IBM Entry Cloud Configuration for SAP Solutions on zEnterprise

New Cloud offering for z/OS
Cloud computing addresses these challenges

Virtualized
- Higher utilization
- Economy of scale benefits
- Lower capital expense

Standardized
- Easier access
- Flexible pricing
- Reuse and share
- Easier to integrate

Automated
- Faster cycle times
- Lower operating expense
- Optimized utilization
- Improved compliance
- Optimized security
- End user experience

Doing more with less

Higher quality services

Breakthrough agility and reducing risk
Complex IT landscapes create challenges for SAP customers

- Explosive growth in the number of SAP systems is resulting in landscape complexity and associated service quality issues.
- Dependence on labor intensive processes result in long lead times for creation of new SAP systems, refreshes for development, and test.
- SAP operational budgets are draining valuable resources needed for business value creating SAP application projects.
- Need for improved productivity of Basis teams to implement and manage multiple SAP environments with reliability, repeatability, and reduced time to value.

Multiple physical servers per SAP System

Multiple operational stages per SAP System

Multiple system landscapes per SAP functional solution
Introducing: IBM Entry Cloud Configuration for SAP Solutions on zEnterprise

- A cloud enablement offering that combines technology and services to automate, standardize, and speed up day-to-day operations for SAP resulting in reduced operational costs and faster time to value.

- Summary:
  - Automation of specific DB2 tasks and workflow engine tasks
  - SAP service catalog
    - Automated cloning to provision a new SAP system
    - Create customized SAP system from an existing image
    - SAP database refresh
    - Create an additional SAP dialog instance
  - Services
    - Planning
    - Configuration
    - Automation code
    - Customization
    - Onsite implementation assistance
    - Training

Available November 2012
Background

- IBM SAP joint development team built a virtualized infrastructure with automation and management for SAP applications more than five years before it was called ‘Cloud’
- IBM provides enterprise private cloud services via IBM Entry Cloud Configuration on zEnterprise with a new offering under the “managed with cloud technologies” offerings for System z
  - Customer self services provisioning with strong automation capabilities
  - DB2® for z/OS® services
  - SAP services
  - Makes use of DB2 Cloning Tool
  - Requires FlashCopy feature of DS8000
IBM Entry Cloud Configuration for SAP solutions on zEnterprise provides automation to accelerate and standardize operations

- **SAP System Clone** – Provision a fresh SAP system based on a new system copy
- **SAP System Copy** – Create a customized SAP system based on existing system
- **SAP System Refresh** – Copy DB content from PRD to Non-PRD including post processing
- **Create an additional Dialog instance** – Adding additional application server instances, e.g. for monthly closing

Note: TTV (time to value)
IBM Entry Cloud Configuration for SAP Solutions on zEnterprise transforms traditional services into automated cloud services

Value Delivered:

- New SAP System
- SAP Database Refresh
- SAP System Clone

From traditional

New SAP System: 1-2 weeks → ~1 day
SAP Database Refresh: 2-3 days → ~0.5 days
SAP System Clone: 1-2 weeks → ~1.5 days

Planned delivery times with IBM Entry Cloud Configuration on zEnterprise based on actual administrator experience. Individual results may vary.
## Solution scope – Details

### DB2 Automation

- **Introduce a Database on System z service catalog for building the following database use cases:**
  - Provide a DB2 subsystem on z/OS
    - Unattended, automated database installation
    - In addition automate de-provisioning of the database
    - Predefined SMS/ACS setup
  - Automated update of database libraries
    - Replace code and perform hold actions on subsystem
  - Clone database from backup
    - Restore an existing backup (offline, backup system) into a different DB2 subsystem
  - Automated backup/restore
    - Mainly used for clone use case, but also for recovery purposes

### SAP Services

- **Introduce a SAP service catalog for building the following SAP use cases.**
  - Create a fresh SAP System from scratch
    - Unattended SAP installation
  - SAP database refresh
    - Copy DB content from PRD to Non-PRD including post processing
  - Create a customized SAP system based on existing image
    - Provide a Non-PRD System
  - Create an additional SAP dialog instance (DI) to cover peak workload
    - Additional DI runs in same context

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**Note:** IBM Entry Cloud Configuration on zEnterprise

**Requirements:** z/OS 1.11, DB2 9 or DB2 10 for z/OS, DB2 Cloning Tool
Database Provisioning System – Operational Efficiency

**Value Delivered:**
- **Install DB2**: From traditional 1 day → To cloud 12 mins
- **Maintain database libraries**: From traditional ½ day → To cloud 8 mins
- **Clone database**: From traditional 2-3 days → To cloud 20-180 mins
- **Install operating system**: From traditional 1 day → To cloud 30-60 mins
- **Prepare upgrade/provide SAP system**: From traditional 2-3 days → To cloud ~40-200 mins
- **Add additional application server**: From traditional 1 day → To cloud 10 mins

Objectives: Planned delivery times with IBM Entry Cloud Configuration on zEnterprise based on actual administrator experience. Individual results may vary.
Database Provisioning System – Architecture Overview

zEnterprise

Sysplex PRD
- z/OS LPAR – Mgmt*
  - DB2
  - DPS Web App
  - DB2 Instances

Sysplex DEV
- z/OS LPAR – Mgmt*
  - DB2
  - DPS Web App
  - DB2 Instances

Management LPAR Not exclusively for DPS

DPS
- Configuration and management Database + Web Application
- z/OS LPAR – Mgmt
- Provisioning and Lifecycle Management
- Import
- Import of meta data to support use case “SAP System Refresh”

Import

Import of meta data to support use case “SAP System Refresh”
Screen Shots
## Database Provisioning System – Meta-data Management

### Database Provisioning System - DB2 Subsystems

- Switch to graphical view...
- Register database subsystem...
- Prepare new database subsystem...
- Add custom parameter...
- Delete custom parameter...

### Table: Database Subsystems

<table>
<thead>
<tr>
<th>Action</th>
<th>Name</th>
<th>Current Request</th>
<th>VCAT</th>
<th>Installed</th>
<th>SMP/E Group</th>
<th>Release</th>
<th>Service Level</th>
<th>IRLM Subsys Name</th>
<th>DDF Location</th>
<th>DDF Port</th>
<th>DDF Resync Port</th>
<th>LU Name</th>
<th>Owner (User ID)</th>
<th>Migration Mode</th>
<th>NUMLKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FT01</td>
<td>-</td>
<td>FT01</td>
<td>No</td>
<td>COB3</td>
<td>DEV</td>
<td>none</td>
<td>IT01</td>
<td>COBFT01</td>
<td>5901</td>
<td>5101</td>
<td>IPXAC901</td>
<td>DPS User (user)</td>
<td>n.a.</td>
<td>100000</td>
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<td>V100</td>
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</table>
Database Provisioning System – Meta-data Management (2)

Parameter Name * (without #)

**DSMX**

Default Value

20000

Maximum Length

5

Add Parameter

Remarks

* The following parameter names are reserved and can't be used:

[BEGIN, DATASHARING, DDFLOCATION, DDFLUNAM, DDFPPORT, DDFRPORT, DELLOG, DPSHLQ, DSNZPARM, DUMPID, END, ENDRBAD, GROUPNAME, HLQ, HLQPRE, INSTALLED, IRLMGRP, IRLMID, IRLMNM, JOBNAME, LIBRARY, LIBLEND, LIB_ID, LPAR, MODE, NAME, NEWLOG, NUMLKS, OWNER, POOL, PROD, PUTLEVEL, REL, RELEASE, RESERVED_RID, RESERVED_USER, SERVICELVL, SGLGROUP, SOURCECSI, SOURCETHQ, SOURCETLIB, STARTRBAD, STATSINT, TARGETCSI, TARGETLQ, TARGETTLIB, TARGETUNIT, TOMCATHOME, USER, VCAT, VERS, WLMPREFIX]

<table>
<thead>
<tr>
<th>Change</th>
<th>User ID</th>
<th>Migration Mode</th>
<th>DSMAX</th>
<th>NUMLKS</th>
</tr>
</thead>
<tbody>
<tr>
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<td>n.a.</td>
<td>20000</td>
<td>100000</td>
</tr>
<tr>
<td>3</td>
<td>n.a.</td>
<td>n.a.</td>
<td>20000</td>
<td>500000</td>
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<td>100000</td>
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</tbody>
</table>
Database Provisioning System – Request Tracking

<table>
<thead>
<tr>
<th>Request ID</th>
<th>Request Type</th>
<th>Version</th>
<th>Status</th>
<th>DB2 Instance</th>
<th>Requestor</th>
<th>Start Time</th>
<th>End Time</th>
<th>Elapsed Time</th>
<th>Backup ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Uninstall a DB2 Subsystem</td>
<td>V100</td>
<td>finished</td>
<td>FT01</td>
<td>admin</td>
<td>2012-02-24 10:28:21</td>
<td>2012-02-24 10:29:45</td>
<td>0:01:24:003</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Install a DB2 Subsystem</td>
<td>V100</td>
<td>finished</td>
<td>FT02</td>
<td>admin</td>
<td>2012-02-24 10:27:21</td>
<td>2012-02-24 10:35:51</td>
<td>0:08:28:551</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Add add. DS Member</td>
<td>V910</td>
<td>finished</td>
<td>FSA0</td>
<td>admin</td>
<td>2012-02-23 14:29:02</td>
<td>2012-02-23 14:34:25</td>
<td>0:05:23:441</td>
<td></td>
</tr>
</tbody>
</table>
### Database Provisioning System – Request Tracking

**Database Provisioning System – Show latest request per DB2**

<table>
<thead>
<tr>
<th>Request ID</th>
<th>Request Type</th>
<th>Version</th>
<th>Status</th>
<th>DB2 Instance</th>
<th>Requestor</th>
<th>Start Time</th>
<th>End Time</th>
<th>Elapsed Time</th>
<th>Backup ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Uninstall a DB2 Subsystem</td>
<td>V100</td>
<td>finished</td>
<td>FT01</td>
<td>admin</td>
<td>2012-02-24 10:28:21</td>
<td>2012-02-24 10:29:45</td>
<td>00:01:24.003</td>
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<tr>
<td>7</td>
<td>Install a DB2 Subsystem</td>
<td>V100</td>
<td>finished</td>
<td>FT02</td>
<td>admin</td>
<td>2012-02-24 10:27:21</td>
<td>2012-02-24 10:35:51</td>
<td>00:08:29.551</td>
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<tr>
<td>6</td>
<td>Install an add. DS Member</td>
<td>V910</td>
<td>finished</td>
<td>FSA0</td>
<td>admin</td>
<td>2012-02-23 14:29:02</td>
<td>2012-02-23 14:34:25</td>
<td>00:05:23.441</td>
<td></td>
</tr>
</tbody>
</table>

**Request Phases**

- **Prepare**
- **Execution**

**Request Parameters**

- Request Number: 7
- Request Type: Install a DB2 Subsystem
- Request Status: 0
- DB2 Subsystem: FT02
- DB2 Version: 10
- Ended: 2012-02-24 10:35:51.0

**Workflow Details**

<table>
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<tr>
<th>Step</th>
<th>Job Name</th>
<th>Template Name</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>DPS0007A</td>
<td>DSNSTODB</td>
<td>finished</td>
</tr>
<tr>
<td>2</td>
<td>DPS0007B</td>
<td>DELETE</td>
<td>finished</td>
</tr>
<tr>
<td>3</td>
<td>DPS0007C</td>
<td>COMPRPL</td>
<td>finished</td>
</tr>
<tr>
<td>4</td>
<td>DPS0007D</td>
<td>DSNLIBS</td>
<td>finished</td>
</tr>
<tr>
<td>5</td>
<td>DPS0007E</td>
<td>DSNTIJMV</td>
<td>finished</td>
</tr>
<tr>
<td>6</td>
<td>DPS0007F</td>
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</tr>
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<td>7</td>
<td>DPS0007G</td>
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</tr>
<tr>
<td>8</td>
<td>DPS0007H</td>
<td>DSNTIJUZ</td>
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<td>DPS0007J</td>
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</tr>
<tr>
<td>11</td>
<td>DPS0007K</td>
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</table>

**JCL Parameters Details**

<table>
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<th>Parameter Name</th>
<th>Value</th>
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<td>DATASHARING</td>
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<td>IPXAC902</td>
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<td>DDFPORT</td>
<td>5002</td>
</tr>
<tr>
<td>DDFRPORT</td>
<td>5102</td>
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<td>DPSHLQ</td>
<td>DPS4</td>
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</tr>
<tr>
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<td>HLQ</td>
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<td>HLQPRE</td>
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<tr>
<td>IRIAMNM</td>
<td>FT02</td>
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</table>
### Database Provisioning System (DPS) – Sample screen shots

#### Request Parameter

- **Request Number**: 221
- **Request Type**: Install a DB2 Subsystem
- **Request Status**: 0
- **DB2 Subsystem**: FT02
- **DB2 Version**: 9
- **Started**: 2012-02-10 14:39:50.0
- **Ended**: 2012-02-10 14:46:38.0

#### Workflow Details (Click to show/hide)

<table>
<thead>
<tr>
<th>Step</th>
<th>Job Name</th>
<th>Template Name</th>
<th>Status</th>
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<td>finished</td>
</tr>
<tr>
<td>2</td>
<td>DPS0221B</td>
<td>DELETE</td>
<td>finished</td>
</tr>
<tr>
<td>3</td>
<td>DPS0221C</td>
<td>COMPRPL</td>
<td>finished</td>
</tr>
<tr>
<td>4</td>
<td>DPS0221D</td>
<td>DSNLIBS</td>
<td>finished</td>
</tr>
<tr>
<td>5</td>
<td>DPS0221E</td>
<td>DSNTIJMV</td>
<td>finished</td>
</tr>
<tr>
<td>6</td>
<td>DPS0221F</td>
<td>DSNTIJIN</td>
<td>finished</td>
</tr>
<tr>
<td>7</td>
<td>DPS0221G</td>
<td>DSNTIJUZ</td>
<td>finished</td>
</tr>
<tr>
<td>8</td>
<td>DPS0221H</td>
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<td>finished</td>
</tr>
<tr>
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<td>DPS0221I</td>
<td>DSNTIJID</td>
<td>finished</td>
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<tr>
<td>10</td>
<td>DPS0221J</td>
<td>SETDDF</td>
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</tr>
<tr>
<td>11</td>
<td>DPS0221K</td>
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<tr>
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<tr>
<td>13</td>
<td>DPS0221M</td>
<td>DSNTIJTM</td>
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<td>15</td>
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<td>finished</td>
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<td>ADBBIND</td>
<td>finished</td>
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#### JCL Parameter Details (Click to show/hide)

- **Parameter Name**: BSDDSHLQ
  - **Value**: #HLQ#L
- **Parameter Name**: DATASHARING
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- **Parameter Name**: DDFLOCATION
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- **Parameter Name**: DDFLUNAM
  - **Value**: IPXAC902
- **Parameter Name**: DDFPORT
  - **Value**: 5902
- **Parameter Name**: DDFRPORT
  - **Value**: 5102
- **Parameter Name**: DPSHLQ
  - **Value**: DPS4
- **Parameter Name**: DSNZPARM
  - **Value**: DSNZPARM
- **Parameter Name**: GROUPNAME
  - **Value**: FT02
- **Parameter Name**: HLQ
  - **Value**: FT02
- **Parameter Name**: HLQPRE
  - **Value**: FT02
- **Parameter Name**: IRLMN
  - **Value**: IT02
- **Parameter Name**: LIBRARY
  - **Value**: DPS1, DSN, D910P102
- **Parameter Name**: LIBTEMP
  - **Value**: FT02, DSN, D910P102
- **Parameter Name**: LPAR
  - **Value**: COB3
- **Parameter Name**: NAME
  - **Value**: FT02
- **Parameter Name**: OFFLOAD
  - **Value**: YES
- **Parameter Name**: OWNER
  - **Value**: USER
- **Parameter Name**: REL
  - **Value**: V910
- **Parameter Name**: SFRVICFLEVFL
  - **Value**: Y11200
Value Proposition

Customer benefits

- Standardization and automation of repetitive SAP administrator tasks – reduced risk/cost of operational errors
- Consolidate SAP applications and database workloads under a single simplified management system – consolidation
- Support rapid business growth with more flexible delivery of high value services for SAP systems and data operations – agility to meet business demands
- Increased SAP applications and data availability – reduced planned down time of SAP applications
- Simplified and comprehensive database and SAP systems Life Cycle Management – simplification
- Reduced dependency on DB2 for z/OS and z/OS skills
- Introduces a real world scenario for PaaS on z/OS platform
IBM Services

- This offering is not available as an orderable product
- Code delivered through IBM Services
- **IBM Services engagement will provide → 2 weeks**
  - Onsite implementation services
  - Install code
  - Customize and configure automation scripts and JCL
  - Train personnel on use of this technology
- **IBM Support and Service services to provide Q&A, fixes etc. → yearly contract**
IBM zEnterprise System and SAP

Ability to integrate a complex multi-platform business process into a single management domain with comprehensive platform management.

zEnterprise BladeCenter® Extension (zBX) not required – external application servers also supported.

IBM System z
An ideal solution to enable a private enterprise cloud for SAP applications

zEnterprise brings together the benefits of enterprise computing and cloud computing in a single system

- Enable clients to address the pain and cost of explosive growth in the number of SAP systems
- Provide an enterprise computing foundation with the scale, security, and resiliency required for delivery of critical SAP services
- Provide a centrally managed set of resources supporting a single integrated system for rapid and efficient provisioning of SAP services
- Leverage cloud computing efficiency and the flexibility of fully virtualized resources to reduce payback period and increases ROI of your SAP infrastructure investment
Thanks!

- **Kershaw Mehta – Chief Architect for Cloud Computing on System z**
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- **Jim Elliott – Consulting Sales Specialist – System z; zChampion**
  - Jim_Elliott@ca.ibm.com or 905-316-5813