The Sysprog’s Guide to the Customer Facing Mainframe: Cloud / Mobile / Social / Big Data

Summer SHARE
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Session 17794
The business environment is shifting…
The Customer-Facing Mainframe

Systems of Record / Systems of Engagement
How System z Fits

Cloud......
What are the Characteristics of Public Cloud Computing?

- **On-Demand Self Service**
  - Pick services you need, when you need them
- **Broad Network Access**
  - Available over network through thin or thick clients
- **Resource Pooling**
  - Resources are shared, serving multiple consumers
- **Rapid Elasticity**
  - Capabilities provisioned, in some cases automatically
- **Measured Service**
  - Pay only for what you use
What do people mean when they say “cloud computing?”

- Cloud computing is a model for service delivery
- Eliminate the confusion, and make any cloud conversation a specific, useful discussion, by answering these three questions:
  - Where is the service coming from? (public, private or hybrid)
  - What kind of service is it? (IaaS, PaaS, SaaS)
  - Which characteristics of the cloud service delivery model are important to you? (what is the problem you are trying to solve?)

IaaS, PaaS and SaaS on z Systems private cloud

Software as a Service

Platform as a Service

Infrastructure as a Service

z/OS

z/VM and Linux on z
The hybrid cloud reality

z/OS in a Hybrid cloud

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Application and run-time deployment

DevOps Hybrid Cloud: Docker Architecture on z Systems

- Container technology provides an easy way to make applications more mobile in a hybrid cloud
- IBM and the Open Container Project

The emergence of the ‘API Economy’
Mainframe as a service – API economy

Another use-case for z/OS Connect is as a standard gateway into the z/OS LPAR to expose programs as a service:

z/OS Connect provides a way to do this with a single entry point (HA is possible) and common protocol (REST/JSON)

Mobile......
Typical mobile environment

**Client Tier Devices**
- OS Device Variety
- Screen size variety
- Various Smartphones
- Tablets

**Middle Tier Server**
- Web Application Server
- Mobile Application
- Runtime Server
- Security components
- Back-end access services
- Caching to back-end services

**Back-end Data & Services**
- Databases and Data sources
- Transactional services

**Systems of Engagement**

**Systems of Record**
System z bridges Systems of Record and Systems of Engagement

**Systems of Engagement**

- Mobile Apps
- Systems of Engagement are cloud-based, decentralized, support rapid app development
- Cloud APIs
- Existing Web Apps

**Systems of Record**

- Finance
- Corporate Data Warehouses
- Accounting
- Order Fulfillment
- Systems of Record are well integrated, trusted repositories

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**IBM MobileFirst architecture**

1. **Android**
2. **Application Center**
3. **Device Runtime**
4. **Available for Linux on z**
5. **MobileFirst Console**

*Available for Mac OS X and Windows

* Available for Android, iOS, Windows Phone and Blackberry

* Web-based admin tool
MobileFirst running on Linux on z

Mobile protocol connectivity with core z Systems applications including CICS, IMS, TPF, MQ, WMB and DB2

IBM MobileFirst Platform
- Simple to maintain
- Secure
- Standards-based
- Easier and faster to develop apps
- Includes adapters that provide secure connectivity to back-end systems

JSON stands for JavaScript Object Notation

Extend mainframe-based apps to mobile users

IBM MobileFirst Platform Foundation Studio
- MobileFirst Platform Foundation Studio includes tools for mobile application development, with programming models and web support
- Fully integrated into the RDz Eclipse-based platform
MobileFirst and z/OS Connect

- z/OS Connect – a single gateway for mobile connectivity – provides protocol conversion
- Ships with WebSphere on z/OS, CICS and IMS – at no additional charge
- Integrated into z/OS services (e.g., WLM, SMF, etc.)

z/OS Connect Interceptors

- z/OS Connect runs as part of WebSphere Liberty Profile – a fast, lightweight, composable server runtime
- Low cost option – Java-based, runs on zIIPs
- Also includes additional logging, security and metering services, plus an API
From 3270 to z/OS Connect to Mobile App to Bluemix to IoT

Social......
Social Media Explained

What is social business?

- A lot more serious than getting a nice presence on Facebook or Twitter or Google+

- The application of social networking tools, ideas and culture to business roles, processes and outcomes
  - Collective intelligence
  - A new way of working
  - Understand market shifts
Three elements of successful Social Business approaches

- Build Communities
- Create Conversations
- Listen & React

Spanning Systems of Record and Systems of Engagement

- Systems of Engagement
- Social Business
- Systems of Record
Collaboration software for Linux on System z

IBM Connections
Social Software for Business

Empowers users to be more innovative and helps them collaborate & execute more quickly with dynamic networks of co-workers, partners and customers.

Home page
See what's happening across your social network

Communities
Work with people who share common roles and expertise

Files
Post, share, and discover documents, presentations, images, and more

Wikis
Create web content together

Activities
Organize your work and tap your professional network

Profiles
Post updates to your board and find the people you need

Forums
Exchange ideas with, and benefit from the expertise of others

Social Analytics
Discover who and what you don’t know via recommendations

Blogs
Present your own ideas, and learn from others

Bookmarks
Save, share, and discover bookmarks

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Big Data......
Technological immortality

“….each of us now leaves a trail of digital exhaust, an infinite stream of phone records, texts, browser histories and other information that will live on forever.”
- The Human Face of Big Data

“We have lots of information technology. We just don’t have any information.”
Analyzing all the data about customers adds business value

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Analysis</th>
<th>Business Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional RDBMS</td>
<td>Analyze all customer records across departments</td>
<td>Complete view of customer value to the company</td>
</tr>
<tr>
<td>External Data</td>
<td>Analyze customer sentiment and experience</td>
<td>Attract and retain customers</td>
</tr>
<tr>
<td>Real Time Data</td>
<td>Analyze customer data as it happens</td>
<td>Personalize customer interaction in real time</td>
</tr>
</tbody>
</table>

Customer experience: the demographic of one

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What does a big data platform do?

- Analyze a Variety of Information
  - Novel analytics on a broad set of mixed information that could not be analyzed before

- Analyze Information in Motion
  - Streaming data analysis
  - Large volume data bursts & ad-hoc analysis

- Analyze Extreme Volumes of Information
  - Cost-efficiently process and analyze petabytes of information
  - Manage & analyze high volumes of structured, relational data

- Discover & Experiment
  - Ad-hoc analytics, data discovery & experimentation

- Manage & Plan
  - Enforce data structure, integrity and control to ensure consistency for repeatable queries

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Traditional IM | "Big Data" Style

- Requirements based
- Top-down design
- Integration and reuse
- Technology consolidation
- World of DW and ECM
- Competence centers
- Better decisions
- Enterprise

- Opportunity oriented
- Bottom-up experimentation
- Immediate use
- Tool proliferation
- "World of Hadoop"
- Hackathons
- Better business
- Marketing (+)
What is Hadoop?

Hadoop is an open source software framework from the Apache Software Foundation that supports data-intensive highly parallel applications.

High throughput, batch processing
Designed to run on large clusters of commodity hardware

- Lots of cores – inexpensive cores working all the time
- Processors fail – that’s ok – just replace them
- Lots of redundant disks – really inexpensive disks
- Disks crash – that’s ok – just replace them

**But nothing in Hadoop requires commodity cores and disks!**

- Two main components
  - Hadoop Distributed File System (HDFS)
    - Self-healing, high-bandwidth clustered storage
  - MapReduce engine
    - A simple, powerful framework for parallel computation

Is this your data lifecycle?
Big data and analytics on z Systems

- Data Store
  - DB2 for z/OS
  - Big Data (Hadoop)
  - InfoSphere BigInsights
  - Business Intelligence and Reporting
  - IBM Cognos Enterprise
  - Predictive Analytics, Modeling, Scoring
  - IBM SPSS
  - BLU Acceleration
  - DB2 LUW

IBM z Systems

DB2 Analytics Accelerator

Hadoop and z Systems

- System z Mainframe
  - z/OS
  - DB2
  - IMS
  - Logs

- Linux for System z
  - InfoSphere BigInsights
  - MapReduce, Hbase, Hive
  - HDFS

- System z Connector for Hadoop

z/VM

- IFL
  - IFL
  - IFL

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SPSS on z Systems Architecture

Windows

Linux for z Systems

z/OS & Linux for z Systems

z/OS

SPSS Scoring Adapter for DB2 z/OS

DB2 z/OS

Data Warehouse

z/OS & Linux for z Systems

Windows

Linux for z Systems

Modeling ETL Scoring

Modeling ETL Scoring

SPSS Statistics and Modeler Client

Modeling ETL Scoring

SPSS Statistics and Modeler Client

Modeling ETL Scoring

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48
We’re ready to begin the next phase of keeping things exactly the way they are!

The customer-facing mainframe