

2015 IBM CICS Lunch & Learn Series
Get more out of CICS

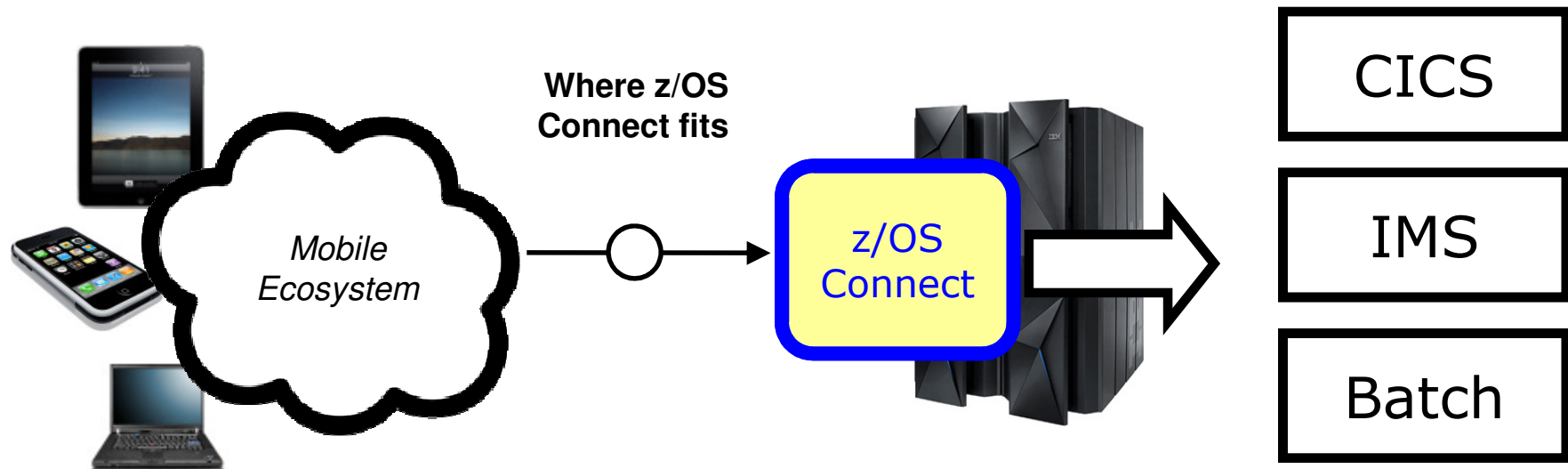
Expose z/OS Assets to Cloud and Mobile Devices with z/OS Connect

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z/OS Connect – What is it?

It's about getting REST and JSON into your mainframe environment in a way that enables you to best take advantage of the assets that exist there:



REST – Representational State Transfer ... the use of HTTP URLs that map to a 'service', such as 'query account' or 'update data'

JSON – JavaScript Object Notation ... a standard of representing data as a set of name/value pairs. This is passed back and forth along with REST request/responses

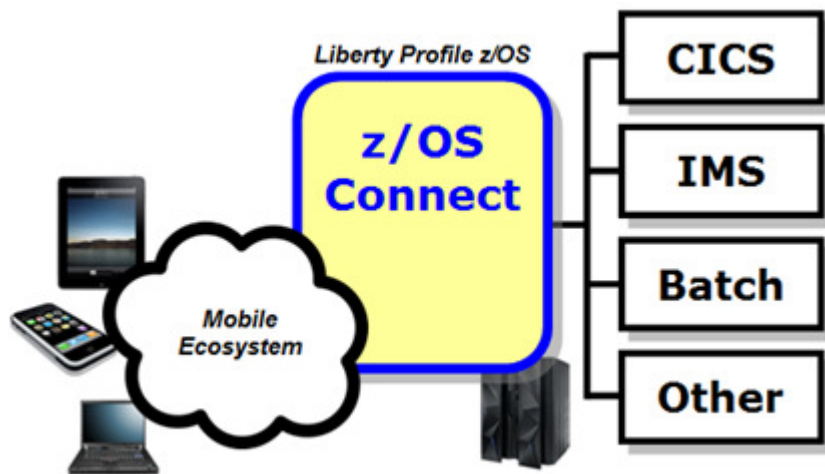
- Liberty Profile Server
- Function IBM wrote to run in Liberty Profile
- No charge function provided with license entitlement for WAS z/OS, CICS or IMS customers

Notes

- At the very heart of this discussion is the idea of devices and systems using RESTful calls and JSON data to access the mainframe and the applications and data that reside there. REST and JSON are becoming more and more common in the world of mobile and cloud system access to systems of record.
- For REST and JSON to be effective, something has to be in place to recognize and handle the REST call and the JSON data.
- Key Point: z/OS Connect is designed to be a REST/JSON interface to a z/OS LPAR.
- z/OS Connect is software function written by IBM that runs inside an instance of WebSphere Liberty Profile z/OS, and uses existing connector technology to get to the backend systems. There is no charge for z/OS Connect; it is supplied as part of license entitlement to WAS z/OS, CICS or IMS.

Why z/OS Connect?

This represents another component to configure and maintain in your environment. So what value does it bring?



You *could* enable Mobile access without z/OS Connect

z/OS Connect simplifies and makes the environment more consistent and manageable

- Provides a common and consistent entry point for mobile access to one or many backend systems
- Java, so runs on specialty engines
- Shields backend systems from requiring awareness of RESTful URIs and JSON data formatting
- Provides point for authorization of user to invoke backend service
- Provides point for capturing usage information using SMF
- Simplifies front-end functions by allowing them to pass RESTful and JSON rather than be aware of or involved in data transformation

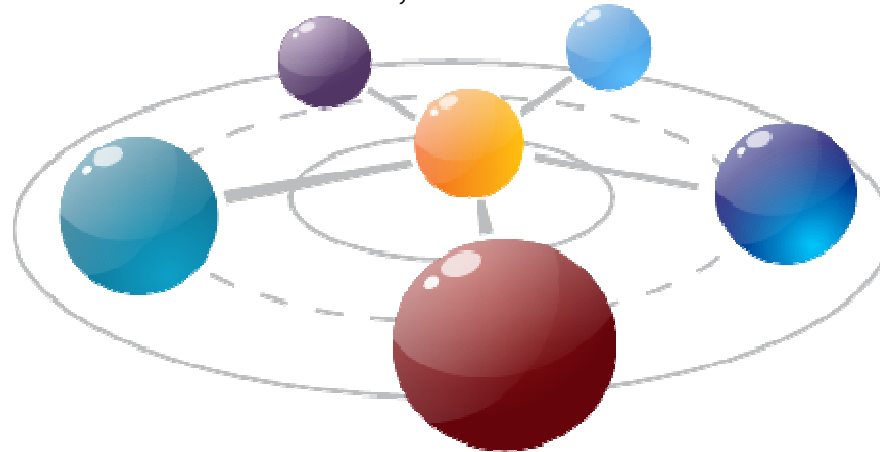
Notes

- This chart explains the business value of z/OS Connect. The bullet points on the right side of the chart summarize the value proposition of z/OS Connect. At the end of the day it's about a manageable and simplified interface to the z/OS LPAR for mobile and cloud devices that use REST and JSON.

z/OS Connect: Statement of direction

ENUS214-107, April 7th, 2014

“IBM intends to deliver IBM WebSphere Liberty z/OS Connect (z/OS Connect) as a common program component of WebSphere Application Server for z/OS, IMS™ Enterprise Suite for z/OS, CICS Transaction Server for z/OS, and CICS Transaction Gateway.”



GA June 2014

- **IBM WebSphere Application Server** delivered Liberty z/OS Connect as a new repository feature
- **IMS™ Mobile Feature Pack** delivered, based upon Liberty z/OS Connect

GA December 2014

- **CICS** delivered Liberty z/OS Connect via APAR PI25503

Different Delivery Approaches

z/OS Connect is delivered with WAS z/OS, CICS and IMS ... objective is to provide different approach paths depending on what you have:

WAS z/OS

Delivered as function that runs inside Liberty Profile z/OS. Initially will use WOLA (WebSphere Optimized Local Adapters) to access backend.

CICS

Delivered as part of Liberty Profile that runs inside of CICS region with a JCICS local LINK, and CICS TG using standard CICS inter-system connections.

IMS

Initially this ends up looking just like the WAS z/OS approach: that is, Liberty Profile z/OS with z/OS Connect inside. Difference is this: IMS z/OS Connect uses JCA* to talk to IMS Connect to get access into IMS.

These different delivery mechanisms tend to obscure the main story of what it is and how it works, so for now let's stipulate IBM offers several ways to get this and now focus on some details

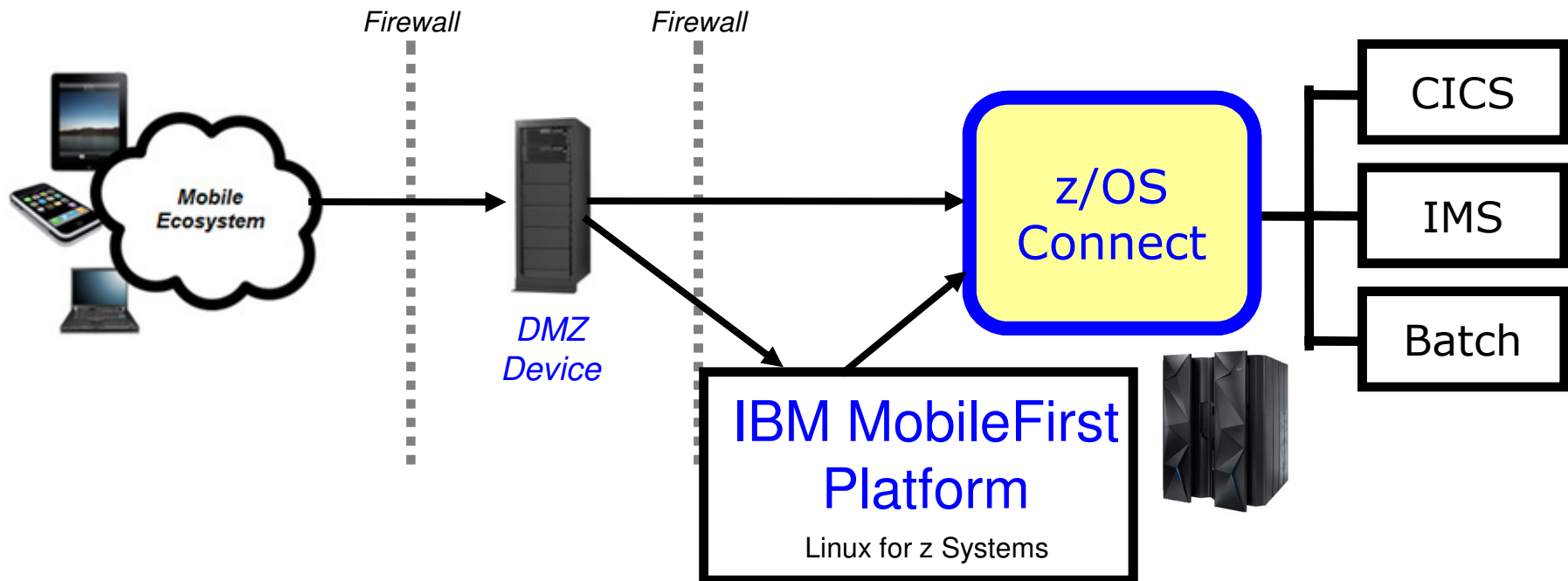
* A supplied IMS JCA resource adapter, as opposed to the local adapter support

Notes

- As mentioned earlier, z/OS Connect is a no-charge software function that is part of your license entitlement for WAS z/OS, CICS or IMS. Each provides a delivery mechanism – Liberty and z/OS Connect will be supplied by WAS z/OS, CICS and IMS.
- Note: the Liberty and z/OS Connect for CICS will run inside a CICS region. It is intended to be used only inside CICS regions and not outside. The Liberty and z/OS Connect supplied by WAS z/OS and IMS look very similar on the surface, but for IMS the access mechanism is a JCA resource adapter and not the local adapters. To use the JCA resource adapter with IMS, a running copy of IMS Connect is required.
- For the purposes of this presentation the focus will be on CICS. That implies a Liberty Profile server instance with z/OS Connect enabled and configured. CICS can be accessed through a WAS/Liberty or CICS/Liberty implementation.
- The CICS implementation is somewhat different in that the Liberty instance will run inside the CICS region, and the backend connectivity is provided through the JCICS interface of the CICS region.
- The implementation supplied with IMS is very similar to the WAS implementation, with the difference being the connectivity to IMS supplied as a JCA resource adapter that will talk to a running instance of IMS Connect.
- We mention these delivery mechanisms because we have seen some confusion created by this. The different delivery approaches tends to obscure the story of z/OS Connect and the value it brings. We thought it best to bring this point out early to clear any misunderstandings that may be present. This will allow us to focus back on z/OS Connect and what it provides.

Context within Mobile Architecture

The message here is that z/OS Connect is a *piece* of the Mobile architecture, but in most cases will not be the only component:



Users of z/OS Connect would access through normal corporate firewall infrastructure

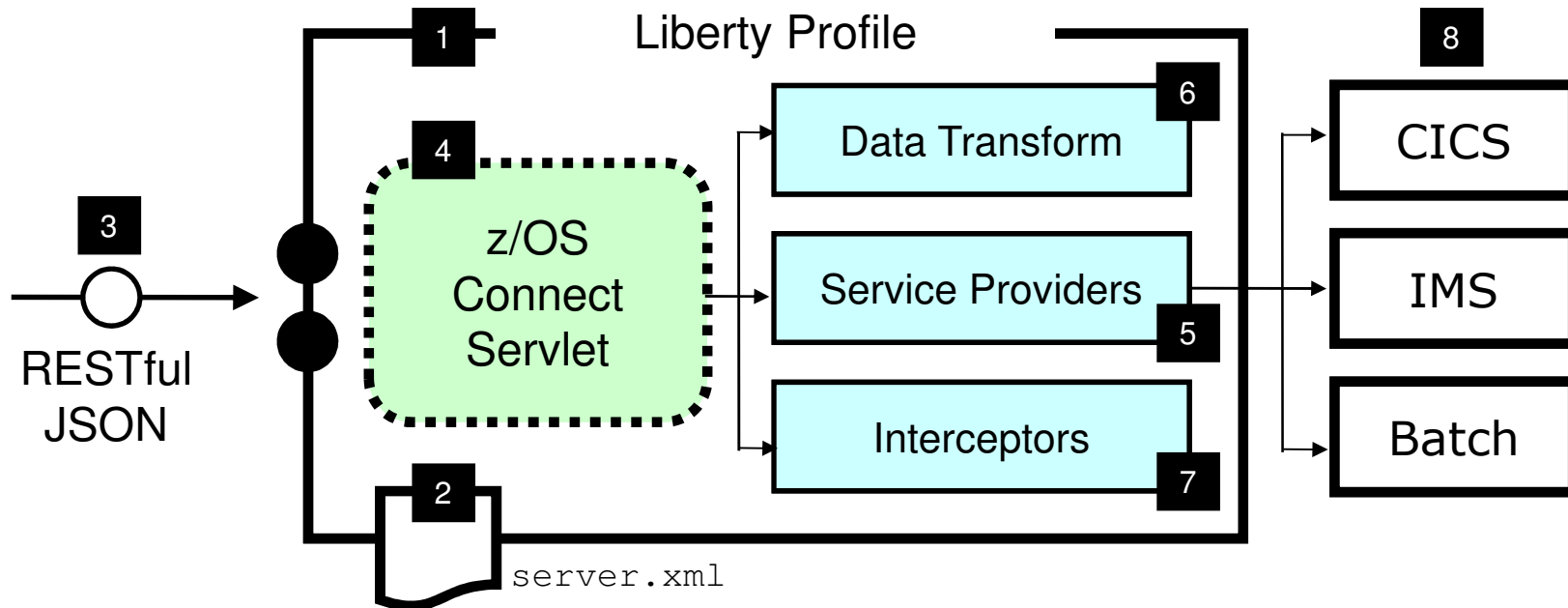
IBM MobileFirst Platform to provide application management, security and operational governance for mobile applications

z/OS Connect would be behind the secure firewall, and on LPARs along with backend systems

Notes

- Key Point: z/OS Connect will be part of a broader architecture comprised of several different components.
- In this picture we represent the fairly typical topology where the mainframe is positioned behind the inside firewall. z/OS Connect operates on z/OS (and z/OS only), and therefore it too will run on the mainframe in the secure zone.
- Most environments operate with another firewall that faces the public internet. This creates a zone between the outside firewall and the inside firewall. This zone is often referred to as the “DMZ” (which is an acronym that stands for “Demilitarized Zone” – a reference to a fenced-off neutral zone between factions in a conflict). It is in this DMZ that devices are placed that serve as the first point of access for requests that come through the outside firewall. This device may be an HTTP Server, or a network device such as IBM’s DataPower appliances. The request is then forwarded back through the inside firewall. The target of the forwarding can be z/OS Connect. Or it might be IBM MobileFirst Server.
- IBM MobileFirst Server has the ability to accept requests and provide connectivity to backend services. When z/OS Connect is part of the architecture, the job MobileFirst Server has to do is much simpler – take in REST/JSON and pass REST/JSON back to z/OS Connect. In that sense, z/OS Connect augments an architecture that includes MobileFirst Platform. IBM MobileFirst Platform does not require z/OS Connect, nor does z/OS Connect require MobileFirst Platform. But together they provide a nice synergy of MobileFirst Platform’s capabilities and z/OS Connect’s capabilities.

z/OS Connect anatomy



1 z/OS Connect is software function that runs in a Liberty Profile

2 z/OS Connect is described and configured in the Liberty `server.xml` file

3 z/OS Connect is designed to accept RESTful URIs with JSON data payloads

4 One part of z/OS Connect is a servlet that runs in Liberty Profile

5 A 'Service Provider' is software that provides the connectivity to the backend system

6 z/OS Connect provides the ability to transform JSON to the layout required by backend

7 'Interceptors' are callout points where software can be invoked to do things such as SAF authorization and SMF activity recording

8 Initially the backend systems supported will be CICS, IMS and Batch

Notes

- This chart offers on one page a summary of the topics we've shown earlier. Follow the numbered blocks that correspond to the text description below the picture.

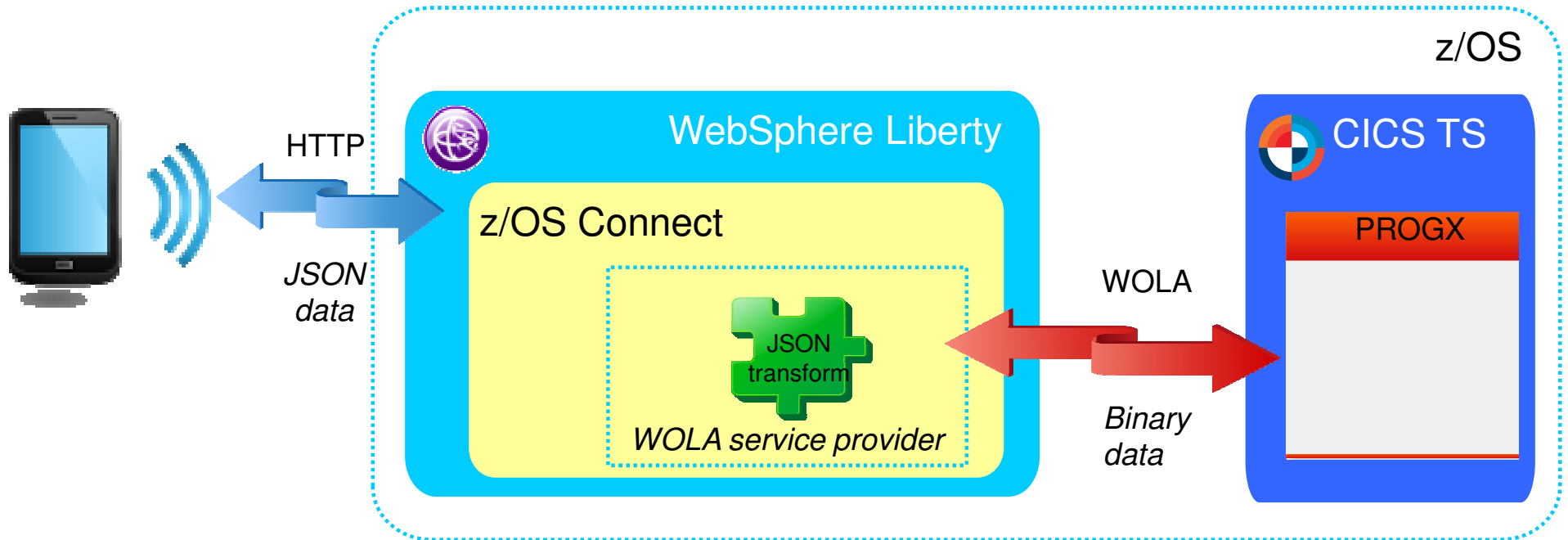


z/OS Connect and CICS

Topology #1: WAS z/OS Connect



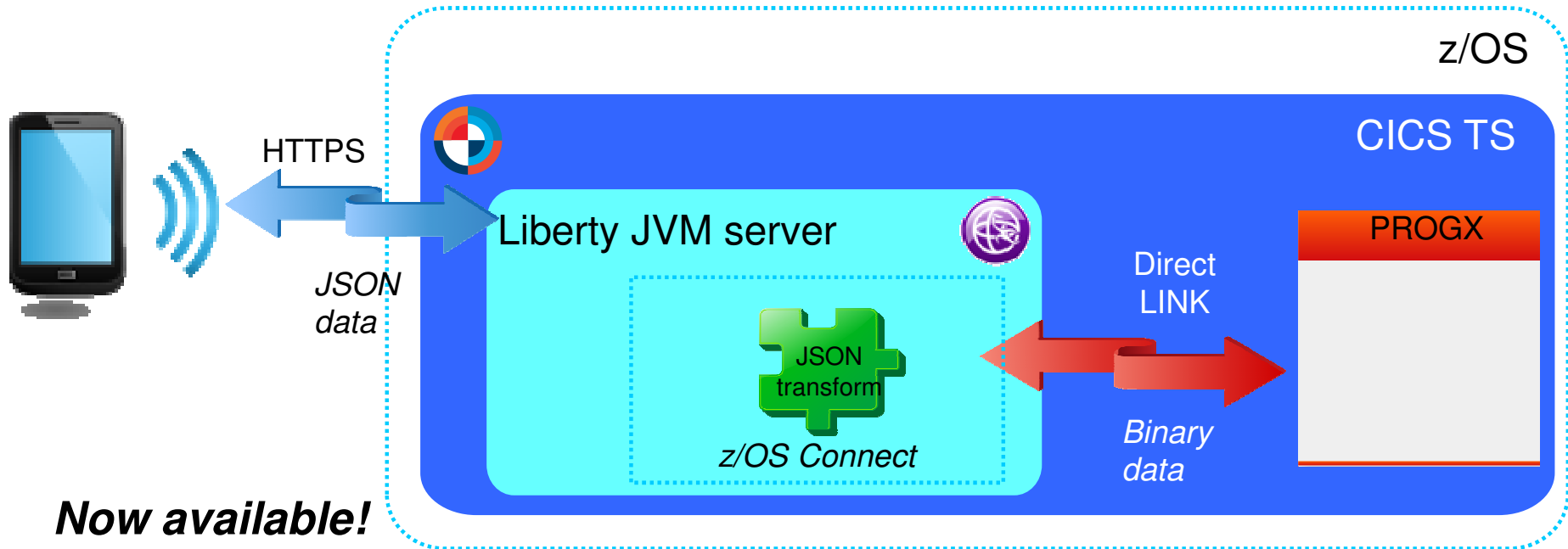
- **Web Service provider:** WebSphere Liberty on z/OS
- **Data transform:** WSBind files
- **CICS integration:** WebSphere Optimized Local Adapter (WOLA)



Topology #2: CICS TS z/OS Connect



- **Web Service provider:** CICS TS z/OS Connect (embedded)
- **Data transform:** WSBind files
- **CICS integration:** Direct LINK



Now available!

- CICS TS V5.2 via APAR PI25503
 - CICS TS V5.3 open beta includes embedded z/OS Connect

z/OS Connect vs CICS JSON web services

Point-in-time comparison for CICS TS z/OS Connect

- IBM API Management
 - z/OS Connect and support for IBM API Management
- Non-RESTful CICS programs (JSON RPC, request/response)
- RESTful CICS programs
- Outbound JSON web services
 - Not available with z/OS Connect

z/OS Connect is evolving...we'd like your input!

API/Web Economy Lifecycle

API Economy Lifecycle

Business Assets

Exposable Enterprise Services

Web APIs

APIs providing commercial access to the Business Assets

Developers

Use APIs to create Apps

Apps

Use backend services through Web APIs

End Users

Increase revenue by using Apps with Business Assets



The API Economy

Where companies [providers] expose their (internal) digital business assets or services in the form of (Web) APIs to third parties [consumers] with the goal of unlocking additional business value through the creation of new assets

Notes

- As the definition explains, the Web Economy is where companies [providers], expose their internal digital assets or services in the form of Web APIs to third parties [consumers] with the goal of unlocking additional business value through the creation of new assets.

IBM API/M

- Create, publish, manage APIs
 - Web Services
 - REST Services
- Discovery of z Services for API Development
 - Get a list of deployed services (Service Identification)
 - Filter based on technical and business service attributes
 - Get schema for a specific service (API Definition)
 - Get additional deployment details for a service (API Assembly)
 - e.g., security protocol support, invocation uri

Benefits

- z/OS Connect provides integration for business and infrastructure assets
 - Consistently
 - Securely
 - High-performing
- Shipped with WAS, IMS, and CICS
- Unifies z/OS connectors
- Simplifies integration

Summary

- REST/JSON is key technology for accessing subsystems on z
 - We are working to make z appear as any other API provider in cloud or enterprise
 - z/OS Connect is the technology we are using across the subsystems
- We want to make this EASY for z assets and z skills to participate - both via runtime dynamic changes AND tooling
- z/OS Connect works in cooperation with API Management to help manage your enterprise APIs
 - API Management also brings value (API publishing, Access Control, etc.)