CICS is ready for mobile

...are you?

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Agenda

Why is mobile important?
What does mobile really means to CICS
CICS & mobile since V3
How to: REST/JSON in CICS
There are currently more than 1.038 billion smartphones in use. That’s 1 out of every 6.7 people on the planet.

Mobile users are five times more likely to abandon the task if the site isn’t optimized for mobile.

79% will search for another site to complete the task.

Media tablet sales:
- In 2012: 118.9 million
- By 2016: 369.2 million tablets will be sold

In the last 16 years:
- 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14

1 billion smartphones sold

The next one billion will be sold in just the next 2 years.

Global mobile vs. desktop internet user projection, 2007 - 2015:
- Mobile internet user
- Desktop internet users

Google estimates by 2013, more people will use mobile phones than desktop PCs to go online.
Shopping / Commerce

Global Stats

Gartner predicts that in 2016 there will be 448 MILLION M-Payment users, in a market worth $617 BILLION

by 2015 Global mobile transactions will grow to more than $1 TRILLION

Global mobile transactions in 2011 were around $241 BILLION

Retailers

52% of surveyed retailers do not yet have a MOBILE OPTIMIZED WEBSITE

Amazon.com to reach $4 BILLION in mobile sales by end of 2012

In 2011 5 BILLION people purchased $5 BILLION of goods using their MOBILE PHONES.

PayPal estimates $7 BILLION in mobile sales in 2012

In 2012, this rose to $10 BILLION
Going Places:
Mobile tickets (m-ticketing) for travel and entertainment.

By 2015 over 750 million users will either have a ticket delivered to their mobile phone or buy a ticket with their phone compared to 230 million today.

Mobile subscribers will use m-ticketing for airline, rail and bus travel, festivals, cinemas and sports events.

Healthcare:
The mobile health technology market including devices, applications, and services is expected to exceed $8 billion by 2018.

70% of available healthcare apps are designed for medical professionals, while 30% are consumer focused.

Insurance:
Only 22% of insurers have a mobile quoting app.

Financial Services:
In 2012, 47 million Americans used mobile banking by next year, more than 61 million Americans will use mobile banking.

Mobile banking users in the U.S. in the next will double in the next 5 years and reach 108 million by 2017.
What does mobile mean to CICS?

Smaller web requests

Typically one request per data item

More throughput

Resource Orientated Architectures
CICS and Mobile since V3!

Service Orientated Architecture

V3.1
Soap Web Services

V4.2
Axis2 Web Services

Resource Orientated Architecture

V4.1
Atom Services

Mobile solution goes here
What do mobile solutions like?

**REST Architectural designs**
- **Rep**resentational **St**ate **Tr**ansfer
  - Great for **ROA**, requests target resources not services
  - Design principle NOT a protocol

**JSON data format**
- **JavaS**cript **Ob**ject **Not**ation
  - Easy to generate and parse
  - Lightweight data interchange
What do mobile solutions like?

**REST Architectural designs**

- Resource orientated
  - NOT
  - Service orientated

Create  POST  www.domain.com/customers
        POST  www.domain.com/CreateCustomers

Read   GET   www.domain.com/customers
        POST  www.domain.com/InquireCustomers

Update POST  www.domain.com/customers
           POST  www.domain.com/UpdateCustomers

Delete DELETE www.domain.com/customers
             POST  www.domain.com/DeleteCustomers
What do mobile solutions like?

REST Architectural designs

Resources identified by URI

REST
GET www.domain.com/customers/?policy=Gold&city=Regensburg

SOAP

POST www.domain.com/InquireOnCustomers

```xml
<soapenv:Envelope
  xmlns:q0="http://www.InquireOnCustomers.Request.com"
  xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <soapenv:Body>
    <q0:InquireOnCustomersOperation>
      <q0:Customer>
        <q0:Policy>Gold</q0:Policy>
        <q0:City>Regensburg</q0:City>
      </q0:Customer>
    </q0:InquireOnCustomersOperation>
  </soapenv:Body>
</soapenv:Envelope>
```
What do mobile solutions like?

**JSON data format**
JavaScript Object Notation

```
{  
  { "firstName":"John" , "lastName":"Doe" },
  { "firstName":"Anna" , "lastName":"Smith" },
  { "firstName":"Peter" , "lastName": "Jones" }
}
```

Not as verbose as XML

```
<Customers>
  <Customer>
    <firstName>John</firstName>
    <lastName>Doe</lastName>
  </Customer>
  <Customer>
    <firstName>Anna</firstName>
    <lastName>Smith</lastName>
  </Customer>
  <Customer>
    <firstName>Peter</firstName>
    <lastName>Jones</lastName>
  </Customer>
</Customers>
```

Easy to read and parse

```
<Customers>
  <Customer>
    <firstName>Anna</firstName>
    <lastName>Smith</lastName>
  </Customer>
  <Customer>
    <firstName>Peter</firstName>
    <lastName>Jones</lastName>
  </Customer>
</Customers>
```

Name-Value pairs

```
<Customers>
  <Customer>
    <firstName>John</firstName>
    <lastName>Doe</lastName>
  </Customer>
  <Customer>
    <firstName>Anna</firstName>
    <lastName>Smith</lastName>
  </Customer>
  <Customer>
    <firstName>Peter</firstName>
    <lastName>Jones</lastName>
  </Customer>
</Customers>
```

Simple structure

```
<Customers>
  <Customer>
    <firstName>Anna</firstName>
    <lastName>Smith</lastName>
  </Customer>
  <Customer>
    <firstName>Peter</firstName>
    <lastName>Jones</lastName>
  </Customer>
</Customers>
```

Lightweight data package

```
<Customers>
  <Customer>
    <firstName>Anna</firstName>
    <lastName>Smith</lastName>
  </Customer>
  <Customer>
    <firstName>Peter</firstName>
    <lastName>Jones</lastName>
  </Customer>
</Customers>
```

50,000 Example customer records:

XML: ~14 MB
JSON: ~7 MB
CICS Transaction Server Feature Pack for Mobile Extensions V1.0

Extending existing CICS web services technology to support

New JSON Webservice
New RESTful program

Business Data

Existing SOAP Webservice
Existing application

Business Data

CICS TS V4.2
CICS TS V5.1
CICS Transaction Server Feature Pack for Mobile Extensions V1.0

CICS LINKable interface for JSON to/from high level language conversion

Request Restful JSON services

Available at no extra charge

CICS supplied JSON transformer DFHJSON

CICS TS V4.2
CICS TS V5.1
WORKING-STOREAGE SECTION.
01 PROG-NAME PIC X(8).
01 LEN PIC S9(8) BINARY.
01 COUNTER PIC 99999 COMP-5.

LINKAGE SECTION.

PROCEDURE DIVISION.

MAIN-PROCESSING SECTION.

MOVE 4 TO LEN.

EXEC CICS INQUIRE PROGRAM START
NOHANDLE END-EXEC.

PERFORM TEST AFTER VARYING COUNTER FROM 0 BY 1
UNTIL EIBRESP NOT = DFHRESP(NORMAL)

EXEC CICS INQUIRE PROGRAM(PROG-NAME) NEXT
NOHANDLE END-EXEC

END-PERFORM.

EXEC CICS INQUIRE PROGRAM END
NOHANDLE END-EXEC.

EXEC CICS PUT CONTAINER('DFHWS-DATA')
FROM(COUNTER)
FLength(LEN)
END-EXEC.

EXEC CICS RETURN END-EXEC.

EXIT.
CICS SOAP Web Services

//DFHLS2WS JOB (MYSYS,AUSER),MSGCLASS=H,
// CLASS=A,NOTIFY=&SYSUID,REGION=0M
// JCLLIB ORDER='<<CICSHLQ>>.SDFHINST'
//*
//LS2WS EXEC DFHLS2WS, USSDIR='<<USSDIR>>',
// PATHPREF='', JAVADIR='java6_64/J6.0_64'
//INPUT.SYSUT1 DD *
LOGFILE=/u/test/webservices/getcust.log
PDSLIB=//TEST.COBOL.COPY
REQMEM=GETCUST
RESPMEM=GETCUST
LANG=COBOL
PGMNAME=GETCUST
URI=/InquireCustomer
MAPPING-LEVEL=3.0
WSBIND=/u/test/webservices/wsbind/GETCUST.wsbind
WSDL=/u/test/webservices/wsdl/GETCUST.wsdl
*/

CICS JSON Web Services

//DFHLS2JS JOB (MYSYS,AUSER),MSGCLASS=H,
// CLASS=A,NOTIFY=&SYSUID,REGION=0M
// JCLLIB ORDER='<<CICSHLQ>>.SDFHMOBI'
//*
//LS2JS EXEC DFHLS2JS, USSDIR='<<USSDIR>>',
// PATHPREF='', JAVADIR='java6_64/J6.0_64'
//INPUT.SYSUT1 DD *
LOGFILE=/u/test/webservices/myprog.log
PDSLIB=//TEST.COBOL.COPY
REQMEM=GETCUST
RESPMEM=GETCUST
LANG=COBOL
PGMNAME=GETCUST
URI=/InquireCustomer
MAPPING-LEVEL=3.0
WSBIND=/u/test/webservices/wsbind/GETCUST.wsbind
WSBIND=/u/test/webservices/wsdl/GETCUST.wsbind
JSON-SCHEMA=/u/test/webservices/json/GETCUSTRequest.json

Install
TCPIPSERV
JVMSERV
PIPELINE (Axis2 configured with WSBINDIR pointing to WSBIND from JCL)

PIPELINE install automatically creates WERBSERV and URIMAP resources required to make
JSON web service requests to your CICS applications
PIPELINE_CONFIG points to pipeline configuration file on zFS
PIPELINE_WSBINDIR points to WSBIND path specified in JCL

JVMSERVER required with name matching <jvmserver> in PIPELINE configuration

Pipeline configuration example

```xml
<?xml version="1.0" encoding="EBCDIC-CP-US"?>
<provider_pipeline xmlns="http://www.ibm.com/software/htp/cics/pipeline">
  <service>
    <terminal_handler>
      <cics_json_handler_java>
        <jvmserver>JVMSERV</jvmserver>
      </cics_json_handler_java>
    </terminal_handler>
  </service>
  <apphandler_class>com.ibm.cicsts.axis2.CICSAxis2ApplicationHandler</apphandler_class>
</provider_pipeline>
```
```javascript
function getProgramCount(interest) {
    path = '/CICSMOB';

    var input = {
        method : 'get',
        returnedContentType : 'json',
        path : path
    };

    return WL.Server.invokeHttp(input);
}
```
function dojoInit() {
    require(["dojo/ready", "dojo/dom", "dojo/parser", "dojox/mobile", "dijit/registry", "dojox/mobile/ScrollableView", "dojox/mobile/RoundRect", "dojox/calendar/Calendar" ],
        function(ready, dom) {

            ready(function() {

                var invocationData = {
                    adapter: "CICSAdapter",
                    procedure: "getProgramCount",
                    parameters: []
                };

                WL.Client.invokeProcedure(invocationData, {
                    onSuccess: getSuccessData,
                    onFailure: getFailureData
                });
            });

            function getSuccessData(result){

                var node = dom.byId("count");

                node.innerHTML = "You have " + result.invocationResult.CICSMOBOperationResponse.counter + " CICS Programs installed."
            }

            function getFailureData(result){

            }
        });
}
The result!
Mobile for System z Proof of Technology – March 26th NYC

Get involved with the free, hands on, exploration of how easy it is to create cross-platform Mobile applications that integrates with Mainframe applications data!


Mainframe’s 50th anniversary! - April 8th NYC

There is an event in NYC on April 8th to celebrate the Mainframe’s 50th anniversary. Executive speakers include Steve Mills, Tom Rosamilia, Pat Toole and John Kelly. Nominate your customers to attend the celebrations and latest announcements in the z space.

Check out the new System z in the Mobile World Redbook!

Pique your customers interest with this new Point-of-View Redbook on System z in a Mobile World (very quick read, only 7 pages). Check out two blog posts on how to transform and enhance Mainframe applications for Mobile users.

And don't forget...
CICS at Impact
There's a Lot Going On

21 mobile & cloud talks from leading CICS speakers

50 hours of CICS demos to see in the CICS Solution Suite

3 chances to win a free visit from our fab CICS Services team

240 minutes of hands-on labs with CICS experts

160,000 miles travelled by the CICS team to be there with you

37 hours of CICS sessions delivered by CICS specialists and CICS customers

30 CICS maestros on the ground, ready for a conversation

3 carefully designed session menus with hand-picked combinations to fit every interest

Impact 2014 runs from April 27 - May 1
You can register at ibm.com/impact