IMS…REST it, Share it, Mash it, Just Use It

Dusty Rivers
Principal Technical Architect
GT Software

Session #9396
August, 2011
“IMS is the original application server"

Steve Nathan-IBM
In 1977

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<thead>
<tr>
<th>Item</th>
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<tr>
<td>No VCR’s</td>
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<tr>
<td>No Internet</td>
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<tr>
<td>No PC’s</td>
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<tr>
<td>No CD’s/DVS’s</td>
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<tr>
<td>No Cell Phones/PDA’s</td>
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<tr>
<td>No Flat Screen TV’s</td>
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<tr>
<td>No 1000 channel Cable TV</td>
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<tr>
<td>No Microwaves</td>
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<tr>
<td>No WebSphere</td>
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<tr>
<td>No Microsoft (windows)</td>
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<tr>
<td>No DB2</td>
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<tr>
<td>No Linux</td>
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- But there was **IMS** …..
Mainframe Integration Issues and Opportunities

Web Services
REST/JSON
SQL
(ODBC/JDBC)

3270

CICS
IMS

CSC Hogan Systems
CA IDMS™
CA Ideal™

DB2
VSAM
e tc…

etc…

Dist RDBMS
ORACLE
SAP

etc…
Mainframe Integration with the Cloud.............
So what do you have to change in IMS to use IMS with the new Technologies? The transactions, the programs, the screens????
Nothing!
New Development Paradigm

- Integrated drag and drop graphical environment
- One Tool no other pre-reqs.
- Design once, deploy many:
  - Started Task (OTMA)
  - CICS
  - Linux for SystemZ (SUSE or Redhat)
  - Windows (IMS Connect)
  - Linux (IMS Connect)
- Once designed available via:
  - Web Services (WSDL)
  - REST-ful services
  - JSON
  - JCA
Ivory Runtime Architecture

Windows, Unix, Linux

Ivory Server

Mainframe

z/os

IMS Connect

IMS Control Region

IMS Connect(Hipersockets)

IMS DB

OTMA

Ivory Server

Ivory Data Access

Requestor

zLinux

Requestor / Provider

SOAP/REST/JSON/JCA

HTTP or MQ
Hard Questions

• Can I get IMS data for use in the new software?
• Can I get IMS transactions easily incorporated into the new software?
• What about the others(CICS, IDMS/DC, IDEAL, NATURAL, etc.?)
• Do you have the need for 1 IMS tran per service with no other mainframe artifacts?
• Are you at the current latest edition/version of IMS?
• Do you only want to run the services strictly on the mainframe?
• Do you only have simple IMS transactions, no conversational IMS transactions?
• Do I need IMS calling out to other distributed systems?
IMS Standard Architecture Slide

*Solutions*
- WID
- RAD
- WebSphere

*Web Service*
- Direct SOAP
- IMS SOAP Gateway
- WDz

*IMS* (Transaction manager, Database manager)

*SAP Client* (Application developer)

*Direct Database Access*
- Developers

*Java/J2EE Client* (Java dev)

*.NET Client* (Client Developer)

*IMS Database Manager*
- DLI
- IMS TM Resource Adapter
- MFS Web Services

*WebSphere*
- IMS TM Resource Adapter
- MFS Web Services

*DB2 SP/CICS*
- IMS DB Resource Adapter
- Java class Library

*DB2 Developer*

*WebSphere*
- IMS TM Resource Adapter
- MFS Web Services

*Java class Library*

*WebSphere*
- IMS TM Resource Adapter
- MFS Web Services

*Java class Library*

*Transaction manager*
- Java class Library

*IMS Resource Adapter*
- IMS TM Resource Adapter
- MFS Web Services

*Java class Library*

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*Java class Library*

*IMS Connect*
- IMS TM Resource Adapter
- MFS Web Services

*Java class Library*
IMS Architecture with Ivory

Web service clients
- .NET
- Java/J2EE

SAP Client
- Application developer

Java/J2EE Client
- Java developer

Direct Database access Developers
- Java/J2EE Developer
- CICS Developer
- DB2 Developer

Direct Database access

Ivory

Transaction manager
IMS APP
Database manager
Database

IMS Connect
OTMA

Z/os

SOAP/WSDL

SQL jdbc/odbc

Ivory On Windows/Linux

Ivory On z/Linux

Ivory Data Access

Ivory On Windows/Linux

GT Software

SHARE in Orlando 2011
IMS Architecture with Ivory(z/Linux)
IMS Architecture with Ivory(z/Linux)
Easy!

I need to have IMS data in a new spreadsheet..........

• IDA demo
Easy!

I need to have IMS transactions in a new software………..

- ISA demo
Rest and WSDL (Web Services)

```xml
  <soap:Body>
    <s0:getInfo>
      <s0:inCommand>display</s0:inCommand>
      <s0:inLastName>smith</s0:inLastName>
    </s0:getInfo>
  </soap:Body>
</soap:Envelope>
```

Input

```xml
http://gtzdev.gtsoftware.com:20180/soap/ims2?RESTRequest=getinfo&inCommand=display&inLastName=smith
```

WSDL

```xml
  <soap:Body>
    <getInfoResponse xmlns="urn:ims2TNS">
      <outDataType>
        <outLastName>SMITH</outLastName>
        <outFirstName>MARY</outFirstName>
        <outExtension>265</outExtension>
        <outZipCode>30022</outZipCode>
      </outDataType>
    </getInfoResponse>
  </soap:Body>
</soap:Envelope>
```

REST

```xml
<?xml version="1.0" encoding="utf-8"?><getInfoResponse xmlns="urn:ims2TNS">
  <outDataType>
    <outLastName>SMITH</outLastName>
    <outFirstName>MARY</outFirstName>
    <outExtension>265</outExtension>
    <outZipCode>30022</outZipCode>
  </outDataType>
</getInfoResponse>
```
Rest and WSDL (Web Services)

<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:s0="urn:ims2TNS">
  <soap:Body>
    <s0:getInfo>
      <s0:inCommand>display</s0:inCommand>
      <s0:inLastName>smith</s0:inLastName>
    </s0:getInfo>
  </soap:Body>
</soap:Envelope>

<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:ns1="urn:ims2TNS">
  <soap:Body>
    <getInfoResponse xmlns="urn:ims2TNS">
      <outDataType>
        <outLastName>SMITH</outLastName>
        <outFirstName>MARY</outFirstName>
        <outExtension>265</outExtension>
        <outZipCode>30022</outZipCode>
      </outDataType>
    </getInfoResponse>
  </soap:Body>
</soap:Envelope>

http://gtzdev.gtsoftware.com:20180/soap/ims2?RESTRequest=getinfo&inCommand=display&inLastName=smith

WSDL

REST
IBM Mashup Hub (InfoSphere MashupHub) , and Ivory REST Service (IMS) has been added to the hub as a listed REST service
IBM Mashup Hub (InfoSphere MashupHub), REST Service Invoker
<xml version="1.0" encoding="utf-8" ?>
  <getResponse>
    <outDataType>
      <outLastName>RIVERS</outLastName>
      <outFirstName>DUSTY</outFirstName>
      <outExtension>999999999</outExtension>
      <outZipCode>33444</outZipCode>
    </outDataType>
  </getResponse>

Results
Ivory Data Service (ODBC) in List

Ivory SOAP Services (WSDL) in list

Ivory REST Service in list
IMS data (via ODBC) in a Microsoft Excel Spreadsheet
Ivory and BPMN (ActiveVOS)

Systems on the mainframe
Issues with Services on the Mainframe

- SOAP/XML Processing on the GPP = More MIPS
- New Compiled programs running on GPP = More MIPS
- More installed programs/products = More Support $$$
- No zIIP or zAAP use the IFL
IMS and Ivory

- Service Enable IMS transactions
  - Including Support for IMS Conversational
  - Support for MFS as service definition
  - LTERM Name if needed
  - Composite Service Support
  - MFS Mod 3
  - Outbound Support to any remote system
  - REST Support for IMS
  - JSON Support
  - JCA Support (coming………….) for IMS
IMS and Ivory   Other Implementations

- Batch Support
  Enabling IMS Batch jobs to call external services
  Server can be linked in for performance
  All necessary code and linkage created

- Complete IMS Outbound Support
  IMS transactions enabled to call external services
  (like SAP, Oracle, Sharepoint etc)
Deploying to Linux on System Z

Deploying Project to Ivory Server on System Z
Ivory uses the zIIP
Conversation State
IMS Composite as Service Easy!!!

Multiple IMS Transactions
IMS & CICS in the same Service Easy!
Custom code, MQ and IMS Easy!
IMS Calling external services Easy!!
IMS Calling external services

- IMS transactions calling SAP processes
- IMS transactions calling Tandem processes
- IMS transactions calling Oracle processes
- IMS transactions calling Microsoft Sharepoint
- IMS Batch jobs calling distributed services
Security

- Use AT-TLS (Application Transparent Transport Level Security)
• http://gtzdemo.gtsoftware.com:10080/JSONExample/Example2/directions.html