***Plain Text Layout:*** It's the same data in grid format in plain text layout. This layout is mainly used for getting attachments for Quality Centre or any other defect tracker.



```
Level     ofs       Len       Type           Occr Name                                         Value

01        0         2280                     1    f0135cll_resp
02        0         2280                     1    svcResponse
03        0         360                      1    svcHeader
04        0         360                      1    f0133hda
10        1         10        X(10)          1    fnd_hda_acss_type                            WMB TO MF
10        11        4         X(04)          1    fnd_hda_ver_nbr
10        15        1         X(01)          1    fnd_hda_mq_rspn_ind                          Y
10        16        1         X(01)          1    fnd_hda_mqmd_ind
10        17        1         X(01)          1    fnd_hda_lrgvw_ind
10        18        1         X(01)          1    fnd_hda_orig_environment
10        19        40        X(40)          1    fnd_hda_orig_appl_nm                         MYUHC
10        59        100       X(100)         1    fnd_hda_orig_appl_instanc                    MYUHCApp
10        159       40        X(40)          1    fnd_hda_orig_timestamp                       1312401184884
10        199       40        X(40)          1    fnd_hda_orig_random_nbr                      5a04760b
10        239       50        X(50)          1    fnd_hda_orig_srvc_nm                         F0135CLL_UNET
10        289       4         X(04)          1    fnd_hda_orig_srvc_ver_nbr                    5
10        293       8         X(08)          1    fnd_hda_mf_cics_srvc_rgn                     CICSF2PC
10        301       4         X(04)          1    fnd_hda_mf_ebus_trans_id                     MYQ1
10        305       7         9(07)          1    fnd_hda_mf_tsk_id                            0060197
10        312       16        X(16)          1    fnd_hda_mf_unit_of_wrk_id                    0000000000000000
10        328       1         X(01)          1    fnd_hda_loglevel                             4
10        329       18        X(18)          1    fnd_hda_mf_timestamp                         08/03/201115:53:05
10        347       14        X(14)          1    fnd_hda_filler_14
03        360       1920                     1    svcBody
04        360       83                       1    f0133fdd
10        361       1         X(01)          1    fdd_action                                   R
10        362       8         X(08)          1    fdd viewname                                 F0135CLL
```

- ***Copybook Editor:*** This tab provides dedicated functionalities for editing copybooks. Many times data records from queue do not mach exactly with the copybook, so in this tab copybook can be modified and used at run time. There is a level filter which helps in filtering the copybook based on a level.



```
       01  F0135CLL-RESP.
           02  svcResponse.
            03  svcHeader.
            04  F0133HDA.
              10  FND-HDA-ACSS-TYPE            PIC X(10)
                                                   VALUE 'WMB TO MF'.
              10  FND-HDA-VER-NBR              PIC X(04).
              10  FND-HDA-MQ-RSPN-IND          PIC X(01) VALUE 'Y'.
              10  FND-HDA-MQMD-IND             PIC X(01).
              10  FND-HDA-LRGVW-IND            PIC X(01).
              10  FND-HDA-ORIG-ENVIRONMENT     PIC X(01).
              10  FND-HDA-ORIG-APPL-NM         PIC X(40).
              10  FND-HDA-ORIG-APPL-INSTANC    PIC X(100).
              10  FND-HDA-ORIG-TIMESTAMP       PIC X(40).
              10  FND-HDA-ORIG-RANDOM-NBR      PIC X(40).
              10  FND-HDA-ORIG-SRVC-NM         PIC X(50).
              10  FND-HDA-ORIG-SRVC-VER-NBR    PIC X(04).
              10  FND-HDA-MF-CICS-SRVC-RGN     PIC X(08).
              10  FND-HDA-MF-EBUS-TRANS-ID     PIC X(04).
              10  FND-HDA-MF-TSK-ID            PIC 9(07) VALUE 0.
              10  FND-HDA-MF-UNIT-OF-WRK-ID    PIC X(16).
              10  FND-HDA-LOGLEVEL             PIC X(01).
              10  FND-HDA-MF-TIMESTAMP         PIC X(18).
              10  FND-HDA-FILLER-14            PIC X(14).
           03  svcBody.
            04  F0133FDD.
              10  FDD-ACTION                   PIC X(01) VALUE 'R'.
              10  FDD-VIEWNAME                 PIC X(08).
              10  FDD-COVERAGETYPE             PIC X(01) VALUE 'M'.
              10  FDD-CALLINGAPPLICATION       PIC X(08).
              10  FDD-RETURNCODE               PIC 9(02) VALUE 0.
              10  FDD-EXPLANATIONCODE          PIC 9(03) VALUE 0.
              10  FDD-VIEWDATALENGTH-1         PIC 9(06) VALUE 0.
              10  FDD-VIEWDATALENGTH-2         PIC 9(06) VALUE 0.
              10  FDD-VIEWDATALENGTH-3         PIC 9(06) VALUE 0.
```

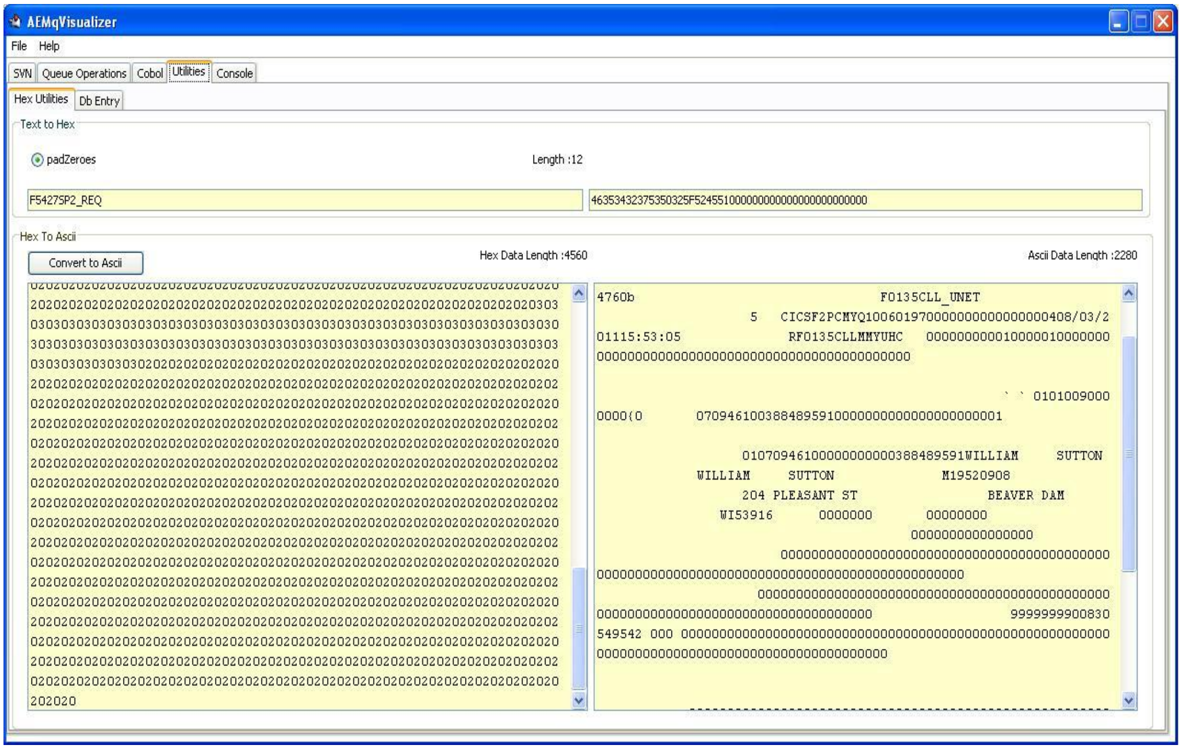
Copybook length : 756 Data Length : 2280

	Name	Comment	Suppress	Row
	FND-HDA-ACSS-TYPE	□	□	4
	FND-HDA-VER-NBR	□	□	6
	FND-HDA-MQ-RSPN-IND	□	□	7
	FND-HDA-MQMD-IND	□	□	8
	FND-HDA-LRGVW-IND	□	□	9
	FND-HDA-ORIG-ENVIRONMENT	□	□	10
	FND-HDA-ORIG-APPL-NM	□	□	11
10	FND-HDA-ORIG-APPL-INSTANC	□	□	12
10	FND-HDA-ORIG-TIMESTAMP	□	□	13
10	FND-HDA-ORIG-RANDOM-NBR	□	□	14
10	FND-HDA-ORIG-SRVC-NM	□	□	15
10	FND-HDA-ORIG-SRVC-VER-NBR	□	□	16
10	FND-HDA-MF-CICS-SRVC-RGN	□	□	17
10	FND-HDA-MF-EBUS-TRANS-ID	□	□	18
10	FND-HDA-MF-TSK-ID	□	□	19
10	FND-HDA-MF-UNIT-OF-WRK-ID	□	□	20
10	FND-HDA-LOGLEVEL	□	□	21
10	FND-HDA-MF-TIMESTAMP	□	□	22
10	FND-HDA-FILLER-14	□	□	23
10	FDD-ACTION	□	□	26
10	FDD-VIEWNAME	□	□	27
10	FDD-COVERAGETYPE	□	□	28
10	FDD-CALLINGAPPLICATION	□	□	29
10	FDD-RETURNCODE	□	□	30
10	FDD-EXPLANATIONCODE	□	□	31
10	FDD-VIEWDATALENGTH-1	□	□	32
10	FDD-VIEWDATALENGTH-2	□	□	33
10	FDD-VIEWDATALENGTH-3	□	□	34
10	FDD-VIEWDATALENGTH-4	□	□	35

Conversion Utilities

MQ series is primarily used to integrate disparate systems and platforms, due to which we have many times data in different formats. Following data conversions are already available in tool:

- Hexadecimal to ASCII Conversion.
- ASCII to Hexadecimal Conversion.
- EBCDIC to ASCII Conversion and vice versa



● padZeroes

Length :12

F5427SP2_REQ

463534323753503 25F5245510000000000000000000000000

Hex Data Length :4560

Ascii Data Length :2280

```
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303030303030303030303030303030303030303030303030303030303030303030303
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202020202020202020202020202020202020202020202020202020202020202020202
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202020
```

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01115:53:05              RF0135CLLMMYUHC   0000000000100000100000000
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                                                     ` ` 0101009000
0000(0       070946100388489591000000000000000000000001

                    0107094610000000000000388489591WILLIAM     SUTTON
             WILLIAM     SUTTON                M19520908
                    204 PLEASANT ST                      BEAVER DAM
                WI53916      0000000       00000000
                                                 0000000000000000
                         000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000
                      00000000000000000000000000000000000000000000000
0000000000000000000000000000000000000                  9999999900830
549542 000 0000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000
```