

Driving Virtual Mobile Devices Through the zEnterprise

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Friday, August 14, 2015

11:15 AM-12:15 PM

Session 17268

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Meet the zPET Mobilization Team



Torin Reilly



Max Bender

- Max and Torin joined the IBM zPET team in January 2015 while Sophomores at Marist College. Working only part-time, they were able to quickly prototype mobile workloads. We are currently moving our first prototype to production.

Agenda

- z/OS Platform Evaluation Test (zPET) introduction
 - Mission
 - Environment
 - Mobile challenge
- Mobilization project
 - Proof-of-concept: EGUI
 - JMeter
 - Mobile Bookstore
 - Architecture design
- Future mobilization plans

z/OS Platform Evaluation Test (zPET)

- Mission
 - Perform integration testing of z/OS and z/HW
 - Recreate field issues, assist with critsits, etc.
- Hardware
 - Approx. 175,000 MIPS
 - 3 generations of z/HW (z13, zEC12, z196)
- Logical
 - (up to) 32-way parallel sysplex

z/OS Platform Evaluation Test (zPET)

- Middleware
 - 86 IBM products outside z/OS BCP
 - Subsystems: CICS, IMS, DB2, MQ, WAS, IADR
 - Operations: System Automations, NetView, TWS, GDPS
- Workloads
 - 88 test applications
 - Designed to match client user flows, in some cases with direct input from IBM clients
- Mobile
 - MobileFirst workloads
 - Currently deploying to production

Mobile challenge

- How do we include mobile flows in our test environment?
 - Need a scalable, automated solution to fit
- How are mobile flows different from other flows?
 - The back-end system of record is the same
 - Is the transaction mix different?
 - Read/Write
 - Search/Update
- Solution
 - Implement MobileFirst Platform to drive CICS, IMS, DB2, WAS, MQ, etc. via simulated mobile devices

**Well, we think we know how we're going to do this
.... let's try a proof of concept**

Proof of concept - EGUI

- EGUI sample application available on developerWorks
 - <http://www.ibm.com/developerworks/rational/library/move-existing-cics-application-smartphone/>
- Fit nicely into our existing environment where CICS skills are readily-available
 - Deployed application as CICS web service
- Phase I: MobileFirst Studio
 - Hosted on local Windows client
 - Completed 2014
- Phase II: MobileFirst Server
 - New environment needed but more production-like

EGUI – Phase I

- Code imported from developerWorks, built with MobileFirst Studio, and deployed to MobileFirst Development Server, viewed with Mobile Browser Simulator

```

EGUI_
CICS EXAMPLE CATALOG APPLICATION - Main Menu
Select an action, then press ENTER
Action . . . . 1. List Items
                2. Order Item Number 00
                3. Exit

CICS EXAMPLE CATALOG APPLICATION - Inquire Catalog
Select a single item to order with /, then press ENTER

Item  Description                Cost  Order
-----
0010  Ball Pens Black 24pk            2.90  -
0020  Ball Pens Blue 24pk            2.90  7
0030  Ball Pens Red 24pk             2.90  -
0040  Ball Pens Green 24pk           2.90  -
0050  Pencil with eraser 12pk        1.78  -
0060  Highlighters Assorted 5pk      3.89  -
                                7.44  -

CICS EXAMPLE CATALOG APPLICATION - Details of your order
Enter order details, then press ENTER

Item  Description                Cost  Stock  On Order
-----
0020  Ball Pens Blue 24pk            2.90  0003  050

Order Quantity: 003
User Name: Regi
Charge Dept: Barosa
  
```



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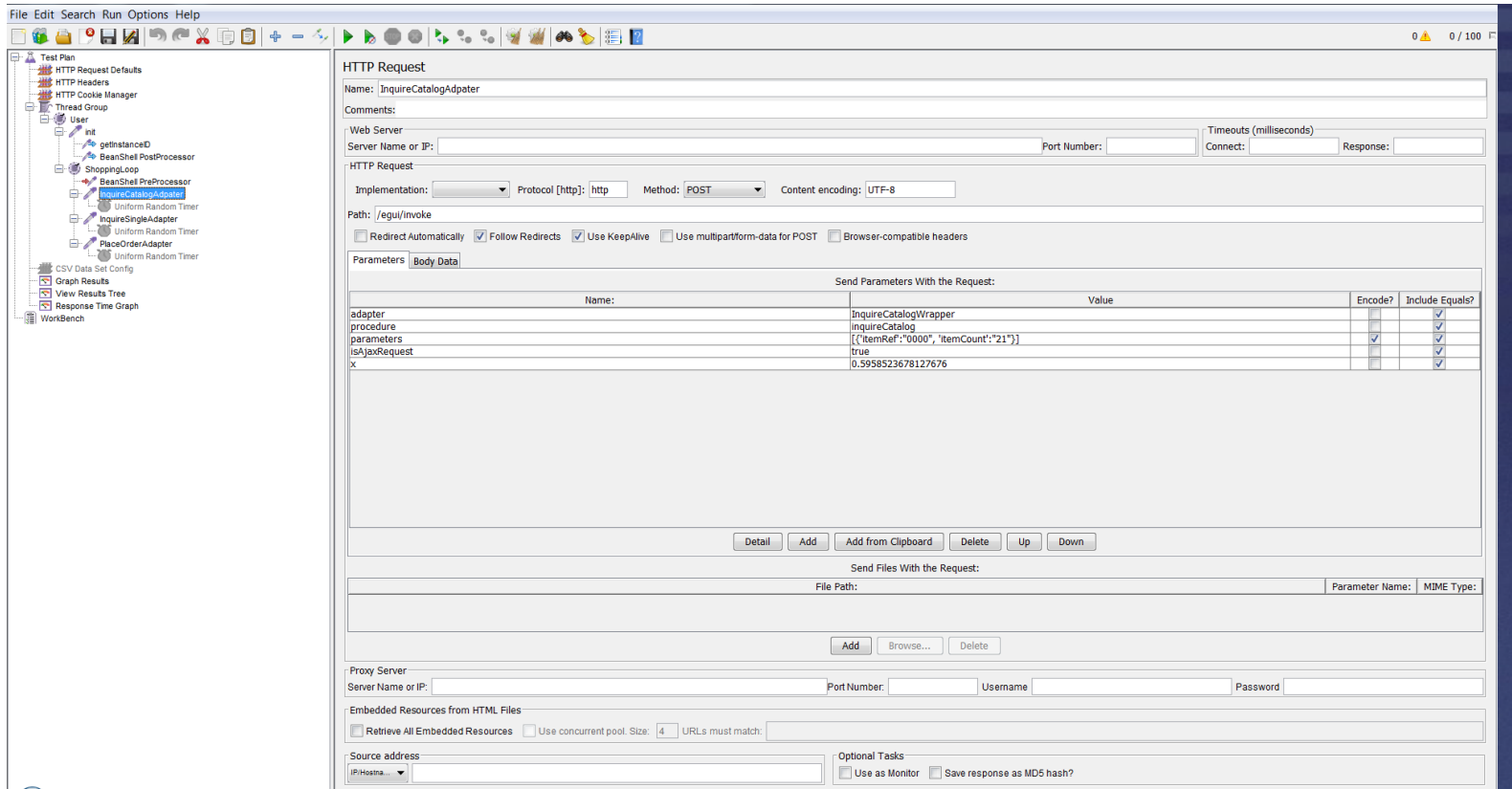
**Everything seems to be working as expected
.... this is great!**

EGUI - Phase II

- Utilize MobileFirst Server running on Linux on z Systems to host mobile connections
- Provision Linux guest on VM
- Install necessary components:
 - Application Server – WebSphere
 - Database – DB2
 - MobileFirst deployed to Liberty
- Build and deploy application to remote MobileFirst server
 - <https://www.ibm.com/developerworks/community/files/basic/anonymous/api/library/81f3b7dc-d966-402d-b2f2-8824c96deb4a/document/d45c0e21-6fff-42b8-b2da-7fc7c33858fb/media>

MobileFirst Server Does What?

- Now that the MobileFirst application and adapters are deployed, let's run them How do I do that?
- **LEARNING MOMENT #1**
MobileFirst Server does not include the Mobile Browser Simulator
 - Mobile Browser Simulator is part of MobileFirst Studio
 - Needed another way to drive adapters – at scale – on MobileFirst Server
- Our answer: JMeter
 - Alternatives: IBM Rational Performance Tester, IBM Rational Test Workbench



The screenshot displays the Apache JMeter GUI. The left sidebar shows a tree view of the test plan, with the 'InquireCatalogAdapter' element selected. The main window shows the configuration for an 'HTTP Request' element. The 'Name' field is 'InquireCatalogAdapter'. The 'Path' is '/egui/invoke'. The 'Parameters' tab is active, showing a table of parameters to be sent with the request.

Name	Value	Encode?	Include Equals?
adapter	InquireCatalogWrapper	<input type="checkbox"/>	<input checked="" type="checkbox"/>
procedure	inquireCatalog	<input type="checkbox"/>	<input checked="" type="checkbox"/>
parameters	{{"itemRef":"0000","itemCount":"21"}}	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
isAjaxRequest	true	<input type="checkbox"/>	<input checked="" type="checkbox"/>
x	0.5958523678127676	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- JMeter uses a simple, tree-based interface with “fill in the blank” test generation.

JMeter-to-MobileFirst Adapters

- JMeter simulates HTTP traffic from multiple synchronous users
 - Very short learning curve for creating a simple JMeter script to drive a MobileFirst adapter, so we could get running quickly
 - Very quickly we realized it wasn't working the way we thought it would :>
- LEARNING MOMENT #2
MobileFirst adapters were maintaining a single instance across all invocations.
 - Needed minor change to adapter configuration to function as "endUser"
- To invoke MobileFirst adapters in sequence, we first had to initialize and receive a unique Instance ID
 - Details available at our zPET developerWorks blog

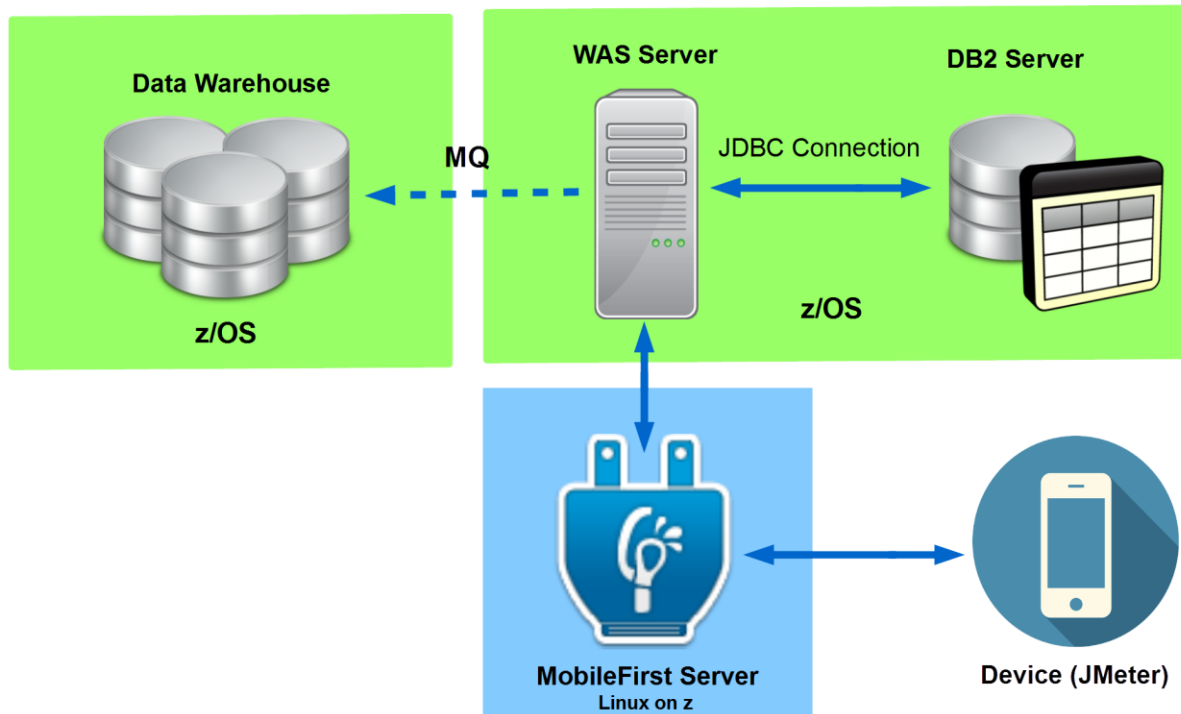
<https://www.ibm.com/developerworks/community/groups/community/zpet>

**Now we know enough to be dangerous
... let's see what we can do!**

Mobile Bookstore Introduction

- Originally web-based servlets hosted on WebSphere Application Server
- Initially we thought we could use the same servlets for mobile
- **LEARNING MOMENT #3**
Existing servlets were “old school” and returned HTML responses. We ended up writing new servlets which returned only the relevant data without any formatting.

zPET Mobile-to-DB2 architecture



Mobile Bookstore User Flow

Initialize

Search for
Book

View Book
Details

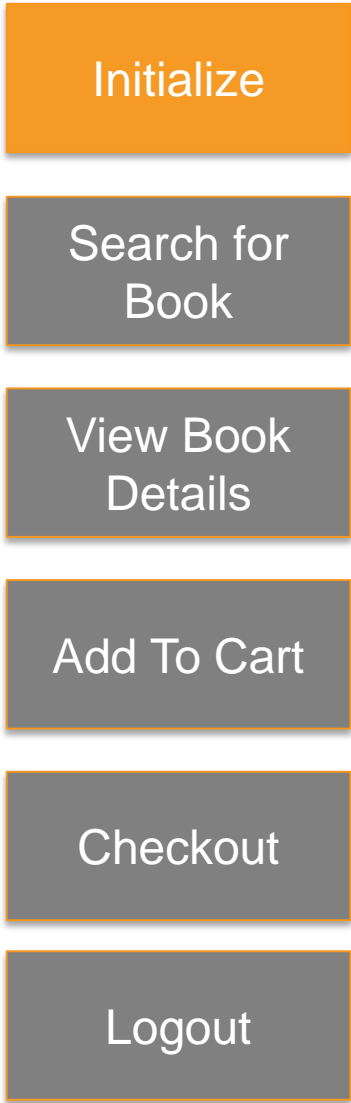
Add To Cart

Checkout

Logout

- Each box on the left represents a MobileFirst adapter call on the back-end
- User flow simplified for illustration. Would normally contain loops not displayed here.

Mobile Bookstore User Flow



No associated user interface for this call

Mobile Bookstore User Flow

Initialize

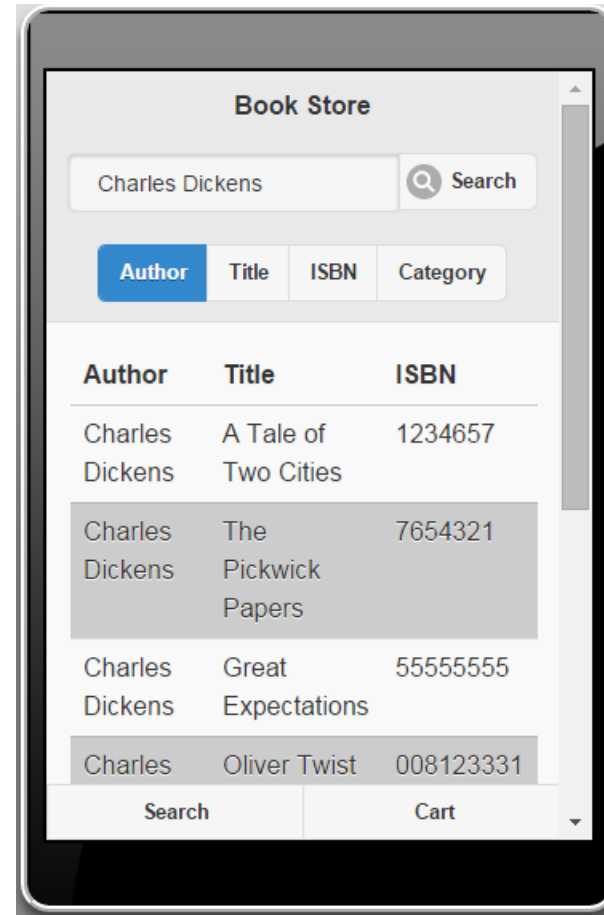
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Book

View Book
Details

Add To Cart

Checkout

Logout



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Mobile Bookstore User Flow

Initialize

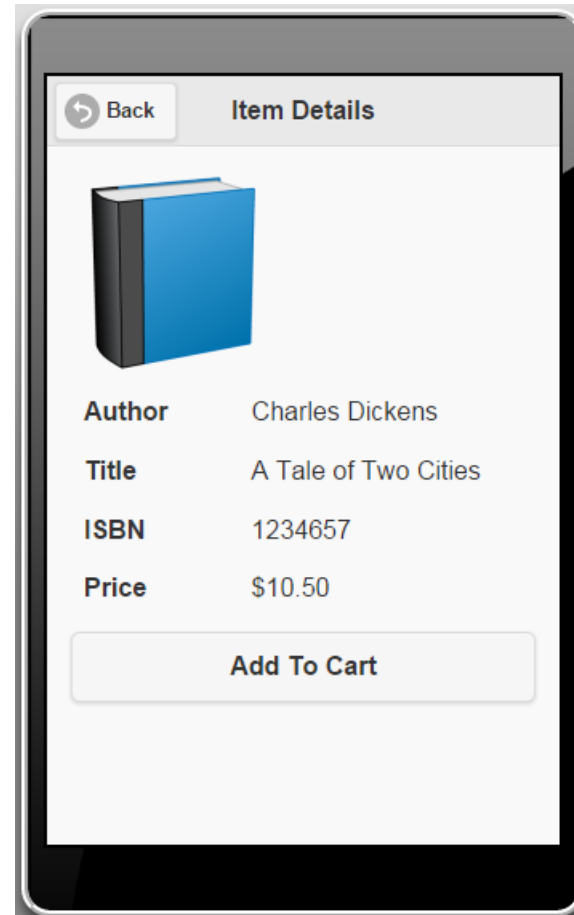
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View Book
Details

Add To Cart

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Mobile Bookstore User Flow

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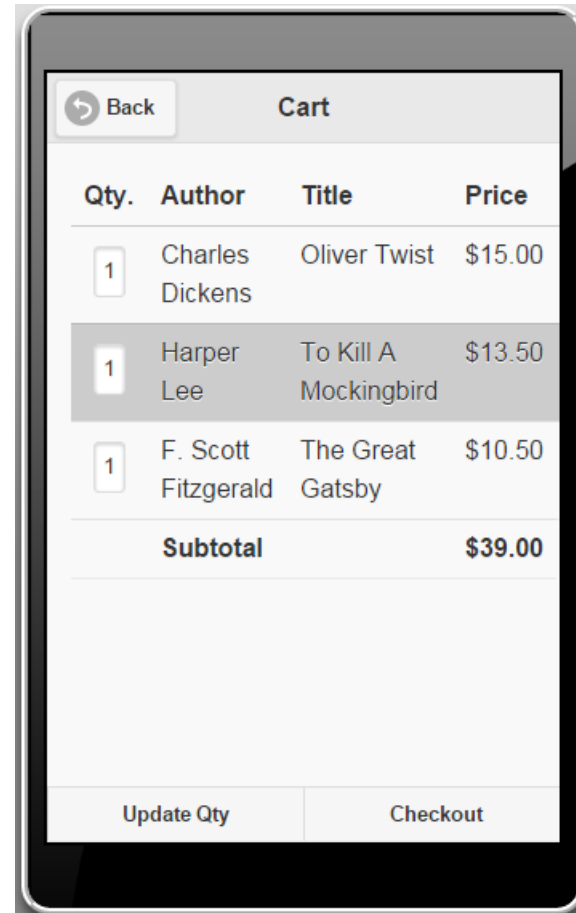
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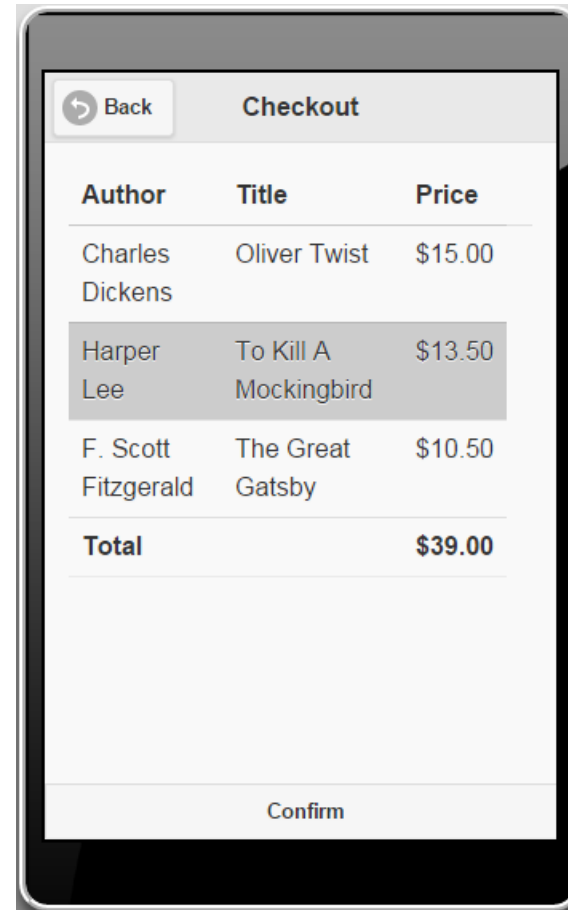
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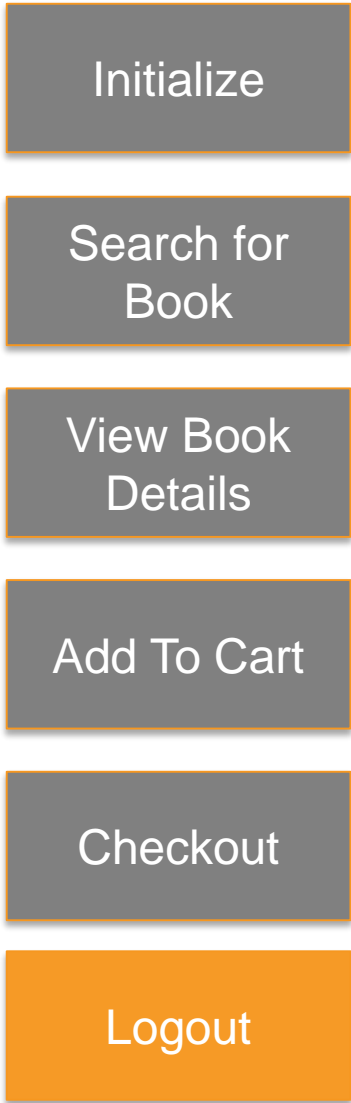
A screenshot of a mobile application's checkout screen. At the top left is a 'Back' button with a left-pointing arrow. The title 'Checkout' is centered at the top. Below is a table with three columns: Author, Title, and Price. The table lists three books: 'Oliver Twist' by Charles Dickens (\$15.00), 'To Kill A Mockingbird' by Harper Lee (\$13.50), and 'The Great Gatsby' by F. Scott Fitzgerald (\$10.50). A 'Total' row at the bottom of the table shows a price of \$39.00. A 'Confirm' button is located at the bottom of the screen.

Author	Title	Price
Charles Dickens	Oliver Twist	\$15.00
Harper Lee	To Kill A Mockingbird	\$13.50
F. Scott Fitzgerald	The Great Gatsby	\$10.50
Total		\$39.00

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Mobile Bookstore User Flow



No associated user interface for this call

Current Status & Strategy

- Strategy: run JMeter from z/OS using JZOS
 - Successful proof of concept
- Currently integrating code to generate message to Websphere MQ, which is consumed by downstream Warehouse application
- Scaling plan:
 - Thousands of users for production
 - Tens of thousands of users for stress

Future Mobile Considerations

- Workloads
 - Mobile-to-CICS **In Progress**
 - Mobile-to-IMS
 - More, more, more

These are Matt's thoughts. They do not represent any commitments, and I haven't discussed all items with my team ... although I expect to hear from them once they read this. ;>

- Infrastructure
 - WebSphere Liberty z/OS Connect
 - MobileFirst in the cloud via BlueMix
 - Highly-available Mobile First Server implementation
 - Create maintenance/service procedures

Questions



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