z/OS Connect and IBM Mobile Workload Pricing

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The “API economy” has changed how developers think about building apps, and how organizations deploy software in the cloud.
API Economy
Mobile App Assembly

IBM APIs
- Watson
- Cloud Provisioning
  - Xtify

Insurance APIs
- Life
- Home
- Auto
- Claims

Bank APIs
- Mortgage
- Online Payment
  - Loans
- Account Query
- Calculators

Auto Dealer APIs
- Price
- Availability
- Location
- Configuration

Map Provider APIs
- Address
- Locator
- Weather
- Traffic

Mobile App Assemblers
Developers & Partners

New Customers

Providers

Consumers
API Economy
Mobile App Assembly

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- IBM APIs
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  - Weather
  - Traffic

Consumers

Benefits for Application Assemblers
- Quick time to Market by using existing assets and services to decrease costs and speed up product and service development
- Driving innovation by capitalizing on the merging of capabilities provided by different APIs
- Attracting clients to your products and services by joining other (established) API ecosystems
- Potentially having freedom of choice in terms of available APIs (avoiding vendor lock-in)
- Focus on core competence and value add rather than reinventing common capabilities
- Create new business opportunity from APIs
- Innovate around business models and reach new customers from the provider’s ecosystem
API Economy
Provider Perspective

Providers

Benefits

- Expanding into new customer bases and niches that you normally wouldn’t be able to reach on your own
- Focusing on your core value
- Expanding your brand and brand loyalty
- Easier possibilities in establishing new partnerships and capitalizing on them
- Benefitting from open innovations of crowdsourcing and expert sourcing, which are implicitly unlocked through the opening of APIs
- Realize profit from new business models
- Decreased development costs and time through software (e.g., mobile apps) produced by third parties
- Keeping up with application demands (e.g. new apps, new features)
- Wider and quicker coverage of different platforms and devices

Mobile App Assemblers
Developers & Partners

New Customers

Consumers
End-to-End Architecture for Mobile and Cloud Application invoking z Services using APIs

Mobile Application Development
• Invokes services and APIs

Cloud Integration Enablement:
• Enabling integration with APIs as well as technical services

API Enablement:
• Consumability by internal and external developers (creation and look up)
• Entitlement Management (securing, workload enforcement)
• Usage monitoring & Analytics

Service Enablement:
• Enables invocation of z applications by remote applications using standard protocols (WSDL, REST)
WebSphere Liberty Profile – What’s New?

Extend existing enterprise data and business logic to Web, Mobile or Cloud apps

- Use **WebSphere Liberty z/OS Connect** for secure enterprise connectivity to easily extend existing assets to Mobile and Cloud applications using RESTful services and JSON.
- Leverage **Websphere Liberty Java Connector Architecture (JCA)** feature to connect into and extend existing enterprise backend systems
- **IBM WebSphere Liberty Optimized Adapters for z/OS (WOLA):** a function of WAS Liberty for z/OS that allows very fast, efficient, and low-latency memory to memory exchanges between WAS z/OS and CICS, IMS & Batch.

Administer production apps with the **WebSphere Liberty Administrative Center**
- Flexible, extensible, mobile ready, next generation admin UI to manage Liberty Servers

**WebSphere Liberty Repository** to pick up new Liberty product features, samples, and tutorials:
- Easily extend your development and production environments with new features

Different options for using **WebSphere Liberty in the Cloud**
- Build applications using the Liberty Buildpack and Caching services on IBM BlueMix
- Deploy WAS Liberty patterns using Pure Application Pattern service on SoftLayer
- Bring your own existing entitlement of WAS to SoftLayer or Amazon cloud environments

Complete your session evaluations online at [www.SHARE.org/Pittsburgh-Eval](http://www.SHARE.org/Pittsburgh-Eval)
Problem Statement (s)

Customers on the z/OS platform today are increasingly expressing concerns about their ability to handle large spikes of new requests originating from any number of almost instantly available clients and systems that have a need for the business assets available there.

The fast advancing worlds of mobile and cloud computing are putting more and more pressure on applications and business logic located on z/OS in environments like CICS, IMS, batch, and others.

Customers have expressed an interest in a common solution that can be used by cloud, mobile, web and components like API management, that enables simple discovery and secure access to z/OS business and infrastructure assets using REST technology.

Infrastructure providers (cloud-based IaaS and SaaS providers) and mobile services registries (ie: API Management) require a uniform way to interact with z-based middleware for discovery, provisioning, data transformation, and service invocation.
z/OS Connect

What is it and what are the benefits for customers?

z/OS Connect is a Liberty based gateway that provides a secure and simple way to discover and call in to application assets/infrastructure on z/OS from Web/Cloud/Mobile applications using RESTful services.

The benefits include:

- **Fast on-ramp for z/OS customers to discover and reach z/OS applications** securely/simply using RESTful services. Service references can be copied from z/OS Connect and stored in any repository – cloud based (such as IBM Cloud OE) or mobile based (such as IBM Worklight, API Management) or any other web technology.

- **Light-weight and modular** providing flexibility to run multiple copies on the same or different z/OS systems and assign higher/lower priority to specific Liberty servers.

- **Integrated with z/OS management** makes the operations of the environment automated and consistent with the environments it is exposing.

- Provides ability to standardize on security access for calling in to z/OS applications in all major environments - CICS, IMS, batch, Unix System Services, and ISV software. Supports SAF-based security integration allowing **for individual z/OS Connect services** to have unique sets of authorized users.

- Provides ability **to track and prioritize requests** from cloud, mobile, web based external requestors using standard z/OS mechanisms like SMF and WLMA. Fulfills audit/chargeback needs for access to z/OS applications.
IBM z/OS Connect

A service that encapsulate calling z/OS target applications using REST calls. z/OS Connect will support JSON payloads for calls from external cloud or mobile-based clients and will enable the conversion of the payload to the target program’s expected format. It will also provide the response payload conversion from a byte array into JSON format before returning the response to the caller.

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**z/OS Connect Liberty under CICS**

**Same z/OS Connect implementation** – the CICS JCICS service provider handles requests targeted to existing CICS programs. CICS provides interceptors to integrate z/OS Connect with CICS security.

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**Complete your session evaluations online at www.SHARE.org/Pittsburgh-Eval**
z/OS Connect Liberty for IMS

Same z/OS Connect implementation – WOLA or the IMS Connect service provider handles requests targeted to existing IMS transactions and data.
Agenda:

- z/OS Connect... Mainframe Makes Mobile Magic
- Mobile Workload Pricing
- What's going on in CICS TS with IBM Design Thinking?
Mobile Workload Pricing for z/OS

**Benefits**

- Improves the cost of growth for mobile transactions processed in System z environments such as CICS, IMS, DB2, and WAS
- Mobile Workload Pricing (MWP) for z/OS enhances Sub-Capacity pricing
  - Mitigates the impact of Mobile on MLC charges where higher transaction volumes cause a spike in machine utilization
  - Normalizes the rate of transaction growth
- No infrastructure changes required, no separate LPARs needed
  - It is an enhanced way of reporting sub-capacity MSUs
  - System runs as it always has, workload execution is not altered

**Hardware requirements**

- Available to all enterprises running a zEC12 or zBC12 server (actual mobile work may run on any zEnterprise machine including z196 and z114)

**MWP Announcement Letters – 2014-05-06**

- AP14-0219 Asia Pacific
- A14-0429 Canada
- ZP14-0280 Europe, Middle East, Africa
- JP14-0279 Japan
- LP14-0279 Latin America
- 214-223 United States
Mobile Workload Pricing Reporting Process

- New Mobile Workload Reporting Tool (MWRT) – available 30 June 2014
  - A new Windows-based Java tool to report sub-capacity MSUs and make adjustments to reported LPAR MSUs based on Mobile transaction data
    - Standard SCRT methodology plus new feature to adjust for Mobile workload impact
    - New tool will replace SCRT for customers who take advantage of Mobile Workload Pricing

- Customers must track mobile transactions and produce a file showing mobile CPU consumption each month
  - Record mobile program transaction data, including CPU seconds, on an hourly basis per LPAR
  - Load the resulting data file into MWRT each month (IBM-specified CSV format)
  - Run MWRT and submit the results to IBM each month (Replaces SCRT process)

- MSU adjustments and monthly peak calculation for billing
  - MWRT will subtract 60% of the reported Mobile MSUs from a given LPAR in each hour, adjusting the total LPAR MSU value for that hour
    - This will function like a partial “off-load” from a software pricing perspective
    - When an LPAR value is adjusted, all software running in the LPAR will benefit from lower MSUs
    - Tool will calculate the monthly MSU peak for a given machine using the adjusted MSU values
Example: reducing Mobile impact to LPAR peak

1. Measure LPAR MSUs: Standard SCRT methodology, SMF 70 records

2. Measure CICS usage: Capture SMF 89 record in new IBM reporting tool (replaces SCRT); SMF 89 is IBM usage standard

3. Tag Mobile transactions: e.g. Capture CICS transaction details (SMF 110 records) and filter by transaction type

4. Subtract 60% of mobile MSUs: 
\[-60\% \times 200 = -120\]

5. Adjusted LPAR MSUs: Per new MWRT reporting tool

6. Adjusted LPAR MSUs used to determine peak for month; Pricing & billing BAU based on peak

### LPAR MSUs for billing (Standard)
- z/OS/Other: 1,500
- CICS: 1,500

### LPAR MSUs for billing (Adjusted)
- z/OS/Other: 1,380
- CICS: 1,380

Figures are for illustrative purposes only.
Example: Sample LPAR MSU values by hour

- SCRT calculates the Rolling 4-Hour Average (R4HA) MSU peak
  - All workloads are included

Peak R4HA value = 1404 MSUs
LPAR MSU values adjusted for mobile contribution

- MWRT removes 60% of the Mobile workload, interval-by-interval
  - Non-mobile workload is unchanged
  - Billing for the month is based upon the newly calculated R4HA curve after the mobile workload has been reduced

Provides benefit when Mobile workloads contribute to monthly peak MSUs; Off-peak MSU adjustments will not affect MSUs used for billing.

Original Peak R4HA value = 1404 MSUs
New Peak R4HA Value = 1231 MSUs
MWRT savings = 173 MSUs
Identifying Mobile Transaction Workload

- Customers are responsible for processing their mobile transaction data into a predefined format to be loaded into MWRT for each sub-capacity reporting period.
  - IBM must approve the data gathering methodology.

- The data must consist of **general purpose processor CPU seconds** for each mobile transaction program summarized by hour by LPAR for all machines processing mobile transactions.
  - Detailed instructions, including CSV file format, available in the MWRT user's guide.

Mobile Workload Pricing Defining Programs:

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New MWP Contract Addendum

- Mobile Workload Pricing is available for Mobile workloads running on a zEC12 or zBC12 server with AWLC or AEWLC sub-capacity pricing
  - Alternatively, if you install and operate a zEC12 or zBC12 in your enterprise you will be eligible for MWP when running a Mobile Workload Pricing Defining Program on a z196 or z114 server with sub-capacity pricing

- There is a new contract addendum:
  - The System z AWLC and AEWLC Addendum for Mobile Workload Pricing
  - Contract number Z126-6300

- Agreement to and compliance with the terms and conditions specified in the MWP contract Addendum is required
  - If the MWP Addendum is not implemented, MWRT Reports will be rejected!
In Summary

- Mobile Workload Pricing (MWP) Benefits
  - Improves the cost of growth for mobile transactions processed in System z environments such as CICS, IMS, DB2, and WAS
  - MWP for z/OS enhances Sub-Capacity pricing
    • Mitigates the impact of Mobile on MLC charges where higher transaction volumes cause a spike in machine utilization
    • Normalizes the rate of transaction growth
  - No infrastructure changes required, no separate LPARs needed
    • It is an enhanced way of reporting sub-capacity MSUs
    • System runs as it always has, workload execution is not altered

- Key requirements
  • Available to all enterprises running a zEC12 or zBC12 server (actual mobile work may run on any zEnterprise machine including z196 and z114)
  • Use a Mobile Workload Pricing Defining Program to process mobile transactions
  • Implement sub-capacity using AWLC or AEWLC under standard pricing terms
  • Meet the mobile workload tracking and reporting requirements