

Bank of America POC Overview and Details

Phase 1 requirements were to provision a Compute Services image for the third party Volante engine and have a PaaS environment with 12cpus available for the databases and SOA / MFT clusters.

Gordon Crump obtained a Compute Service Trial account:

Identity Domain: **usvolanteb96255**

un / passwd: <Gordon can assign new users to the account>

A compute VM was created for Volante. A 100GB disk partition was also added to this VM.

Summary

| | | | |
|-----------|-------|--------|----------------|
| 1 | 4 | 30.0GB | 110GB |
| instances | OCPUs | memory | storage in use |

Instances

An Oracle Compute Cloud Service instance is a virtual machine running a specific operating system, with the CPU and memory resources that you specify.

Category: All Show: All Create Instance

| Name | Status | OCPUs | Memory | Storage | Public IP | Private IP |
|---------|---------|-------|---------|---------|---------------|-------------|
| Volante | Running | 4 | 30.0 GB | 110 GB | 129.144.54.63 | 10.106.63.2 |

Volante installed their financial conversion engine and a Weblogic domain to host the Web Service endpoint used by the SOA composite to call into the engine. The URL is:

<http://129.144.54.63:8080/volante-transformation/transformation>

The 12cpu PaaS GSE account was allocated:



Identify Domain: **metcsgse000742**

Current un/passwd: **cloud.admin / AeONiAN@4DeaN**



Four VMs are allocated, one each for the SOA/MFT DB and Volante DB (High Performance):

Services

Enter a full or partial service name Create Service

| | | |
|---|--|--|
|  SOADB Version: 12.1.0.2 Edition: Enterprise Edition | Created On: Mar 29, 2016 1:18:42 PM UTC | OCPUs: 2 Memory: 15 GB Storage: 205 GB |
|  VolanteDB Version: 12.1.0.2 Edition: Enterprise Edition - High Performance | Created On: Mar 29, 2016 12:49:22 PM UTC | OCPUs: 4 Memory: 30 GB Storage: 205 GB |

Nodes



| | | | | |
|---|---|--|--|---|
|  | SOADB Public IP: 129.144.23.149 | SQL *Net Port: 1521 SID: ORCL PDB Name: PDB1 | OCPUs: 2 Memory: 15 GB Storage: 205 GB |  |
|---|---|--|--|---|

► Activity

Additional Information [\(show more\)](#)

Identity Domain: metcsgse00742
Edition: Enterprise Edition
Service Level: Oracle Database Cloud Service
Subscription Type: Monthly

Nodes

| | | | | |
|---|--|--|--|---|
|  | VolanteDB Public IP: 129.144.23.52 | SQL *Net Port: 1521 SID: ORCL PDB Name: PDB1 | OCPUs: 4 Memory: 30 GB Storage: 205 GB |  |
|---|--|--|--|---|


► Activity

Additional Information [\(show more\)](#)





Identity Domain: metcsgse00742
Edition: Enterprise Edition - High Performance
Service Level: Oracle Database Cloud Service
Subscription Type: Monthly

For the middle tier SOA and MFT clusters were created:

Instances

Search By Instance Name 

[Create Instance](#)

| | | | | |
|---|---|---|---|---|
|  | bofaMFT1 Version: 12.1.3.0.5 Edition: Suite Topology: MFT Cluster | Nodes: 1 Created On: Mar 29, 2016 3:21:22 PM UTC | OCPUs: 2 Memory: 30.0 GB Storage: 73 GB |  |
|  | bofaSOA1 Version: 12.1.3.0.5 Edition: Suite Topology: SOA Cluster | Nodes: 1 Created On: Mar 29, 2016 2:22:57 PM UTC | OCPUs: 2 Memory: 30.0 GB Storage: 73 GB |  |

SOA

As of May 19, 2016 7:22:38 PM UTC ↻

| Nodes | OCPUs | Memory | Storage | Public IPs |
|-------|-------|--------|---------|------------|
| 1 | 2 | 30 GB | 73 GB | 1 |

Virtual Machines

Retrieve real-time monitoring information ⚙

| | | |
|---|--|---|
|  | Administration Server Domain: bofaSOA1_domain Managed Server: bofaSOA1_server_1 Public IP: 129.144.21.87 | OCPUs: 2 Memory: 30.0 GB Storage: 73 GB |
|---|--|---|

MFT

As of May 19, 2016 7:23:21 PM UTC ↻

| Nodes | OCPUs | Memory | Storage | Public IPs |
|-------|-------|--------|---------|------------|
| 1 | 2 | 30 GB | 73 GB | 1 |

Virtual Machines

Retrieve real-time monitoring information ⚙

| | | |
|---|---|---|
|  | Administration Server Domain: bofaMFT1_domain Managed Server: bofaMFT1_server_1 Public IP: 129.144.21.156 | OCPUs: 2 Memory: 30.0 GB Storage: 73 GB |
|---|---|---|

All of the VMs were created using a

public key:

ssh-rsa

```
AAAAB3NzaC1yc2EAAAABIwAAAIEAIXu+D4Qfb51AC6c8IXTg20vcqsW3hrQxD36w5S/ZOY2TuiArvvLflRpvzdfPR4IIM  
wprgrfyb18Z7tkBqfyb0e2Xi5EeyYxrvu3rR6LQ1L/AMCMXKVZn85sS1DB16UbN9q1+4DD8iyBP7Ce6Q/rBQsVle6UWMYf  
r7DL6TTXgfzB8= oracle@oraclelinux6.localdomain
```

The **private key** used to ssh into these images:

-----BEGIN RSA PRIVATE KEY-----

```
MIICWQIBAAKBgQCVe74PhB9vnUALpzyVdODbS9yqxbeGtDEPfrDIL9k5jZO6iCu+  
8t+VGIXN189HiUgzCmCt/JuXxnu2QGp/JvR7ZeLkR7JjGu+7etHotDUv8AwlxcpV  
mfzmxLUMHXpRs32rX7gMPyLIE/sJ7pD+sFCxUh7pRYzJ+vsMvpNNeB/MHwIBlwKB  
gC77ATgTINnvl8kl7ngdaz2bf93mXkBHQP54Rjlmzz35S6+GdCYR0T19TirAKzO9  
bnZw+dBIE6S6uSqmh97Ruoyzr9j8NDmnmxEAJhpTV4jyq/xjfbF/q5GdDhGbtvl0j  
+s3I6WFi3ARr8DISAWx+E8ZmQHRHpPQsFMDB2y/mztmbAkEAXGzxEuXr1ft4UsbG  
LcUenzQT2ZhoayLvuedgul47y1MVSSzkKsPtCcNECKD7p6/EDXcytcJeNyim0B3U  
mHDvNwJBAMLSEKDZ+gPjpfJ2Ma9aZ43a1FPZMxTr9Es/qbZIkHWve66NT04ub+FS  
smylqdSQjUUGcyAx7n1hOhFHseoFblkCQAs5bNyCidG2mSINL+VbuJtiD8NKiCNh  
FQNPdNYlBPY3KUYghESgpLX9UJSV4XsyV/a7PRxgboCUqzOgS1ISC8CQELLrnyi  
gZrmDQKsLkq/6P1vmUFryF7x0BnMrzcu0nF9/oT9P8MIm2MyS816oKCmltXfPWof  
v3tx/uFaaOKFhOsCQG97dZUuafzM+q2sj7jikSUG554d0LNnJQZRgZ6zq7BAqw0k  
UoZgN3KlqBniEVOqvYY7gO7SosApBCIIReBdqSc=
```

-----END RSA PRIVATE KEY-----

Architecture and Design

To accommodate sFTP transfers into the MFT server, DB connections from the Volante engine in the Compute Service to the Volante PaaS DB, SOA DB connections and JDeveloper access/deployments the following ports have been opened in the PaaS account:

sFTP: 7522 (on MFT managed server)

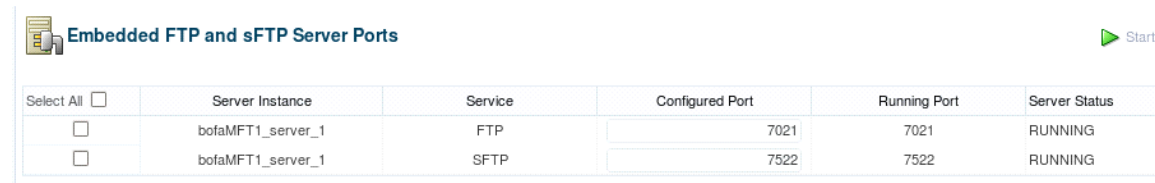
DB: 1521 (on Volante and SOA DB instances)

JDeveloper: 9001, 8001-8003* (on both the MFT and SOA instances for direct access from JDev).

*NOTE: Port 8003 was added as a t3 protocol-->channel on the MFT and SOA Managed Servers. 9001 is opened to the Admin servers while 8001-8003 is opened to the Managed Servers.

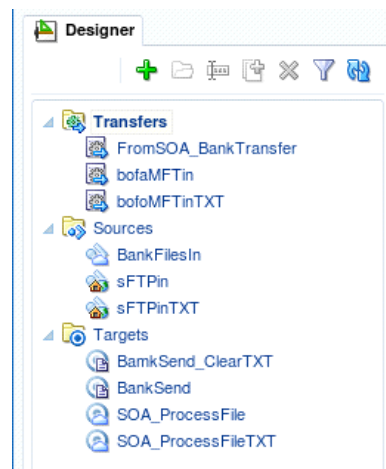
MFT

MFT has been configured to support an embedded sFTP Server on port 7522.



| Select All | Server Instance | Service | Configured Port | Running Port | Server Status |
|--------------------------|-------------------|---------|-----------------|--------------|---------------|
| <input type="checkbox"/> | bofaMFT1_server_1 | FTP | 7021 | 7021 | RUNNING |
| <input type="checkbox"/> | bofaMFT1_server_1 | SFTP | 7522 | 7522 | RUNNING |

There are three Transfers, three Sources and four Targets:



Transfers:

bofaMFTin: (specifies input directory for incoming XML (*.xml) payloads)

Uses:

sFTPin (source), SOA_ProcessFile (target - SOA composite - MFTin)

bofaMFTinTXT: (specifies input directory for incoming Text (*.txt) payloads)

Uses:

sFTPinTXT (source), SOA_ProcessFileTXT (target - SOA composite - MFTin)

FromSOA_BankTransfer: (source that gets "called back" from SOA composite with results of transformation or pass-through)

Uses:

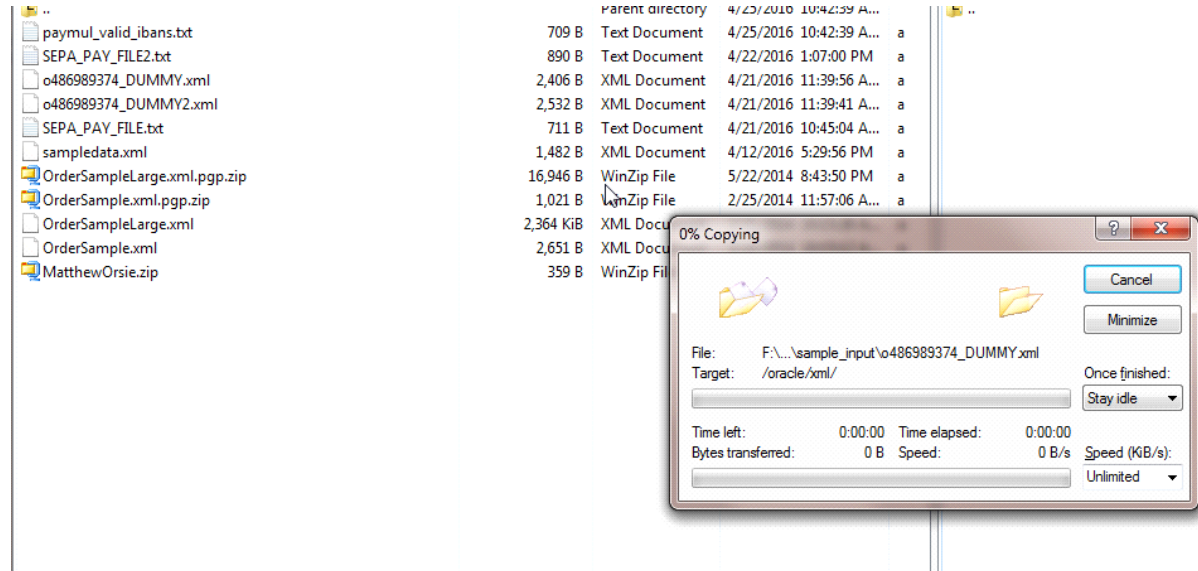
BankSend (writes "results" payload "encrypted" to local file system)

BankSend_ClearTXT (writes "results" payload "as is" to local file system)

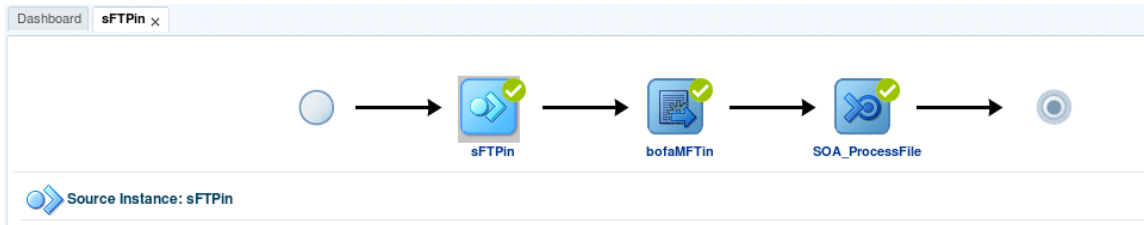
POC Phase I Use Cases:

- 1) A XML document (provided to us by Oracle Treasury) gets transferred via sFTP to MFT. MFT forwards the document inline to a SOA composite which processes and sends the contents to the Volante engine. This document is already in a proper ISO format so no transformation is required. Volante does business rules checking on it and returns as a "**PASS-THROUGH**" payload. SOA process calls back to MFT which writes the payload out in "clear text" and "encrypted" files:

sFTP:



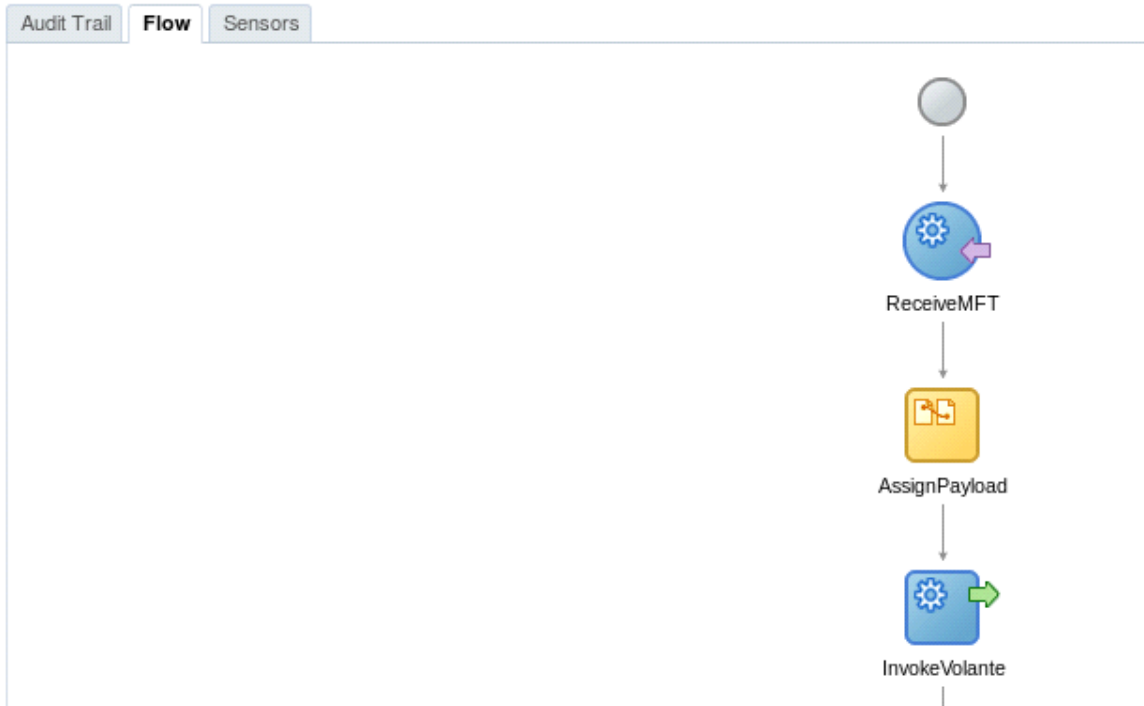
MFT Flow:



SOA composite:

Instance of BPEL_BOFA ⓘ

This page shows BPEL process instance details.



Results from Volante:

Payload for Activity: InvokeVolante

```
Find    
```

```
205         &lt;BIC&gt;PBBBDEFFF99&lt;/BIC&gt;
206         &lt;/FinInstnId&gt;
207     &lt;/CdtrAgt&gt;
208     &lt;Cdtr&gt;
209         &lt;Nm&gt;DHL xxxxxxxx&lt;/Nm&gt;
210         &lt;PstlAdr&gt;
211             &lt;Ctry&gt;DE&lt;/Ctry&gt;
212             &lt;AdrLine&gt;Zollbilling&lt;/AdrLine&gt;
213             &lt;AdrLine&gt;postfach 101051&lt;/AdrLine&gt;
214         &lt;/PstlAdr&gt;
215         &lt;Id&gt;
216             &lt;OrgId&gt;
217                 &lt;Othr&gt;
218                     &lt;Id&gt;999999&lt;/Id&gt;
219                 &lt;/Othr&gt;
220             &lt;/OrgId&gt;
221         &lt;/Id&gt;
222     &lt;/Cdtr&gt;
223     &lt;CdtrAcct&gt;
224         &lt;Id&gt;
225             &lt;IBAN&gt;DE51370100999999999999&lt;/IBAN&gt;
226         &lt;/Id&gt;
227     &lt;/CdtrAcct&gt;
228     &lt;Purp&gt;
229         &lt;Cd&gt;SUPP&lt;/Cd&gt;
230     &lt;/Purp&gt;
231     &lt;RmtInf&gt;
232         &lt;Ustrd&gt;ISO_PENNYTESTING_01&lt;/Ustrd&gt;
233     &lt;/RmtInf&gt;
234     &lt;/CdtTrfTxInf&gt;
235     &lt;/PmtInf&gt;
236     &lt;/CstmrCdtTrfInitn&gt;
237 &lt;/Document&gt;
238 </payload>
239     <processingType>PASS-THROUGH</processingType>
240 </return>
241 </ns0:processMessageResponse>
242 </part>
243 </InvokeVolante_processMessage_OutputVariable>
244 </messages>
245
```

Callback to MFT with payload which get written to files:

Dashboard sFTPin x BankFilesIn x

```
Source Instance: BankFilesIn
-bash-4.1$ ls
BankOut-05-11-2016_12:55.06  BankOut_TXT-05-11-2016_12:54.48
BankOut-05-11-2016_12:55.32  BankOut_TXT-05-11-2016_12:55.32
BankOut-05-19-2016_20:30.56  BankOut_TXT-05-19-2016_20:30.44
-bash-4.1$
```

- 2) Same flow as use case #1 but in this case a TXT document (provided by Oracle Treasury) gets transferred via sFTP to MFT. MFT forwards the document inline to the SOA composite (MFTin) which processes and sends the contents to the Volante engine. This document is **NOT** in a proper ISO format so transformation is required. Volante does business rules checking on it and returns a "**TRANSFORMATION**" payload. SOA process calls back to MFT which writes the payload out in "clear text" and "encrypted" files:

sFTP:

| size | type | Changed | Attr | Name | EXT |
|-----------|------------------|-------------------------|------|------|-----|
| | Parent directory | 4/25/2016 10:42:39 A... | | ↑ .. | |
| 709 B | Text Document | 4/25/2016 10:42:39 A... | a | | |
| 890 B | Text Document | 4/22/2016 1:07:00 PM | a | | |
| 2,406 B | XML Document | 4/21/2016 11:39:56 A... | a | | |
| 2,532 B | XML Document | 4/21/2016 11:39:41 A... | a | | |
| 711 B | Text Document | 4/21/2016 10:45:04 A... | a | | |
| 1,482 B | XML Document | 4/12/2016 5:29:56 PM | a | | |
| 16,946 B | WinZip File | 5/22/2014 8:43:50 PM | a | | |
| 1,021 B | WinZip File | 2/25/2014 11:57:06 A... | a | | |
| 2,364 KiB | XML Docu | | | | |
| 2,651 B | XML Docu | | | | |
| 359 B | WinZip Fil | | | | |

0% Copying

File: F:\...\sample_input\paymul_valid_ibans.txt

Target: /oracle/bt/

Once finished: Stay idle

Time left: 0:00:00 Time elapsed: 0:00:00

Bytes transferred: 0 B Speed: 0 B/s Speed (KB/s): Unlimited

Payload coming into SOA process:

```

<payload xmlns=""><![CDATA[<?xml version="1.0" encoding="UTF-8"?><ns1:MFTServ
<ns1:InlinePayload>UNB+UNOA:2+TESTORACLE:ZZ+ABNANL2A:55+160415:1218+945523209'
UNH+1+PAYMUL:D:96A:UN:FUN01G'
BGM+452+945523209+9'
DTM+137:20160415:102'
LIN+1'
DTM+203:20160415:102'
RFF+AEK:IID00009455233333'
BUS+1:SEP+IN'
MOA+9:800,00:EUR'|
FII+OR+GB11CITI18500811417983:::EUR+CHASGB2L:25:5:609242:154:113+GB'
MAD+OY+++ORACLE GB+ORACLE PARK WAY:::+READING+++GB'
SEQ+1'
MOA+9:800,00:EUR'
DTM+227:20160415:102'
RFF+CR:IID0000007847434'
RFF+UC:IID0000007847434'
FCA+16'
FII+BF+DE02100500000024290661:::EUR+DEUTDEDD:25:5:30070010:25:131:DEUTSCHE BANK AG DUSSELDORF...+DE'
MAD+BE+++KETCHUM PLEON GMBH+BAHNSTRASSE 2:::+DUSSELDORF+++DE'
PRC+11'
FTX+PMD+++//REF0000007847434'
CNT+2:1'
UNT+22+1'
UNZ+1+945523209'
</ns1:InlinePayload>
</ns1:MFTServiceInput>
]]></payload>

```

Volante Transformation:

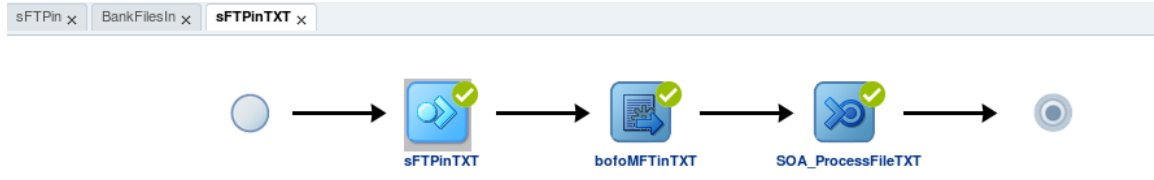
```
<Id><Othr><Id>DE122122222</Id></Othr></Id></OrgId></CdtrAcct><Id>DE02100500000024290661</IBAN></CdtrAcct><Purp><Cd>SUPP</Cd></Purp><RmtInf><Ustrd>inv7</Ustrd></RmtInf></CdtTrfTxInf></PmtInf></CstmrCdtTrfInitn></Document></payload><processingType>TRANSFORMATION</processingType></return></ns0:processMessageResponse></part></InvokeVolante_processMessage_OutputVariable></messages>
```

Portion of "Transformed" output file written:

```
<?xml version="1.0" encoding="UTF-8"?><Document xmlns="urn:iso:std:iso:20022:tech:xsd:pain.001.001.03" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"><CstmrCdtTrfInitn><GrpHdr><MsgId>945523209</MsgId><CreDtTm>2016-04-15T00:00:00</CreDtTm><NbOfTx>1</NbOfTx><CtrlSum>800.0</CtrlSum><InitgPty><Nm>Oracle GB</Nm><Id><OrgId><Othr><Id>ORACLEXML</Id></Othr></OrgId></Id></InitgPty></GrpHdr><PmtInf><PmtInfId>945523209-1</PmtInfId>
```

- 3) In this use case a TXT document with incorrect IBAN codes gets transferred via sFTP to MFT. MFT forwards the document inline to the SOA composite (MFTin) which processes and sends the contents to the Volante engine. This document is flagged with an **ERROR**. The error flow creates an Incident in Oracle Service Cloud and attaches the payload with the creation along with other details. An email notification is sent to benedwards1922@gmail.com. The end user can now go into the Oracle Service Cloud client application, do a search on the new incident and see the details:

MFT flow:

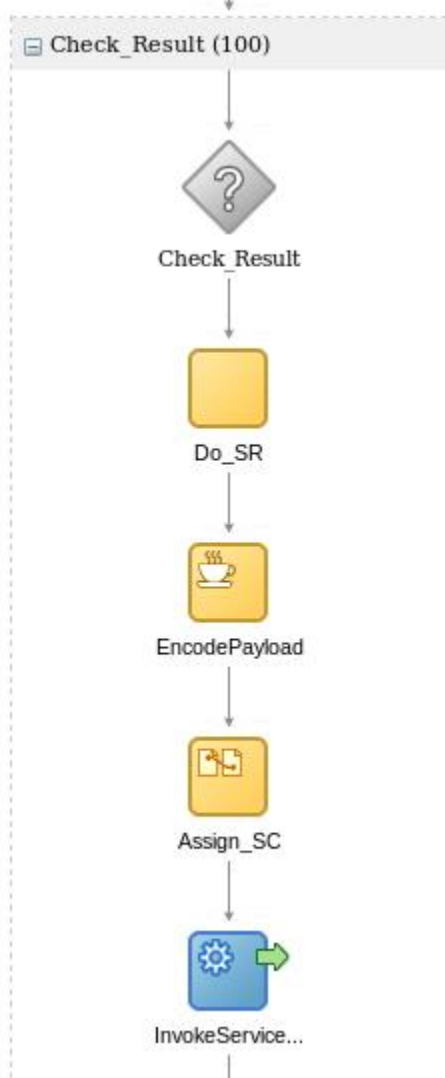


Volante engine return an error:

```

</errorDetails>
<errorMessage>Must be a valid IBAN (field: CstmrCdtTrfInitn.PmtInf[0].DbtrAcct.Id.IBAN)</errorMessage>
</errors>
<payload><?xml version="1.0" encoding="UTF-8"?><ns1:MFTServiceInput xmlns="http://xmlns.oracle.co
&lt;/ns1:InlinePayload&gt;
UNH+1+PAYMUL:D:96A:UN:FUN01G'
BGM+452+945523209+9'
DTM+137:20160415:102'
LIN+1'
DTM+203:20160415:102'
RFF+AEK:BI000009455233333'
BUS+1:SEP+IN'
MOA+9:800,00:EUR'
FII+OR+GB66CHAS609242411111111::EUR+CHASGB2L:25:5:609242:154:113+GB'
NAD+OY+++ORACLE GB+ORACLE PARK WAY::+READING+++GB'
SEQ+1'
MOA+9:800,00:EUR'
DTM+227:20160415:102'
RFF+CR:IID0000007847434'
RFF+UC:IID0000007847434'
FCA+16'
FII+BF+DE96300700100173000000::EUR+DEUTDEDD:25:5:30070010:25:131:DEUTSCHE BANK AG DUSSELDORF...+DE'
NAD+BE+++KETCHUM PLEON GMBH+BAHNSTRASSE 2::+DUSSELDORF+++DE'
PRC+11'
FTX+PMD+++//REF0000007847434'
CNT+2:1'
UNT+22+1'
UNZ+1+945523209'
&lt;/ns1:InlinePayload&gt;
&lt;/ns1:MFTServiceInput&gt;
</payload>
<processingType>ERROR</processingType>
</return>
</ns0:processMessageResponse>
  
```

An Incident is created in Oracle Service Cloud with details: (using the BPEL RightNow Adapter.
 NOTE: A user account and interface has already been created on the Service Cloud side so this can occur. The attached incident file is base64 encoded (required by OSC)).



Incident shows up in Service Cloud user's personal alerts (in this case incident # 160519-000001):

Personal | Small Business | Wealth Management | Businesses & Institutions | About Us

Bank of America

Locations | Contact Us | Help | En español | Search Bank of America

Help Center | Answers | Ask the Community | Ask a Question | Live Chat | Randy Alsop

Account Overview

Questions

| Subject | Reference # | Status | Date Created |
|--|---------------|------------|--------------|
| Error with document: SEPA_PAY_FILE.txt | 160519-000001 | Unresolved | 05/19/2016 |

Using the Service Cloud client application we can search on the Incident ID and see details of the error:

The screenshot shows a 'Quick Search' dialog box with a search type dropdown set to 'Incident Search'. The search field contains the reference number '160519-000001'. There are 'Search' and 'Clear' buttons at the bottom.

The screenshot displays the main interface of the Service Cloud client application for incident ID 160519-000001. The left sidebar contains 'Account Details' for Randy Alsup, 'Incident Details' with reference number 160519-000001, status 'Unresolved', and subject 'Error with document: S'. The main area shows a 'Notes/Message Thread' with a private note from 05/19/2016 02:22 PM. The note content is: 'Payment File: SEPA_PAY_FILE.txt SENT: 19-05-2016 21:22 ERROR: Must be a valid IBAN (field: CstmrCdtTrfInitn.PmtInf[0].DbtrAcct.Id.IBAN)'. The interface includes various toolbars for navigation and editing.

