Cloud on System z – The Real Deal

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Cloud Characteristics

- Resource Pooling
- Broad Network Access
- Metering and Monitoring
- On-Demand Self Service
- Infinitely Elasticity
Service Models

Infrastructure as a Service

Platform as a Service

Software as a Service
Delivery Models

Public Cloud

Private Cloud

Community Cloud

Hybrid Cloud
Considerations

- Architecture Complexity
- Time to value
- Capability to be extensible
- End users can view service catalog
- Best use of the platform

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Platform

System z

- Resource Pooling
- Security
- Monitoring
- Network Access
- Elasticity
Options

Build your own

Extreme Cloud Administration Tool (xCat)
zEnterprise Starter Edition for Cloud (TPM)
IBM Systems Director (ISD)
IBM Workload Deployer (IWD)
System z Solution Edition for Cloud (TSAM)
Build your own Architecture
Time to Value
Extensibility
xCAT Architecture

- UI
- MN
- MAP
- Master
- DIRMaint
- SMAPI
- RACF
xCAT UI

Provides **self service** interface
Users can request **clones and installs**
Users can request **multiple services at once**
Users can view **service catalog**
xCAT UI

Provision a node on System z.

Provision: New node
Group: all
Node: zlnx09
User ID: zlnx09
Hardware control point: maplnx64
Operating system image: sles11sp1-s390x-inst

Directory entry:
USER ZLNX09 U78DEX3S 512M 512M G 64
INCLUDE LNDFLT1
CPU 00 NODEDICTE
CPU 01 NODEDICTE
IPL CMS PARM AUTOCTR
MACHINE ESA 4
OPTION QUICKDSP APPLMON
NICDEF 4420 TYPE QDIO LAN SYSTEM CLOUDSWC
MACID FFFF9

Disks:

<table>
<thead>
<tr>
<th>Type</th>
<th>Address</th>
<th>Size</th>
<th>Mode</th>
<th>Pool</th>
<th>Password</th>
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<tbody>
<tr>
<td>3390</td>
<td>0100</td>
<td>10016</td>
<td>MR</td>
<td>POOL0</td>
<td></td>
</tr>
</tbody>
</table>

Add disk
xCAT Management Node

- Controls the xCat service catalog (tables)
- Can manage multiple LPARS
- Can be extended with plugins
- Can manage other platforms
Time to Value
Extensibility
xCat Clone

MAP

Master

Free Disks
xCat Clone

MAP

Master

Clone

Free Disks
xCat Clone

Free Disks
xCat Clone

Flash Copy or dd

MAP

Master

Clone

Free Disks
xCat Clone

Free Disks
xCat Clone

MAP

Master

Clone

Free Disks
xCat Install

MAP

MN

Free Disks
xCat Install
xCat Install

- MAP
- MN
- Clone

Free Disks
xCat Install

Install

MAP

MN

Clone

Free Disks
xCat Install

MAP

MN

Clone

Free Disks
Things to Consider

Open Source Support
Currently no ESM support
Personalization done through Linux tools on Master
Connects to SMAPI through sockets (IUCV)
Very Linux oriented
Based on clustering technology
With MOAB can extend cloud capability
zEnterprise Starter Edition for Cloud

Enterprise UI

TPM

JAVA/SMAPI

Master

DIRMaint

SMAPI
TPM Based Components

- No need for MAP server
- TPM can run on z/Linux
- Special TPM workflows
- Java implements SMAPI calls directly
Example UI

System z Server Deployment on z/VM - Deploy a new Server

Fill in the following fields and press SUBMIT to deploy a new server.

Provide information to deploy a new server

Select a Master to be deployed *
- RHEL 5.3 64-bit Linux
- SLES 10 SP3 64-bit Linux
- z/OS V1.10

email Address *
- user@my.company.com

Department Charge *
- ACCT

Credit Card Number

* - means required

Submit  Reset  Home
Time to Value
Extensibility
Clone

SMAPI

Master

Free Disks
Clone

- SMAPI
- Master
- Clone

Free Disks
Clone

SMAPI

Master

Clone

Free Disks
Clone

Flash copy

SMAPI

Master

Clone

Free Disks
Clone

- SMAPI
- Master
- Clone

Free Disks
Things to Consider

z/VM 6.2
Can work with RACF and VMSecure
Uses TCP/IP to connect to SMAPI
Personalization is done through:
  CMS Disk
  CP “hack” (p15 override)
  VMSecure Tags
IBM Workload Deployer

- IWD
- MAP
- Master
- DIRMaint
- SMAPI
- RACF
**IWD UI**

**Virtual System Patterns**

<table>
<thead>
<tr>
<th>Pattern Name</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td>WebSphere Message Broker 7.0.0.1 (Basic)</td>
<td></td>
</tr>
<tr>
<td>WebSphere Portal clustered servers (RHEL)</td>
<td></td>
</tr>
<tr>
<td>WebSphere Portal clustered servers (SLES)</td>
<td></td>
</tr>
<tr>
<td>WebSphere Portal single server (RHEL)</td>
<td></td>
</tr>
<tr>
<td>WebSphere Portal single server (SLES)</td>
<td></td>
</tr>
<tr>
<td>WebSphere Portal stand-alone server (RHEL)</td>
<td></td>
</tr>
<tr>
<td>WebSphere Portal stand-alone server (SLES)</td>
<td></td>
</tr>
<tr>
<td>WebSphere advanced cluster</td>
<td></td>
</tr>
<tr>
<td>WebSphere advanced cluster (development)</td>
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</tr>
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<td>WebSphere cluster</td>
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<tr>
<td>WebSphere cluster (development)</td>
<td></td>
</tr>
<tr>
<td>WebSphere cluster (large topology)</td>
<td></td>
</tr>
<tr>
<td>WebSphere single server</td>
<td></td>
</tr>
<tr>
<td>WebSphere single server with sample</td>
<td></td>
</tr>
</tbody>
</table>

**z clou**

- **Description:** None provided
- **Created on:** Apr 13, 2012 4:44:00 PM
- **Current status:** Draft
- **Updated on:** Apr 13, 2012 4:44:26 PM
- **In the cloud now:**
  - zmx01
  - zmx02
  - zmx03

**Access granted to:** Administrator [owner]

**Topology for this pattern:**

- Deploys to z/VM hypervisors.

**Standalone server 8.6.0.1**
Time to V
Extensibility
IWD No Cache

Appliance

IWD

MAP

Free Disks
IWD No Cache

Appliance

Star

Free Disks
IWD No Cache

Free Disks
IWD With Cache

Appliacne

IWD

MAP

Free Disks
IWD With Cache

Flash Copy

IWD

MAP

Clone

Free Disks
IWD With Cache

Appliance

IWD

MAP

Clone

Free Disks

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Things to Consider

z/VM 6.2
It is an appliance
Supports read only file systems
Pattern oriented
Ships with WebSphere Application Server pattern
Supports VM Secure, RACF, Dirmaint
Personalization done as part of Activation Engine
Supports OVA, OVF format
Fits closely with Tivoli’s future Cloud direction
IBM Systems Director

- ISD
- MAP
- Master
- DIRMaint
- SMAPI
Deploy Virtual Appliance

Target

Select the location where you want to deploy the virtual appliance.

You can deploy the virtual appliance to create a new virtual server on an existing host system or system pool. Or, you can deploy the virtual appliance to an existing virtual server.

- Deploy to a new virtual server on the following:

  Select | Name | State | IP Addresses | Installed OS | Description
  --------|------|------|-------------|-------------|---------
  1 | V64-IBM 2817 MBD 02D00009... | Enabled | | | 2/VM System F...

- Deploy to an existing virtual server:

  Select | Name | State | IP Addresses | Description
  --------|------|------|-------------|---------
  1 | or SLW3MSTR | Stopped | | 

Note: When deploying to a server system pool, the server system pool must identify the host where the virtual appliance will be deployed. This process might take a few minutes to complete.
Time to Value
Extensibility
ISD Provision

Free Disks
ISD Provision

ISD

MAP

Clone

Free Disks
ISD Provision

- ISD
- MAP
- Clone

Free Disks
ISD Provision

- Star
- ISD
- MAP
- Clone
- Free Disks
ISD Provision

Free Disks
ISD Provision

Free Disks
Things to Consider

z/VM 6.2
Supports RACF (not VMSecure)
Runs on Power/Intel only
One provision at a time
Uses sockets (IUCV)
Master can have many disks
No orchestration
Personalization done as part of Activation Engine
IBM System z Solution Edition for Cloud

- Web 2.0 UI
- SRM
- TPM
- MAP
- Master
- DIRMaint
- SMAPI
- RACF
IBM System z Solution Edition for Cloud

Role Based access to resources
Very little specific knowledge needed
Shows project state
Users can view service catalog
Provides access to approval mechanisms
IBM System z Solution Edition for Cloud

- Provides orchestration capabilities
- Built in approval flows
- Works with CMDB
- Provides service catalog
- Puts the service in service

SRM
IBM System z Solution Edition for Cloud

Provides data center model and CMDB integration
Provides automation workflows
Provides logical device operations
Plugable architecture allows for software installation as well
TSAM UI

Service Automation Manager

**My Requests**

- Failed (1) Resolved (3)

**Recent Activity**
- Create Project with z/VM Linux Servers (Failed)
- Create Team TEAM 1 (Resolved)
- Create Customer LINUX (Resolved)
- Create Customer PHDPLUST (Resolved)

**My Projects**

- No recent activity

**Upcoming Projects**
- No upcoming projects

Complete your sessions evaluation online at SHARE.org/SFEval
Time to Value
Extensibility
TSAM Clone

MAP

Master

Free Disks
TSAM Clone

- MAP
- Master
- Clone

Free Disks
TSAM Clone

Flash Copy or dd

MAP

Master

Clone

Free Disks
TSAM Clone

Free Disks
TSAM Clone

- MAP
- Master
- Clone

Free Disks
Things to Consider

z/VM 5.4 and 6.2
Some parts can't run on z
Single mini disk master
Can provision many VM's at once
Personalization done at first boot
Connect to SMAPI uses TCP/IP
Service Orchestration build in
Solutions Untried (by US)

- Cloud Ready
  - Like Solution Edition for Cloud
  - Leverages services for a drastically better time to value
  - Has the same extensibility characteristics
- CSL-Wave
  - Integrated zVM solution
  - Should have quick return on Investment
  - Is a z only solution
## Summary

<table>
<thead>
<tr>
<th>Solution</th>
<th>Time To Value</th>
<th>Extensibility</th>
<th>Multi-platform</th>
<th>z Security</th>
<th>VM Version</th>
<th>% on z</th>
<th>Use z/VM</th>
<th>Multiple deploy</th>
<th>Orchestrator</th>
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</tr>
</tbody>
</table>

VH=Very High  H=High  M=Medium  L=Low  VL=Very Low

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