#ibminterconnect

Interconnect Session 1587:

Bring Your Own Flow: Live Demo and Deep Dive into Enterprise Class Hybrid Clouds

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IBM

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The Premier Cloud & Mobile Conference

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Interconnect Session #: AIN-1587: Bring Your Own Flow: Live Demo and Deep Dive into Enterprise Class Hybrid Clouds

Julian Foster and Philip Schaadt

February 25, 2015

Preconference draft version of Feb 18th 2015

HHG's Hybrid Cloud Integration Platform

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AIN-1587: Bring Your Own Flow: Live Demo and Deep Dive into Enterprise Class Hybrid Clouds

Attendees will see a live demonstration of the recommended practices for architecture, deployment, maintenance and management of a secure WebSphere integration infrastructure running across three hybrid clouds. The demonstration will show the connectivity scenario of "bring your own flow" with **IBM Integration Bus** running both on- and off-premise, and **DataPower** acting as the secure cloud connector. The connection to external endpoints will be through the **IBM API Management** product on SoftLayer with the HHG **custom API Portal running also on SoftLayer**. Cloud management on SoftLayer will be via **IBM PureApplication Service on SoftLayer**, with various options demonstrated multi-cloud management including **QRadar**, **UurbanCode Deploy** as well as **IBM Cloud Orchestrator**.

Stream: Application Infrastructure and Integration

Track: Innovating with APIs, Gateways, SOA

Cloud Components

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- **IBM API Management** for Internet API access
- **API Management Dev Portal** for Internet developer access
- **IBM API Management** and **DataPower** for access control and dynamic routing (policies from **WSRR**)
- **IIB**, **BPM** and/or ODM for middleware processing and or routing (duplicated to each cloud)
- **WAS/DB2** for backend application
- **UrbanCode Deploy** with patterns for lifecycle management
- **QRadar** for security incident and event management
- **IBM PureApplication Service on SoftLayer**
- **IBM Cloud Orchestrator** for multi-cloud management

Introduction & Thanks

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A typical selection of…

Analyst Cloud Prognostications…

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- IT service architectures will become even more complex so IT must get better at complex IT service infrastructure design, automation, roll out and operations
- Over the next two years, a majority current service providers will manage their customer workloads on top of a leading cloud provider
- Over the next two years less than one quarter of large enterprise IT shops will have completed a significant platform or workload driven PaaS/ Infrastructure deployment
- Over the next two years more than 50% of the new Business Intelligence/Analytics implementations will be on the cloud
- Multi-cloud integration technologies will preferentially drive incremental migration to the cloud of the enterprise's proven on premise integration IT infrastructures

A LIVE 50 Minute Technical Infrastructure Walk-through…

HHG's Hybrid Cloud Integration Platform (1)

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1. **HHG Multi-cloud Topology**
2. **Functional use case demo: Multi Cloud, Multi Broker routing from external APIs**
   a) APIs managed from custom Drupal portal
   b) APIs route through the API domain on DataPower to the correct version of IIB on any cloud
   c) DataPower custom policies from WSRR
3. **SoftLayer Bare Metal ESX server**
   a) From On-Prem to SoftLayer Bare Metal
   b) Production Topology
   c) Cloud Management
4. **IBM PureApplication Service on SoftLayer**
   a) IBM PureApp Service on SoftLayer overview
   b) Basic Web App & WAS pattern and properties
   c) Dev/Test Topology
   d) PureApp Shared Services
   e) PureApp Monitoring
   f) ITCAM Monitoring the Integration Bus flows
   g) Patterns: BPM Pattern on PureApp
   h) PureApp Pattern Editor
   i) HHG ESB in a box in a Box Pattern
   j) DataPower Virtual Edition on PureApp

A LIVE 50 Minute Technical Infrastructure Walk-through…

HHG's Hybrid Cloud Integration Platform (2)

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6. **Integration Broker on IBM PureApp**
   a) IIB Pattern Deployment
   b) IIB Properties
7. **IIB Lifecycle Management with UCD**
   a) UCD IBM Integration Broker lifecycle management project
   b) UCD project to completely deploy Integration Broker including selected BAR file
8. **IBM API Management from the HHG custom Drupal portal**
   a) APIs route through the API domain on DataPower to the correct version of the Integration Bus on any cloud
   b) DataPower custom policies are available from WSRR
9. **Security Information and Event Management QRadar**
   a) QRadar monitors the components across multiple clouds
   b) DataPower DSM is monitored by QRadar
   c) QRadar monitoring example of custom rules
   d) QRadar Monitors MQ/IIB
10. **IBM Cloud Orchestrator Manages Multi-Clouds**
   a) Manage multiple clouds from one location
   b) ICO Patterns similar to IBM PureApp Service or PureApp System
   c) Deployments include parameter setting
   d) 1,000's of APIs, workflows and catalogs (Customer designs it, builds it and maintains it)

HHG Multi-cloud Integration Platform Deployment Topology

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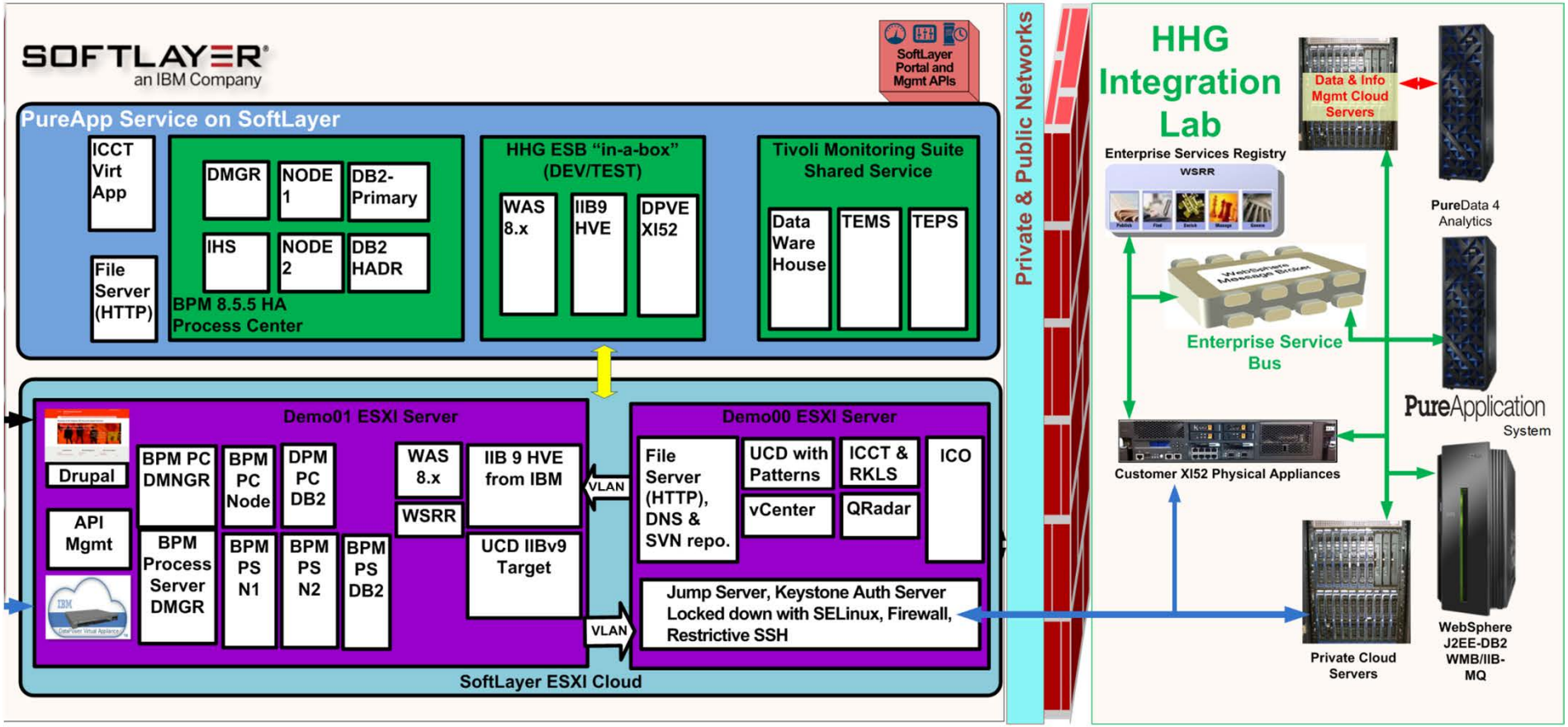
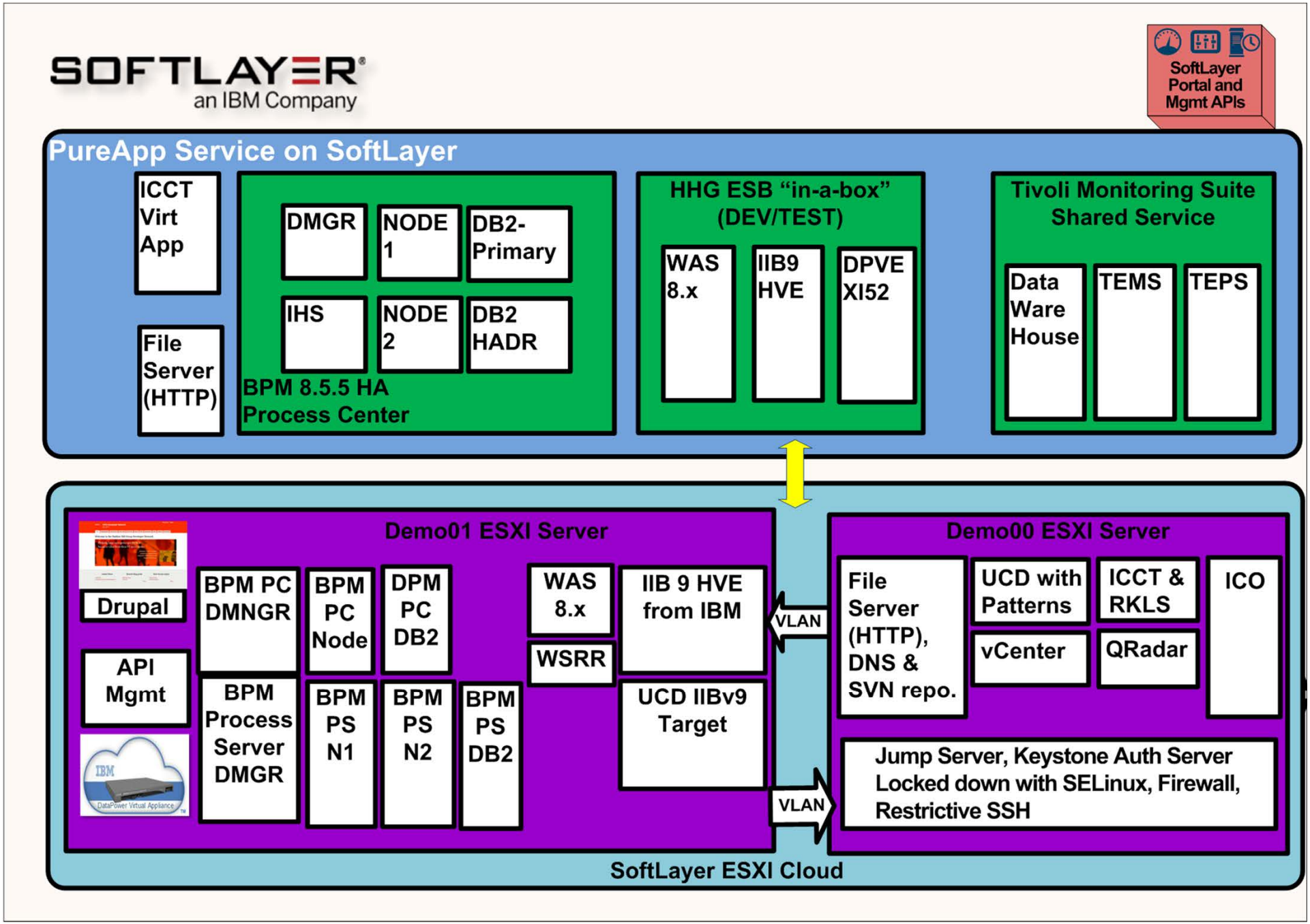
- HHG already runs a multi-cloud infrastructure within the HHG on premise Integration Labs.
- HHG invest in fully integrated and cross brand demo, POC, PoT and training from all legacy brands of WebSphere, Information Management, Tivoli, Rational, Security & POWER/AIX



- **HHG recreated these IBM product integrations with January 2015 available versions on:**
  1. **SoftLayer Bare Metal ESXi servers**
  2. **PureApp Service on SoftLayer**


SOFTLAYER
an IBM Company
SoftLayer Portal and Mgmt APIs
PureApp Service on SoftLayer
ICCT Virt App
File Server (HTTP)
DMGR
NODE 1
DB2-Primary
IHS
NODE 2
DB2 HADR
BPM 8.5.5 HA Process Center
HHG ESB "in-a-box" (DEV/TEST)
WAS 8.x
IIB9 HVE
DPVE XI52
Tivoli Monitoring Suite Shared Service
Data Ware House
TEMS
TEPS
Demo01 ESXI Server
Drupal
API Mgmt
BPM PC DMNGR
BPM PC Node
DPM PC DB2
BPM Process Server DMGR
BPM PS N1
BPM PS N2
BPM PS DB2
WAS 8.x
WSRR
IIB 9 HVE from IBM
UCD IIBv9 Target
VLAN
Demo00 ESXI Server
File Server (HTTP), DNS & SVN repo.
UCD with Patterns
vCenter
ICCT & RKLS
QRadar
ICO
VLAN
Jump Server, Keystone Auth Server Locked down with SELinux, Firewall, Restrictive SSH
SoftLayer ESXI Cloud

Manage Functional or Cloud Management Access with API Plans, cloud connectors or BlueMix…

Functional Demo

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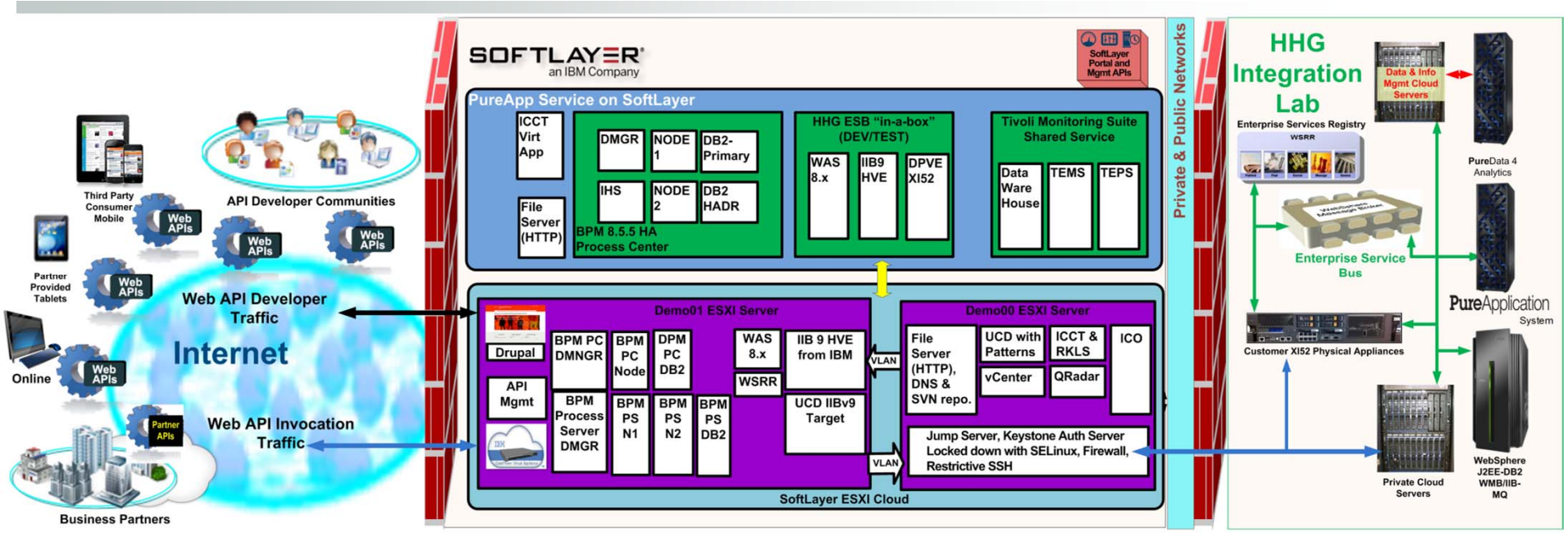

Access HHG API Developer Portal on SoftLayer from the Internet

- **Invoke API #1**: **All On SoftLayer Production** *API Gateway to DataPower Policy/Route to MQ/IIB ESB flow to backend WAS application.*
- **Invoke API #2**: **SoftLayer and HHG Integration** *API Gateway through to HHG Integration Lab DataPower to IIB ESB flow to back end WAS application*
- **Invoke API #3: Original HHG Integration Lab** API Gateway *through to HHG Integration Lab DataPower to IIB ESB flow to back end WAS application*

Red is out of scope for today's presentation and **Bold is the focus…**

Implementation

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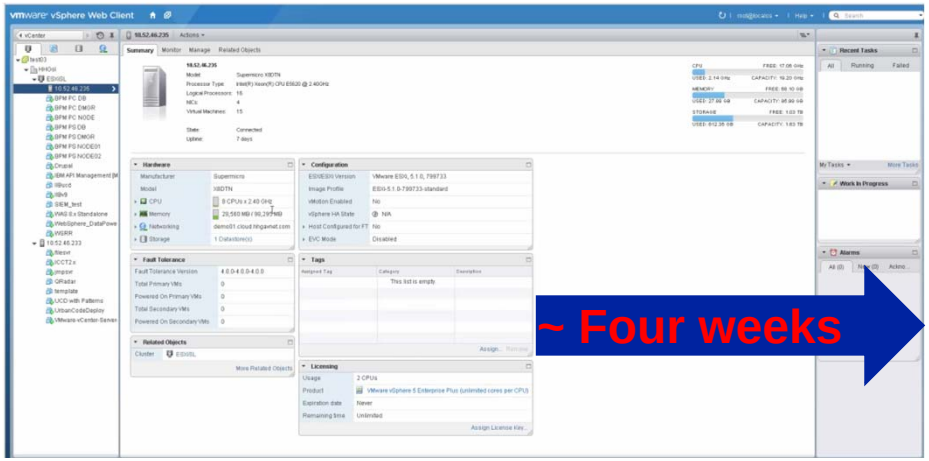


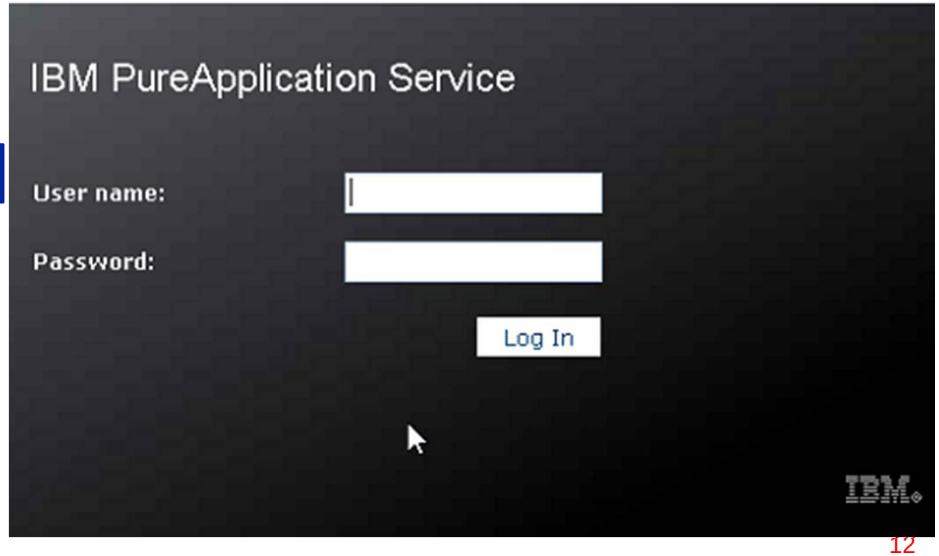
~ Four weeks

- **Create deployment architecture/ quantified technical use cases**
- Plan your environment, desired capacity & required SLAs
- Order your ESXi Servers from SoftLayer
- Plan your networking, security and access environment then coordinate orders with SoftLayer and your network provider & set access
- ➢ **Install Infrastructure and Management for Cloud & VMs**
- ➢ **Install VMs**
- ➢ **Install and integrate products including DevOps/Lifecycle Management**
- ➢ Test & Turnover to users
- Implement your standard ITSM support processes

- **Create deployment architecture/ quantified technical use cases**
- Plan your environment, desired capacity & required SLAs
- Order your PureApp Service from IBM or Business Partner
- Plan your networking, security and access environment. Coordinate orders with IBM/Business Partner plus network provider & set access

~1 week

- ➢ **Upload licensed patterns, images, etc.**
- ➢ **Deploy desired configuration of shared services with integration to enterprise services as necessary**
- ➢ **Deploy desired applications and/or VM assets**
- ➢ **Install and integrate products including DevOps/Lifecycle Management**
- ➢ Test & Turnover
- Implement standard ITSM support processes



This integration could also be BlueMix…

Functional Demo Using HHG's API Management Portal

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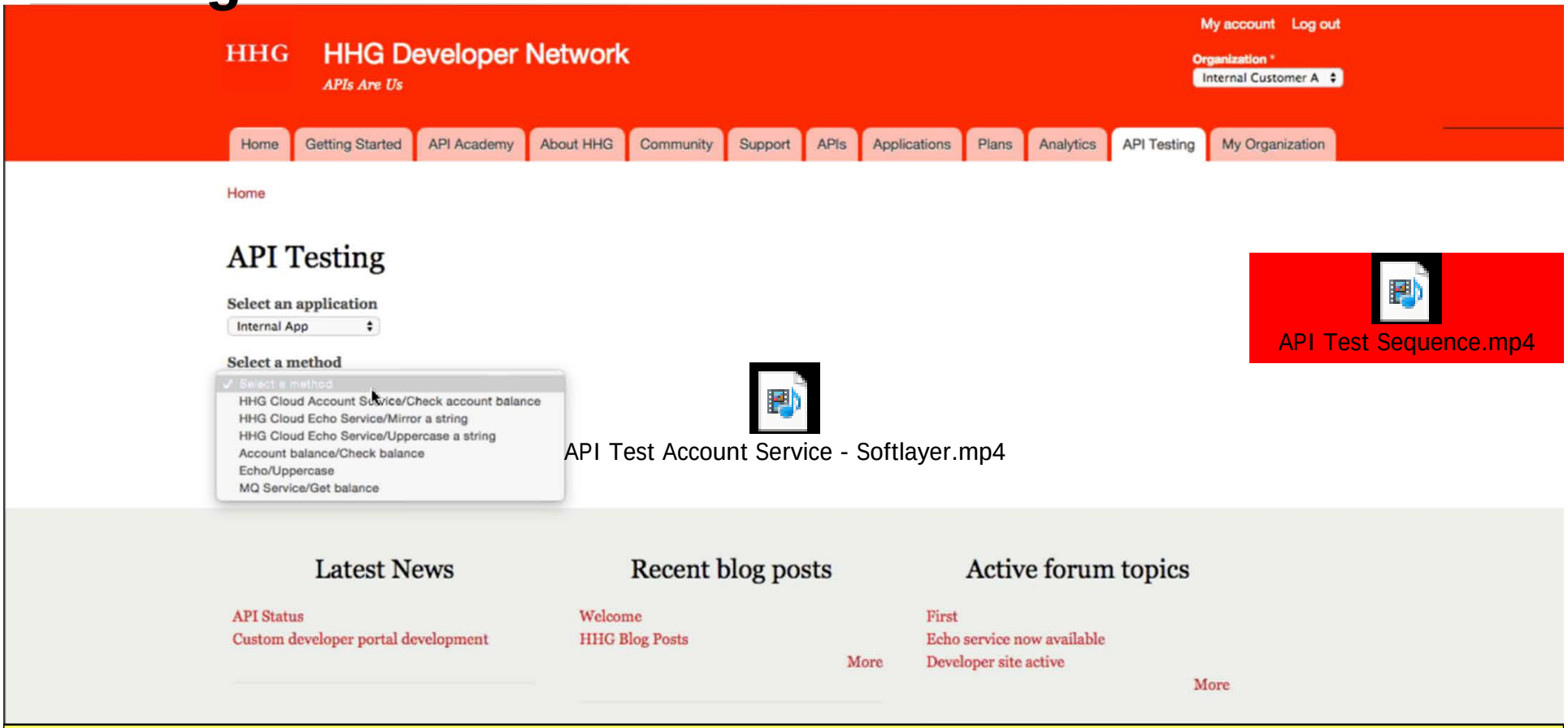

API Test Sequence.mp4

API Test Account Service - Softlayer.mp4

Access HHG API Developer Portal on SoftLayer from the Internet

- **Invoke API #1**: **All On SoftLayer Production** *API Gateway to DataPower Policy/Route to MQ/IIB ESB flow to backend WAS.*
- **Invoke API #2**: **SoftLayer and HHG Integration** *API Gateway to HHG Integration Lab DataPower to IIB ESB flow to WAS app.*
- **Invoke API #3: Original HHG Integration Lab** API Gateway *to HHG Integration Lab DataPower to IIB E[illegible]ow to WAS app*
- **Invoke API #4**: **All On SoftLayer Production** *API Gatew[illegible]**ESXi** to DataPower Policy/Route to **PureApp Service** to MQ/IIB ESB flow to backend WAS application.*

Account Service -

API Test Account Service.mp4

Multi-cloud HHHG APIs available through the HHG API Portal

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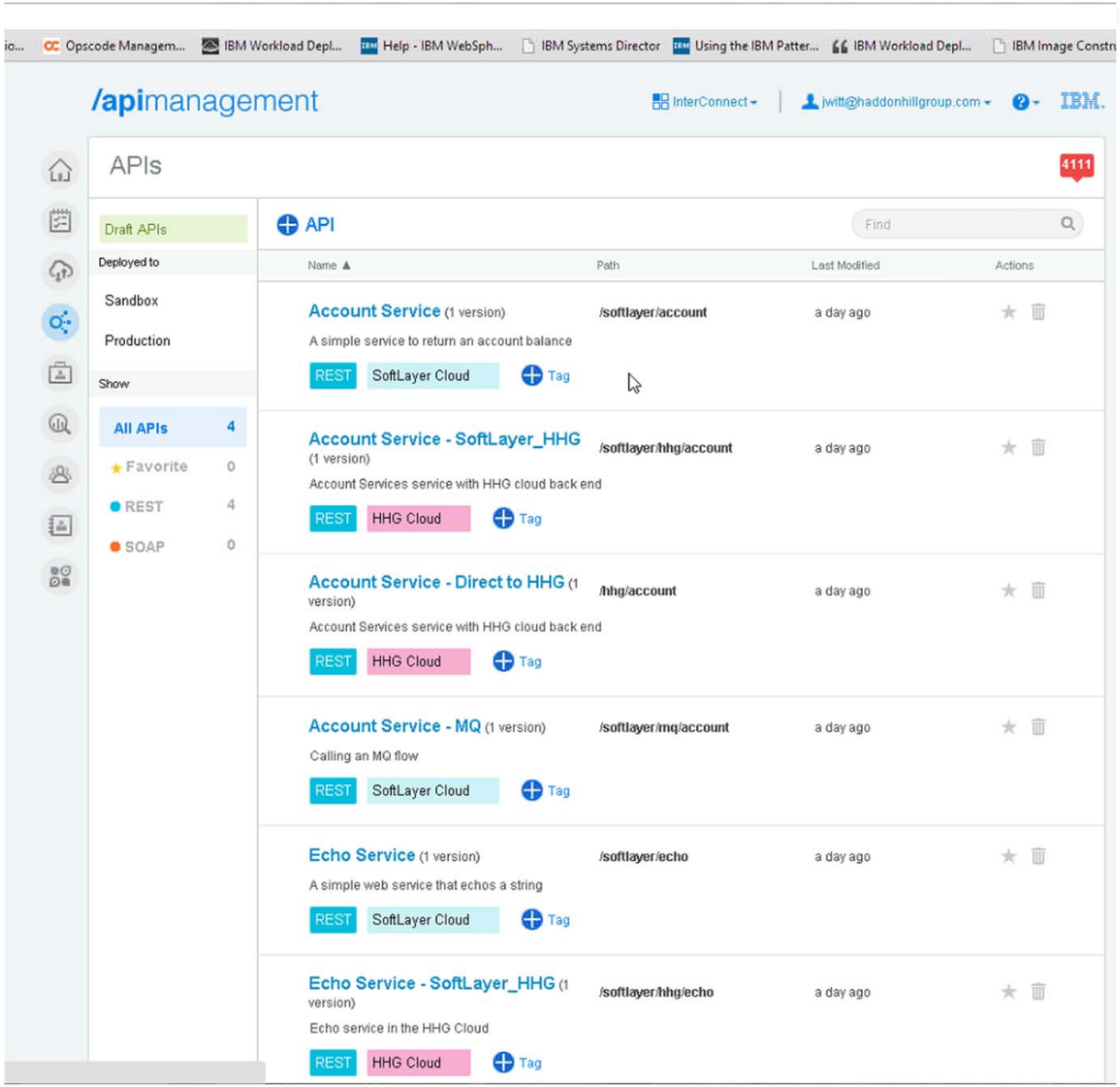

- IBM API Management deploys and manages it's own domain on the DataPower Gateway
- APIs can be grouped into Plans which control the location and the cloud routing and application execution
- The API portal controls access to registered users of the plan
- There is also a second HHG Demo domain on the DataPower for routing and this routing can be dynamic based on policies retrieved from WSRR

This integration could also be BlueMix…

Functional Demo Using IBM API Management

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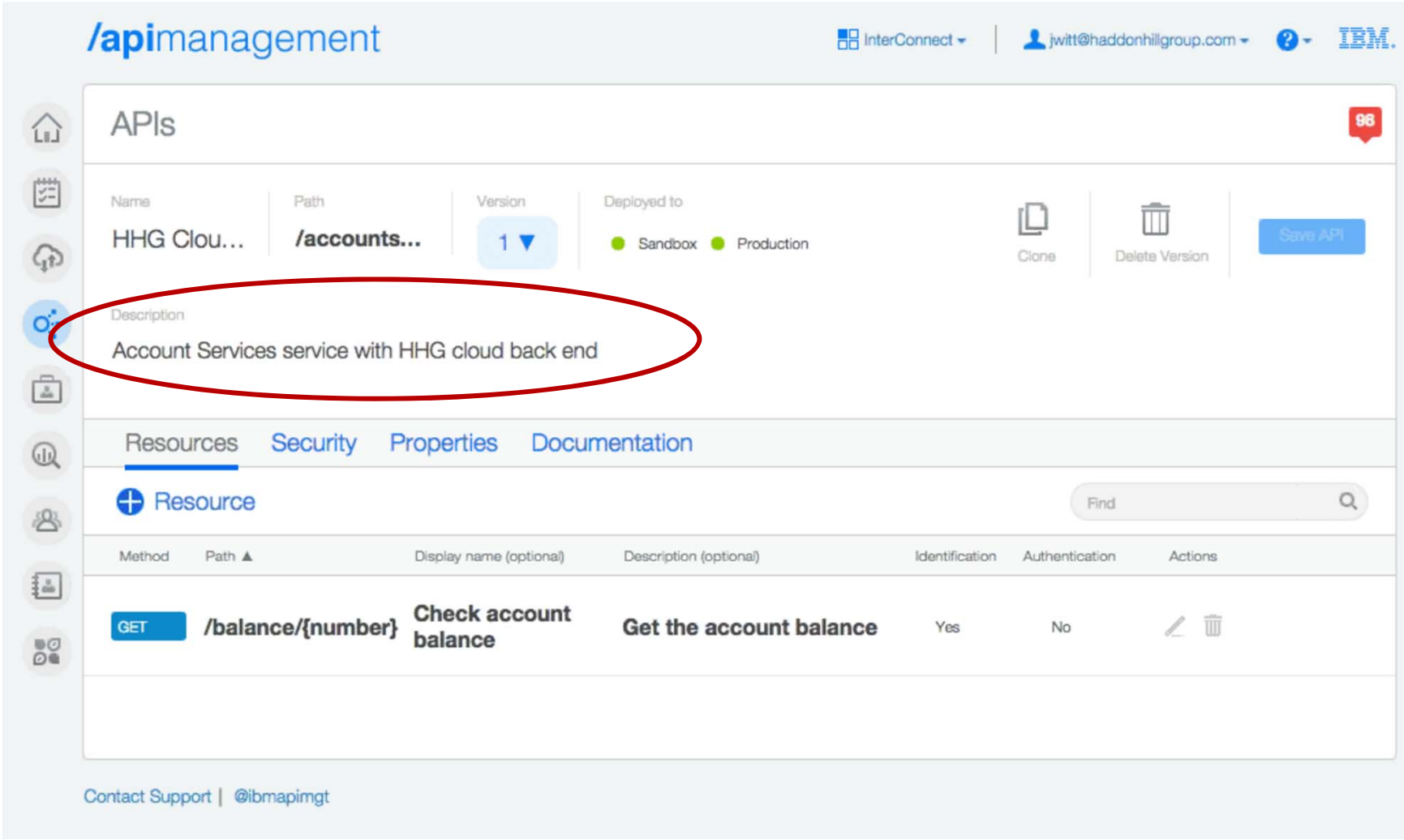

This integration could also be BlueMix…

Routing by API Plan

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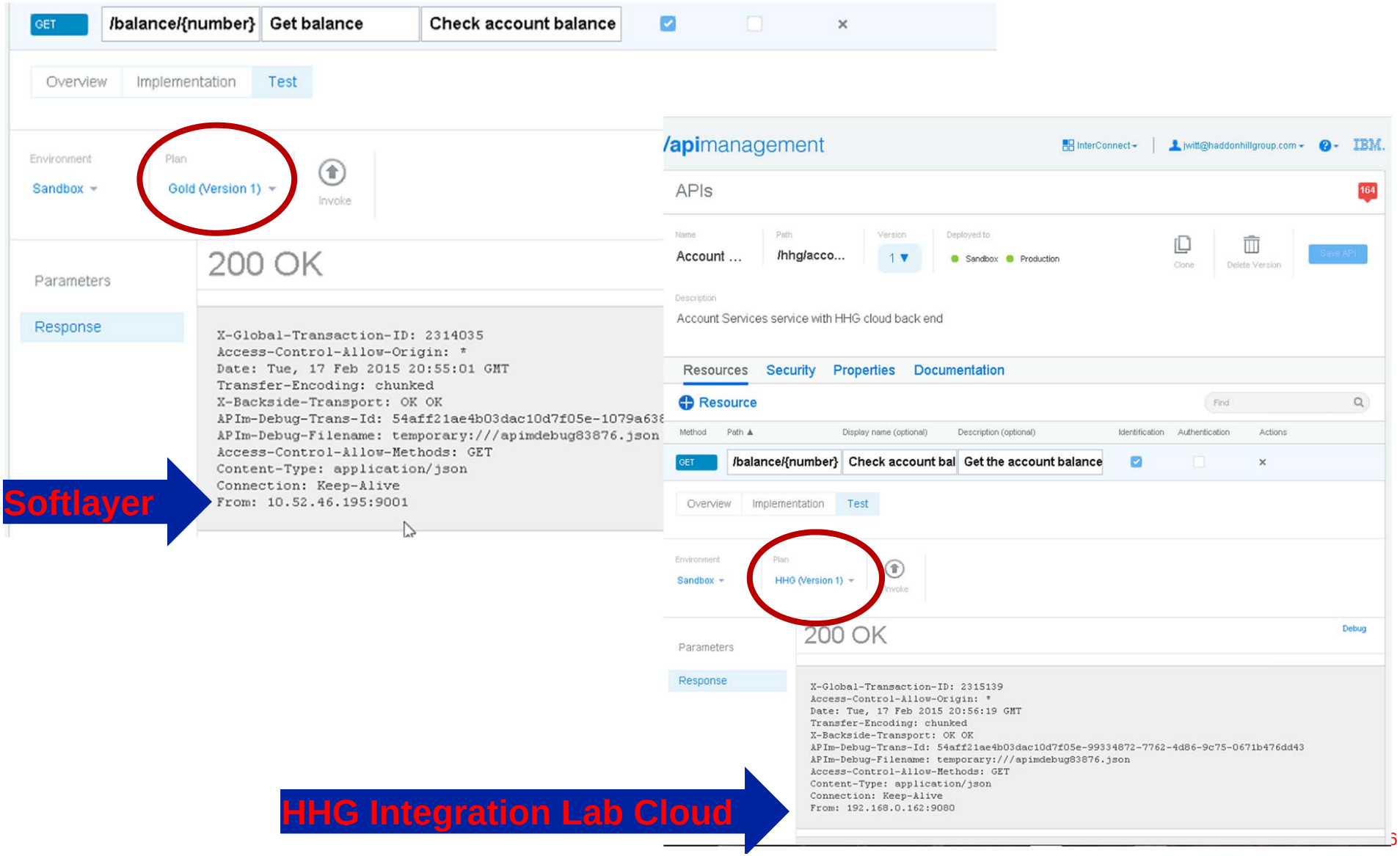

One approach is to use VMware to move your on premise config to SoftLayer using vCenter…

Building your SoftLayer Bare Metal ESX Server

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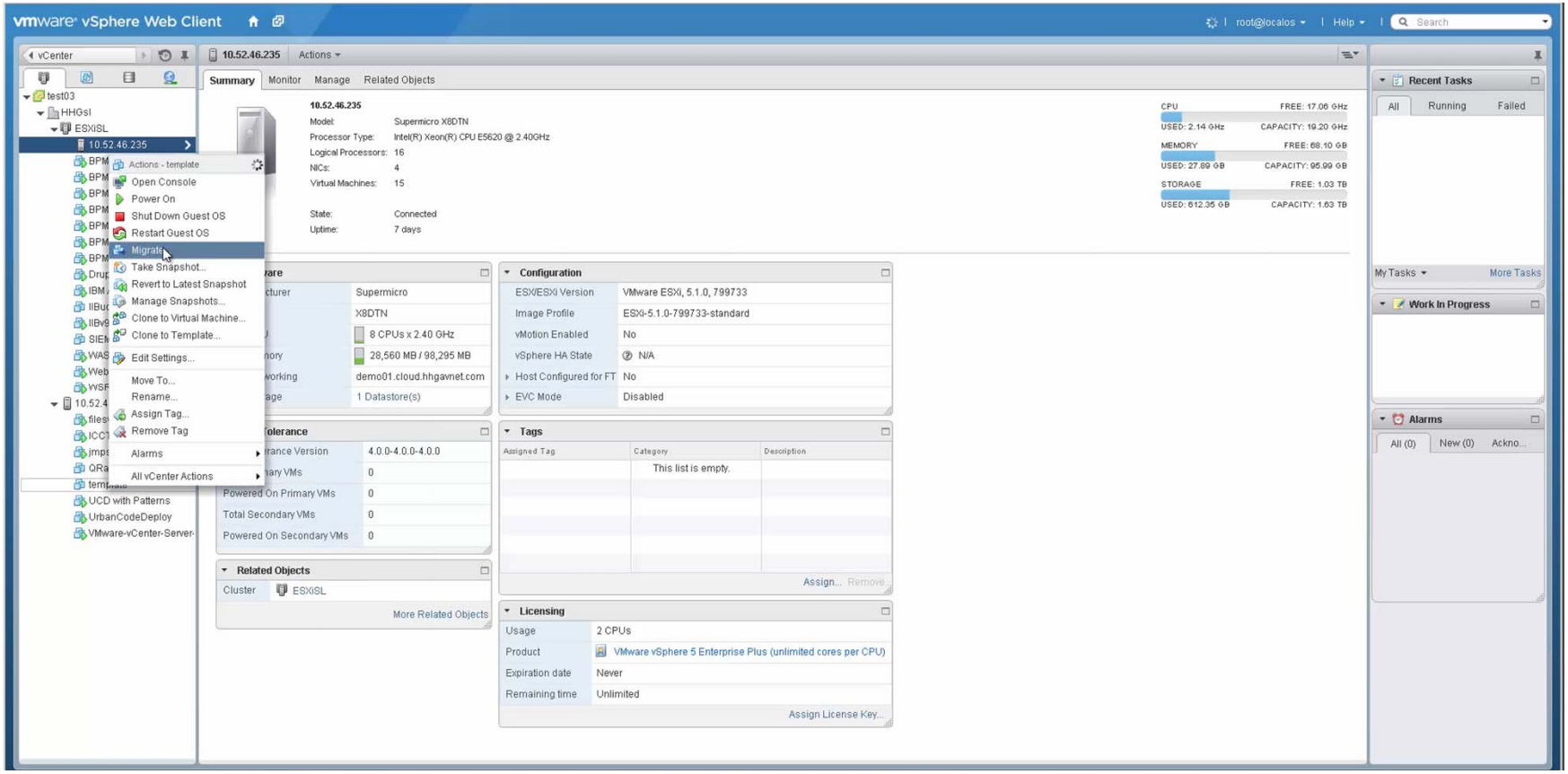

Migration.mp4

A VMware clone approach…

Purchase and Migrate

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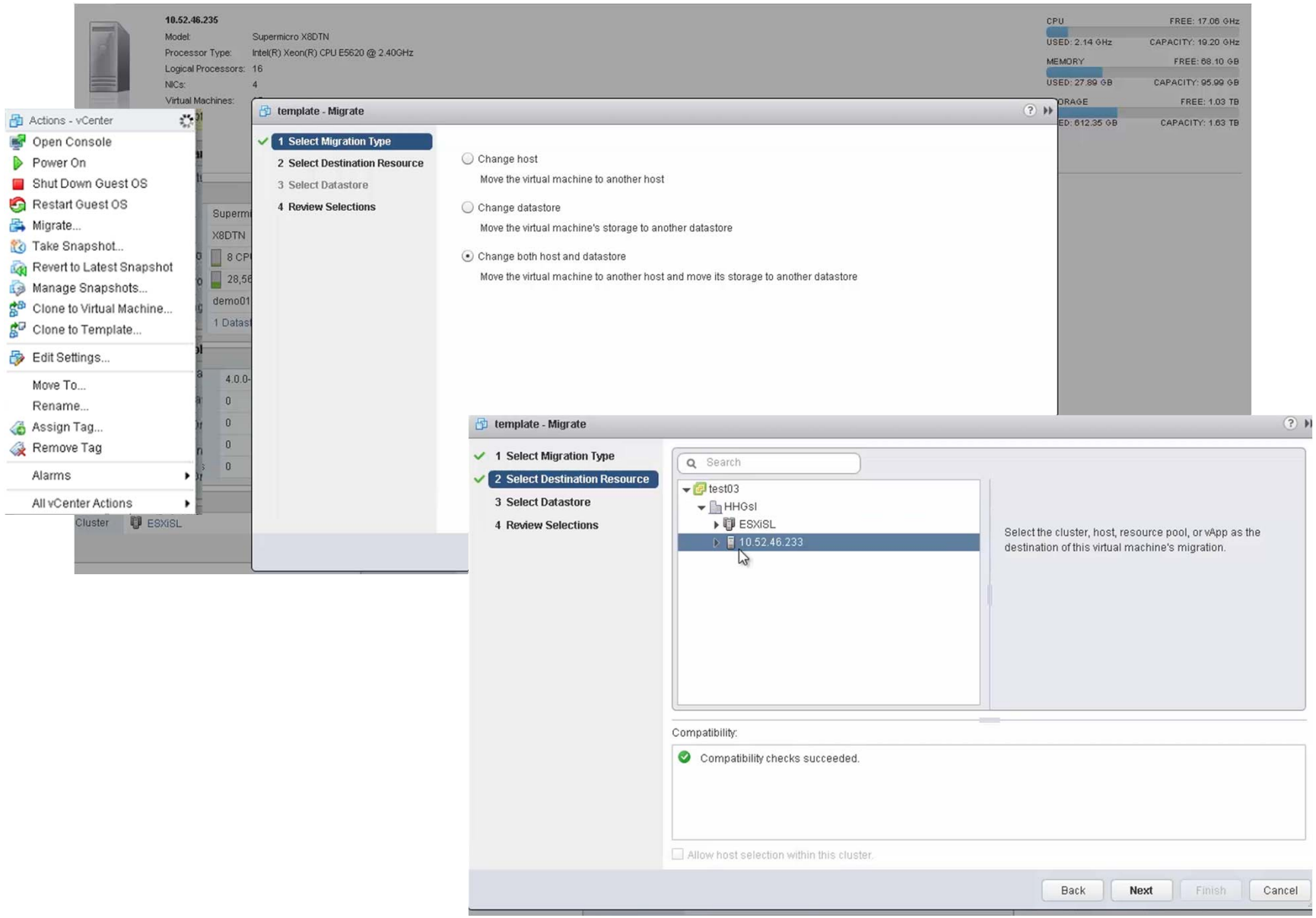

HHG ESX Application Host

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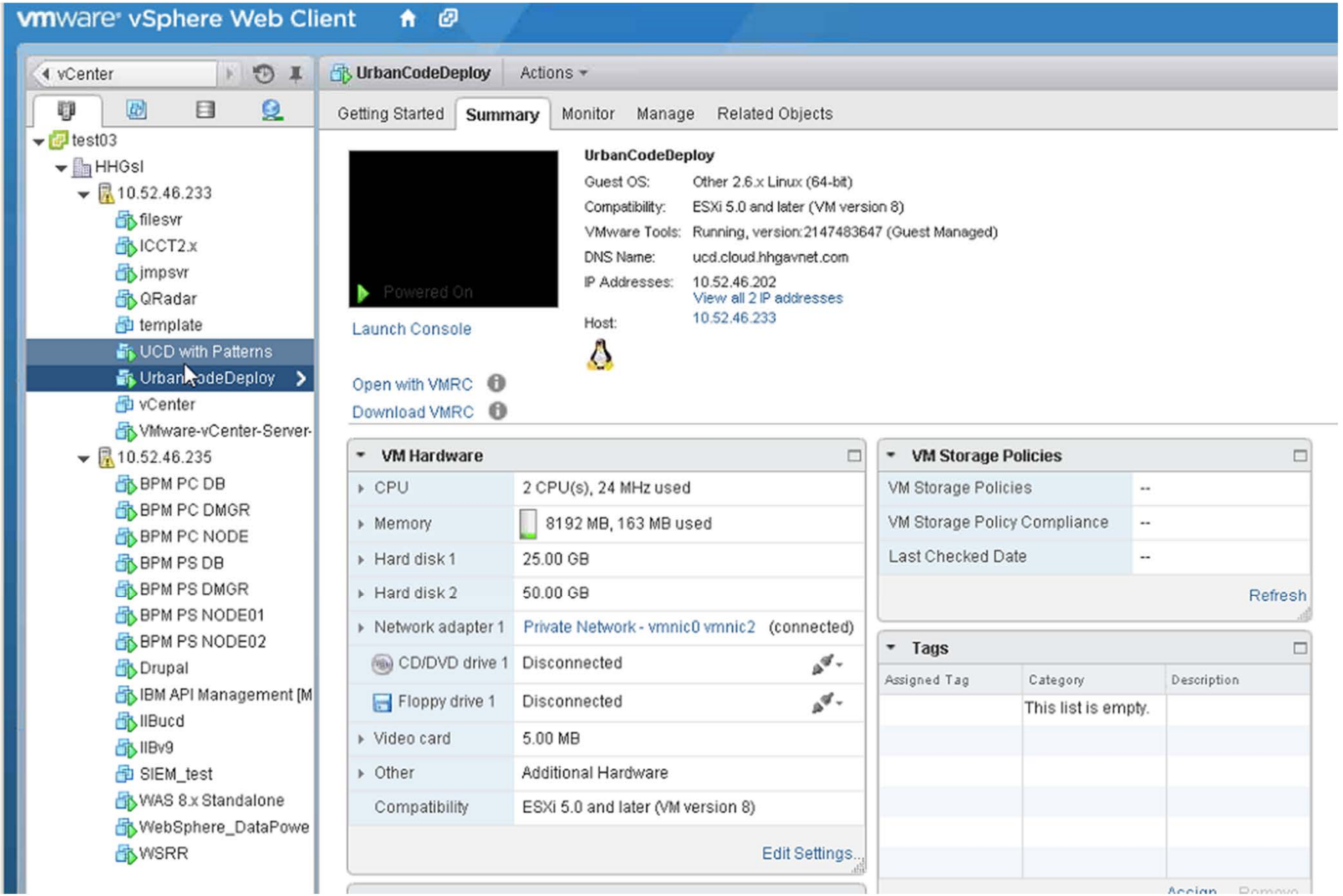

Intro to IBM PureApplication Service on SoftLayer Overview

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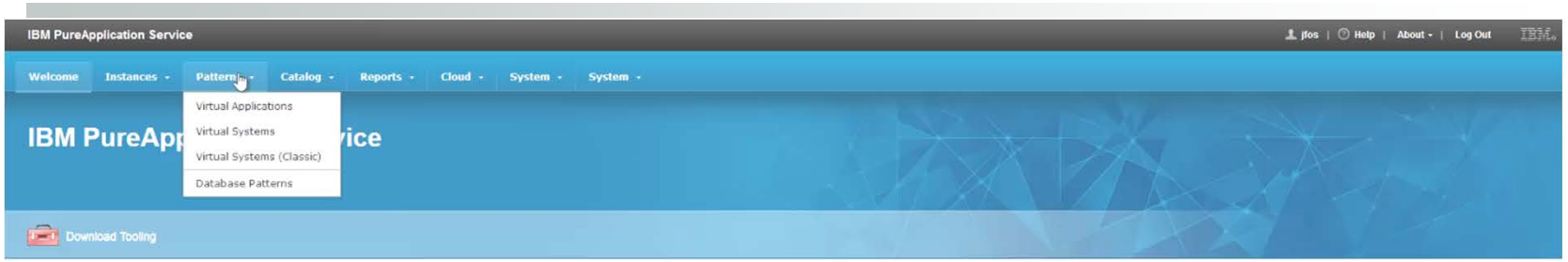
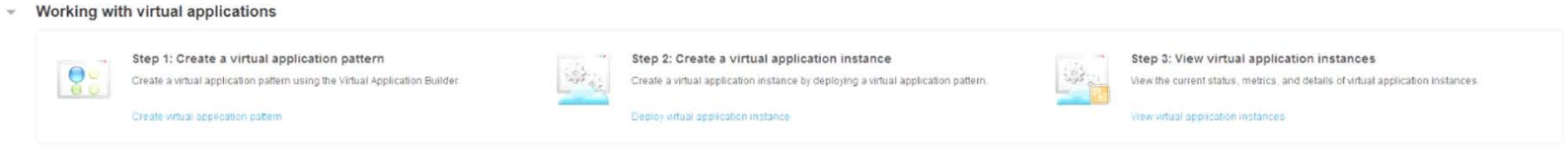
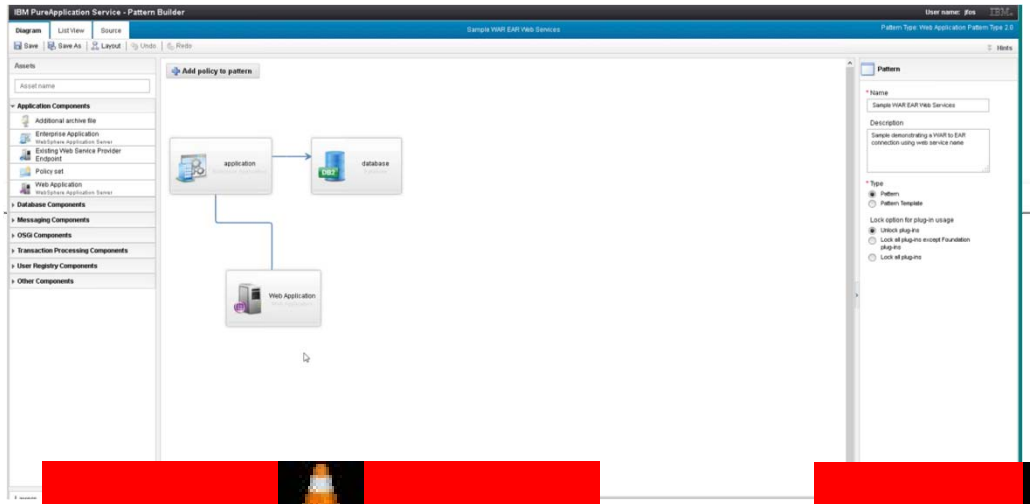


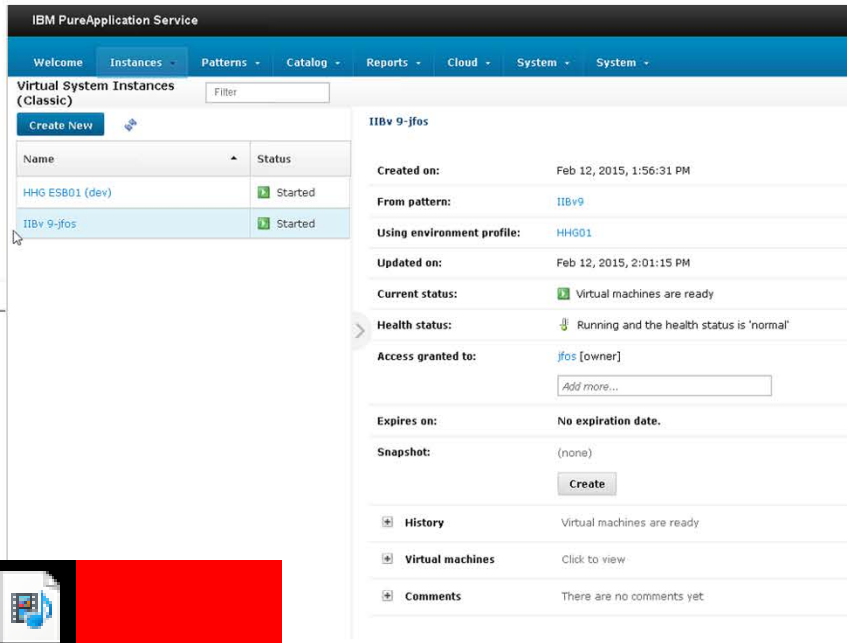


Working with virtual systems

Working with virtual appliances

Working with databases





PureApp Service on SoftLayer.mp4

PureApp on SoftLayer-Full.mp4

PureApp Shared Services & Monitoring

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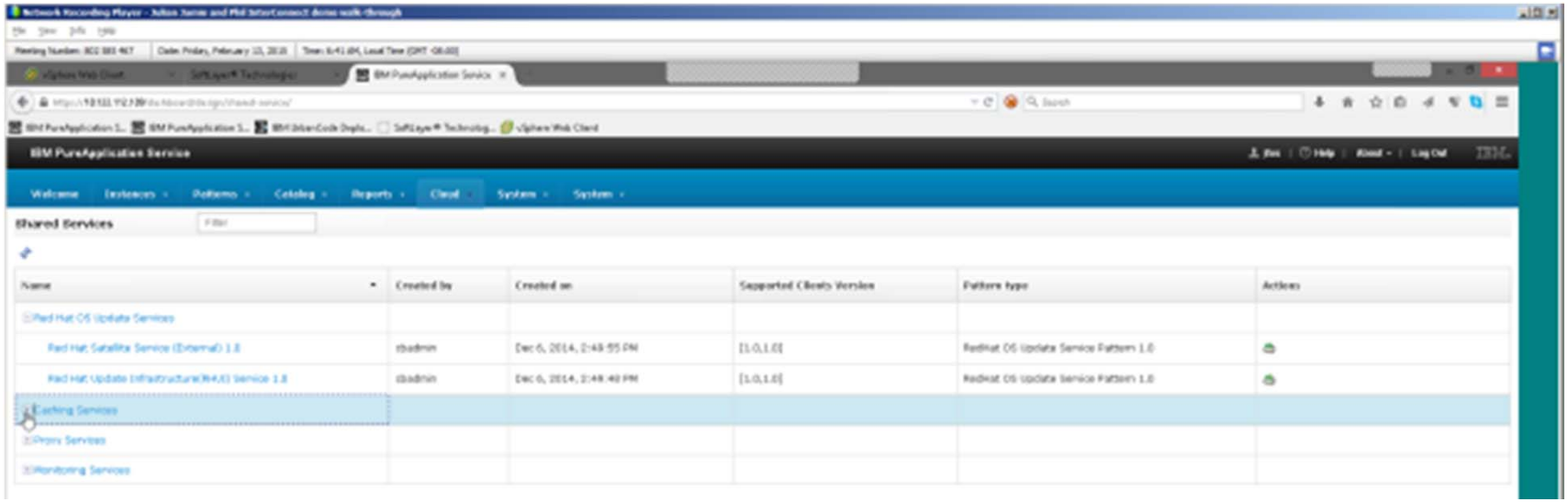

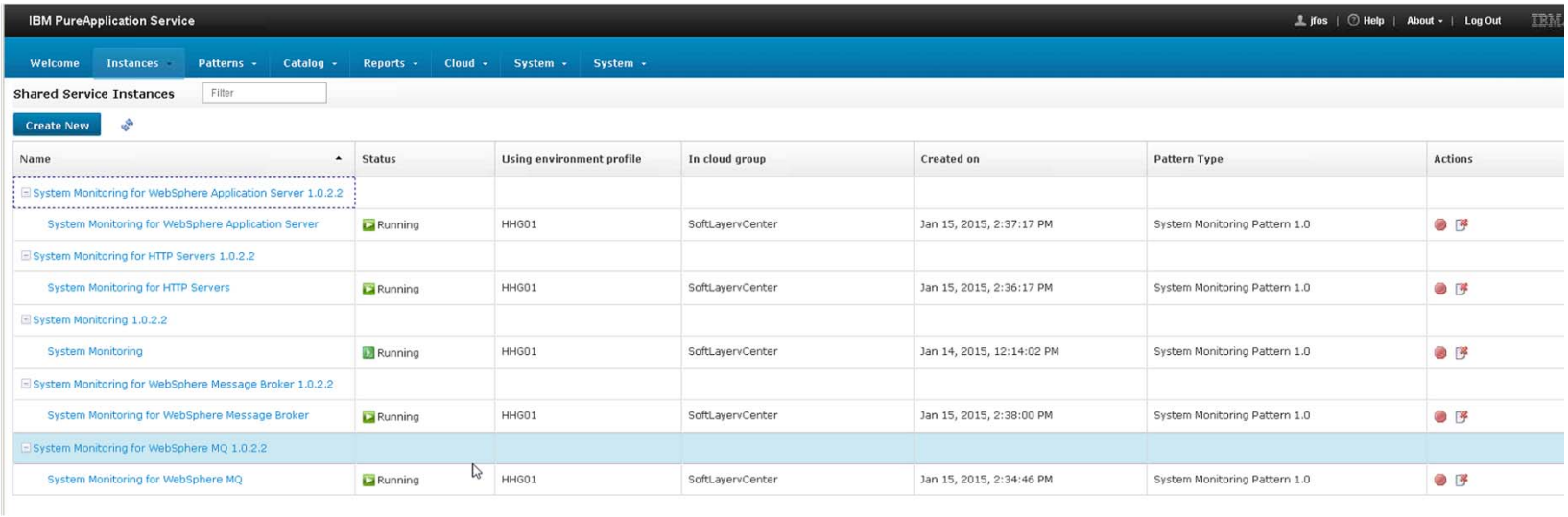

Monitoring.mp4

Configure Shared Services Monitoring— ITCAM

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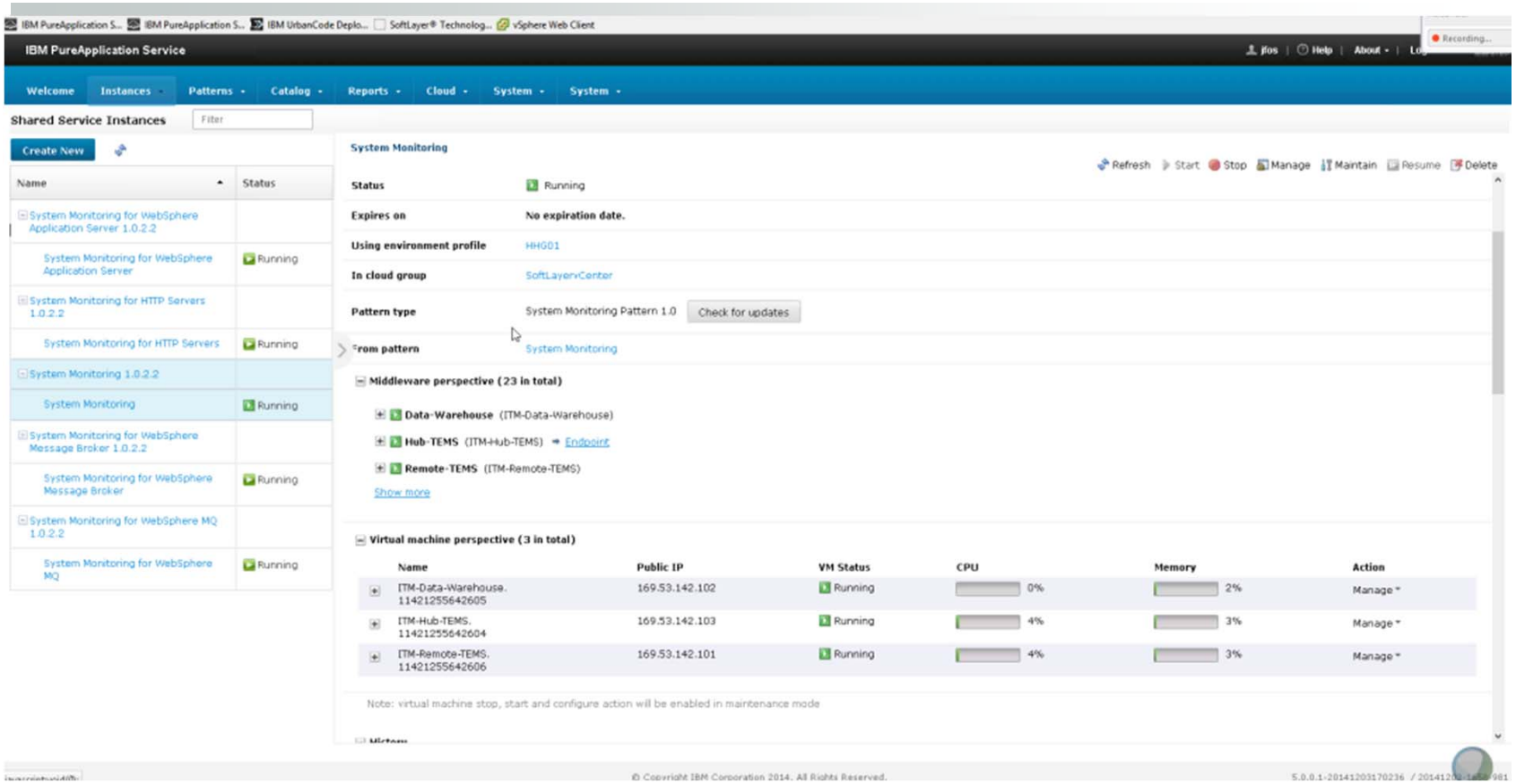

- System monitoring includes the familiar ITCAM,TEMS, ITM DW
- Agents are registered automatically

PureApp Systems Monitoring Views

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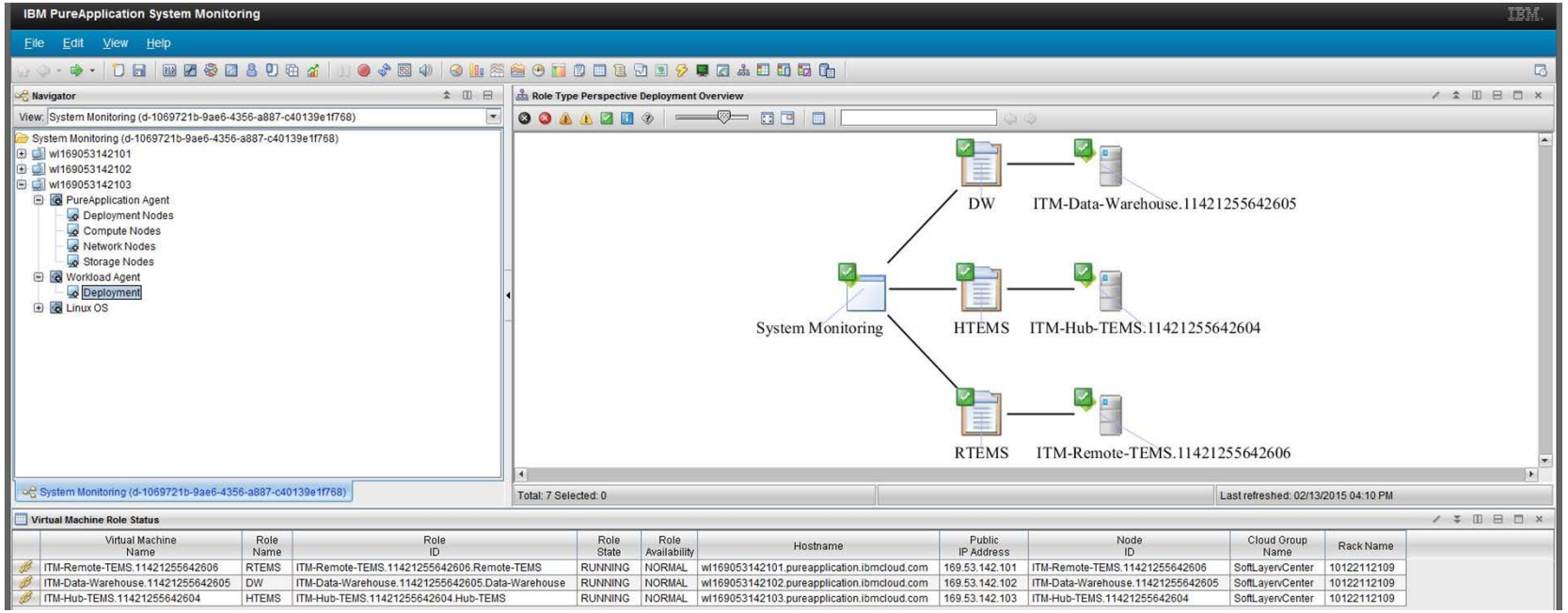

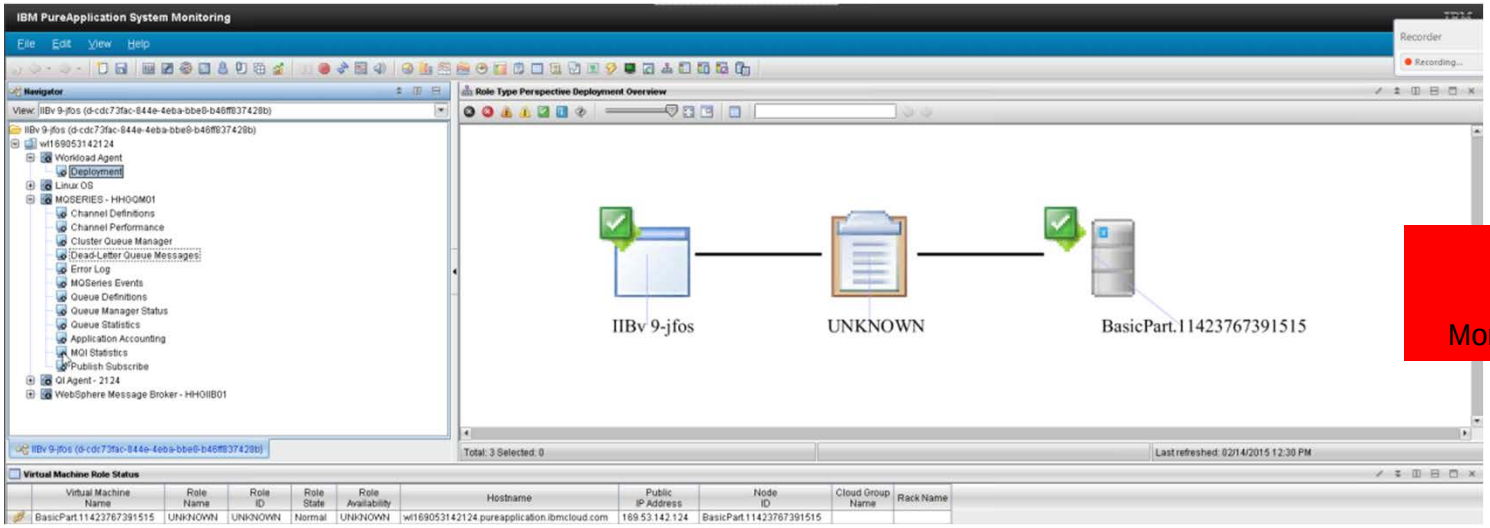

Monitoring as Administrator.mp4

Auto Installing the agent for IIB and MQ

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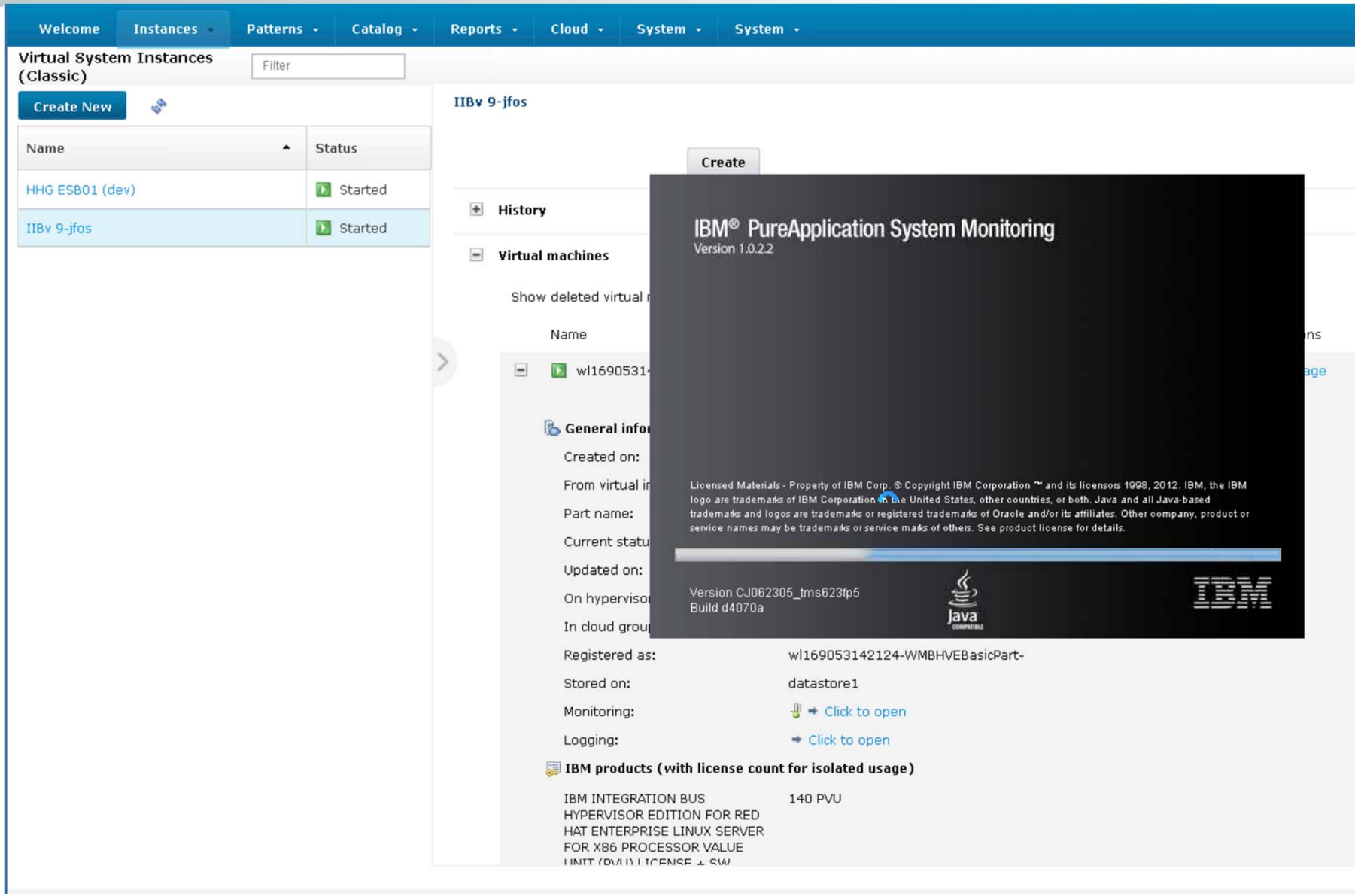

ITCAM Monitoring MQ

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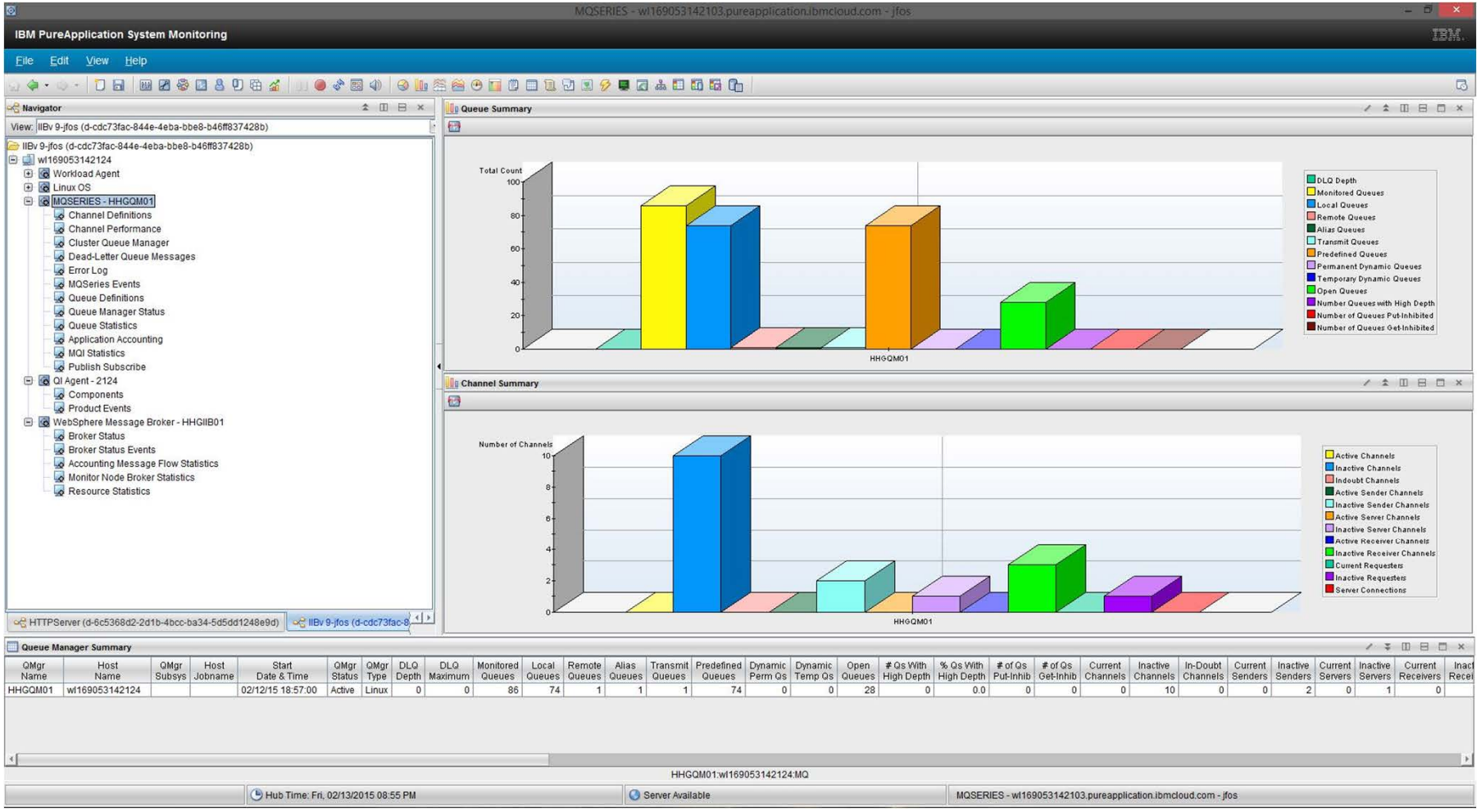

Another look at the PureApp Patterns (BPM)

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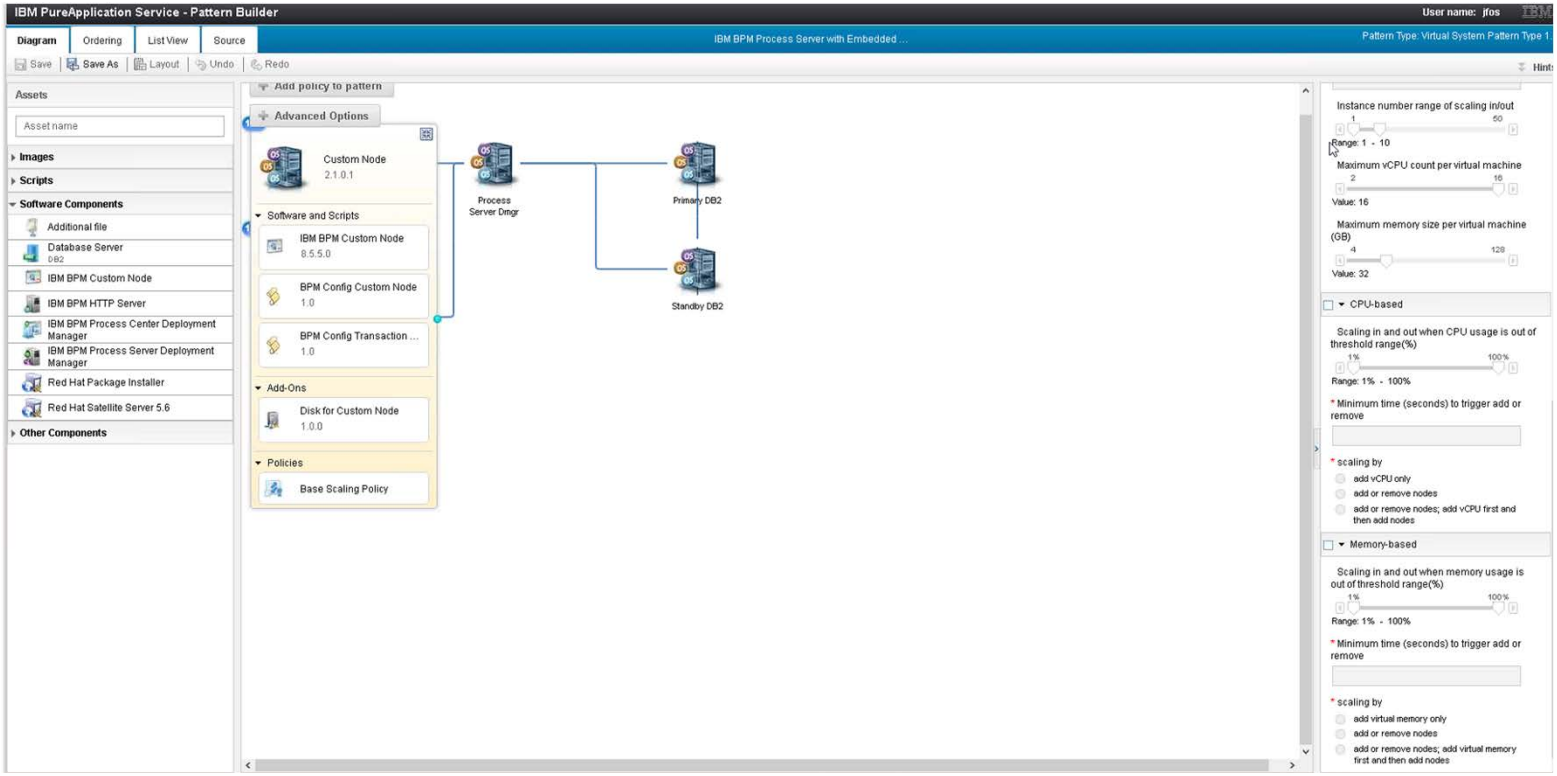
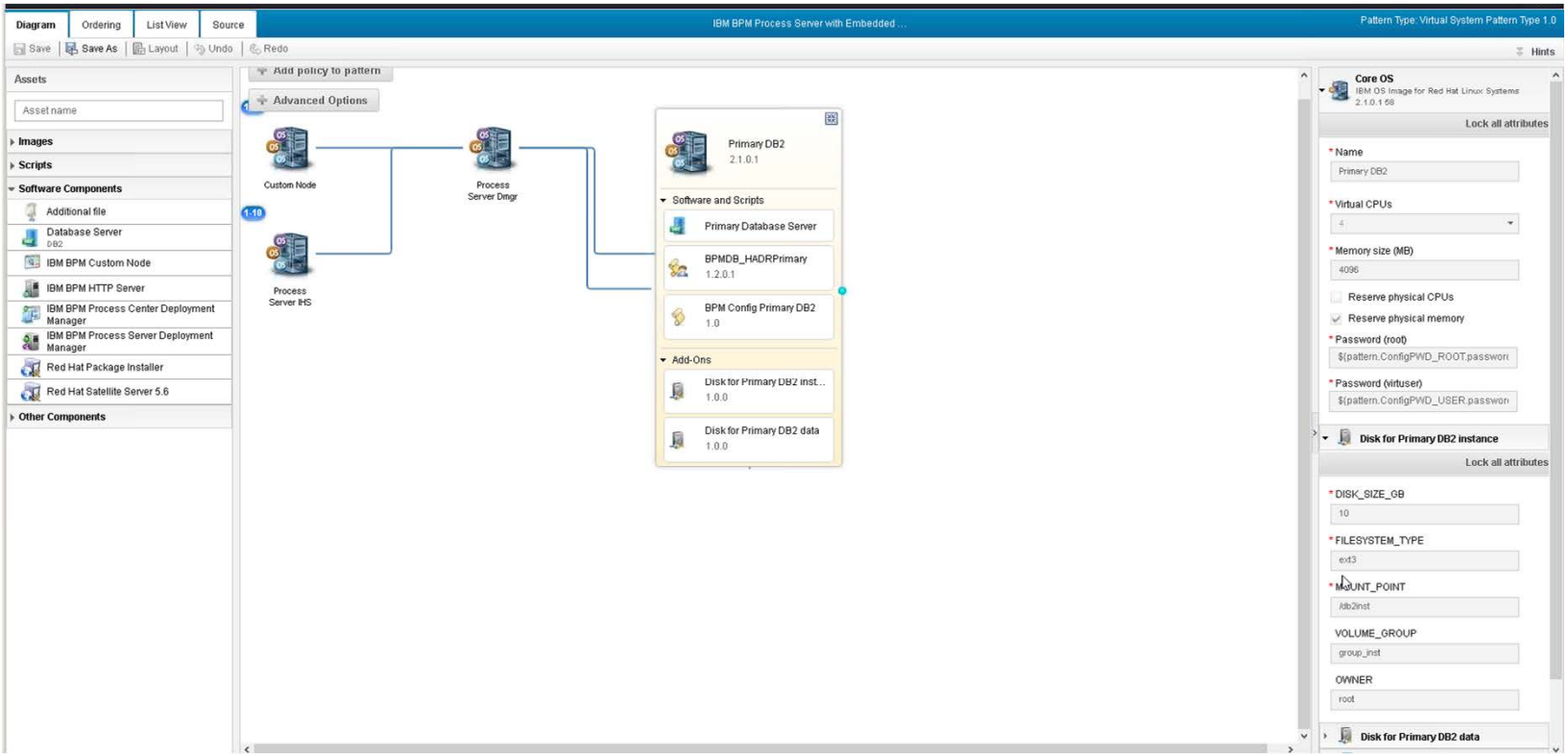


PureApp Service on SoftLayer.mp4

BPM DB Properties & Custom Patterns



- The BPM pattern is suitable for development/test and would require extension for production

WAS for ESB Dev Hosting

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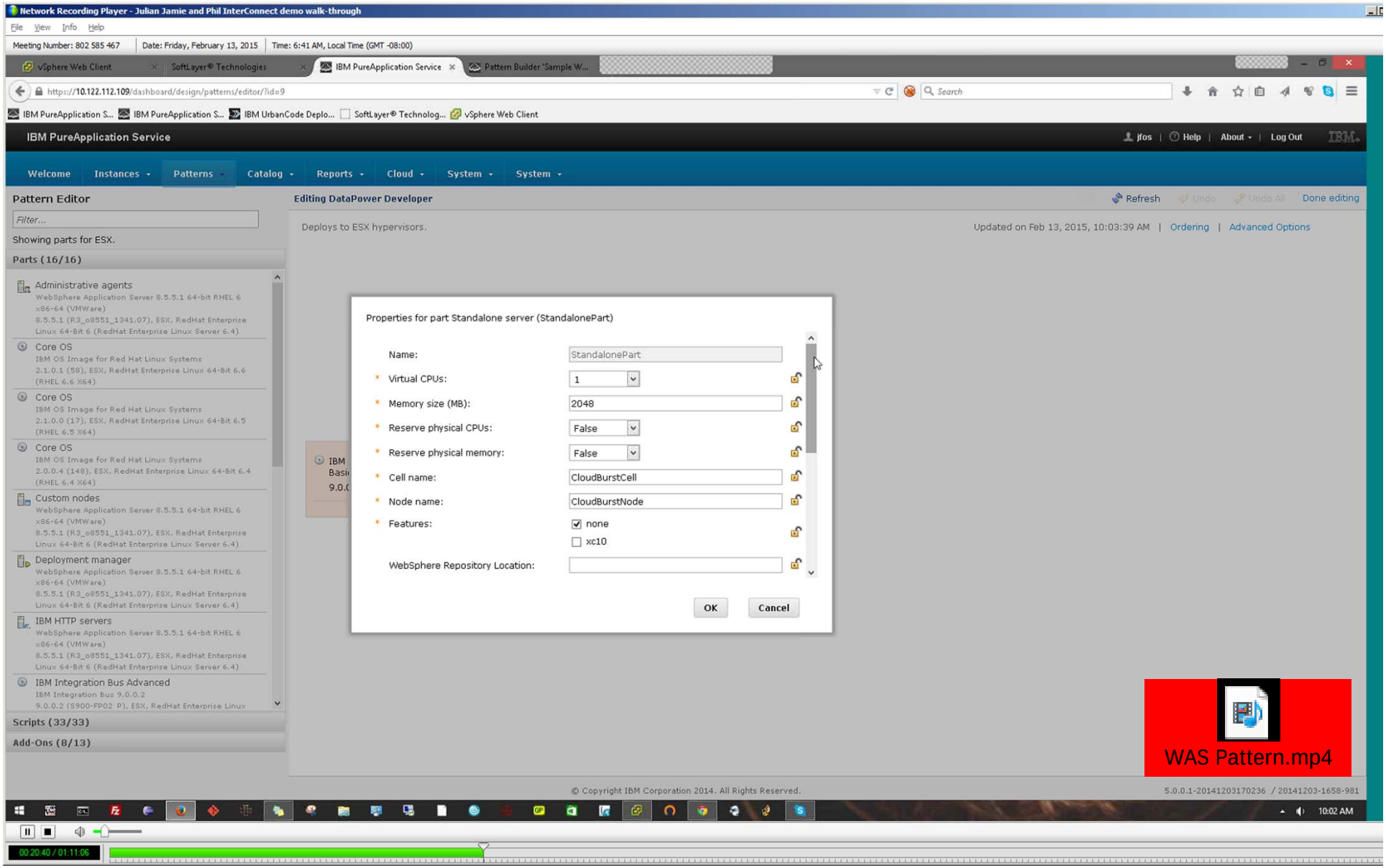

An HHG Custom Pattern: “ESB In a Box”

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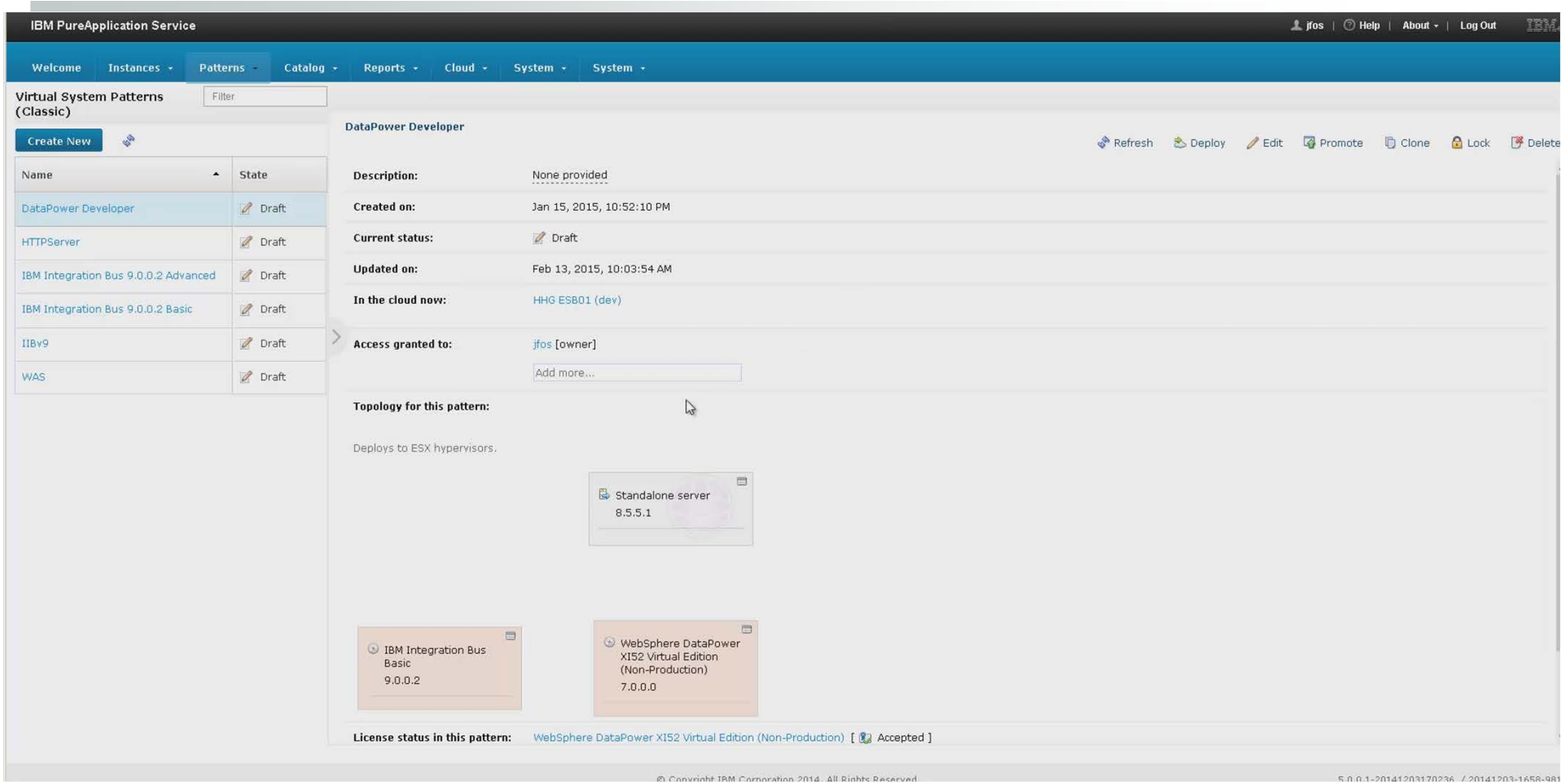

ESB in a Box.mp4

IBM Integration Broker on PureApp

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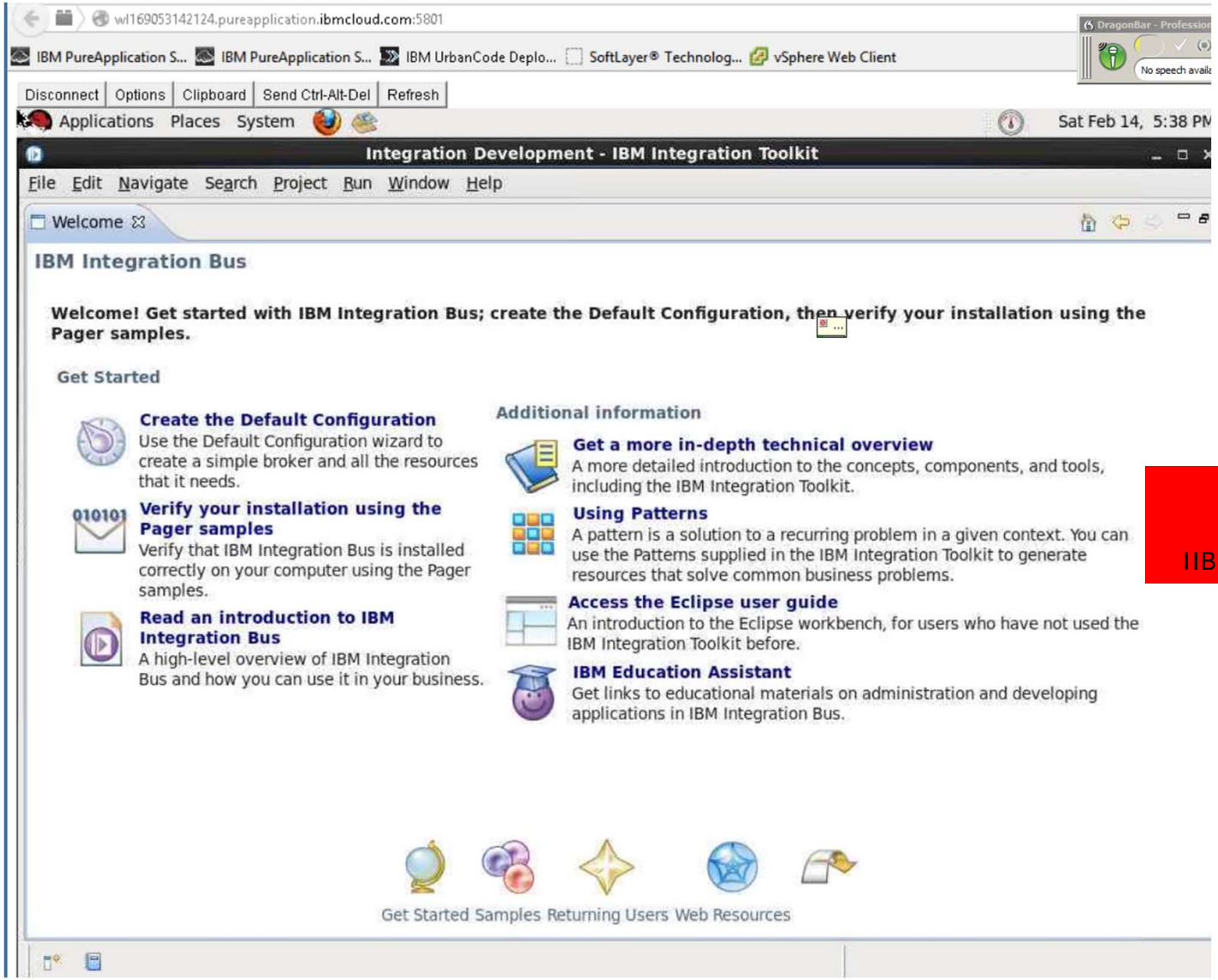

IIB Pattern and Deployment.mp4

Deploying IIB with UCD

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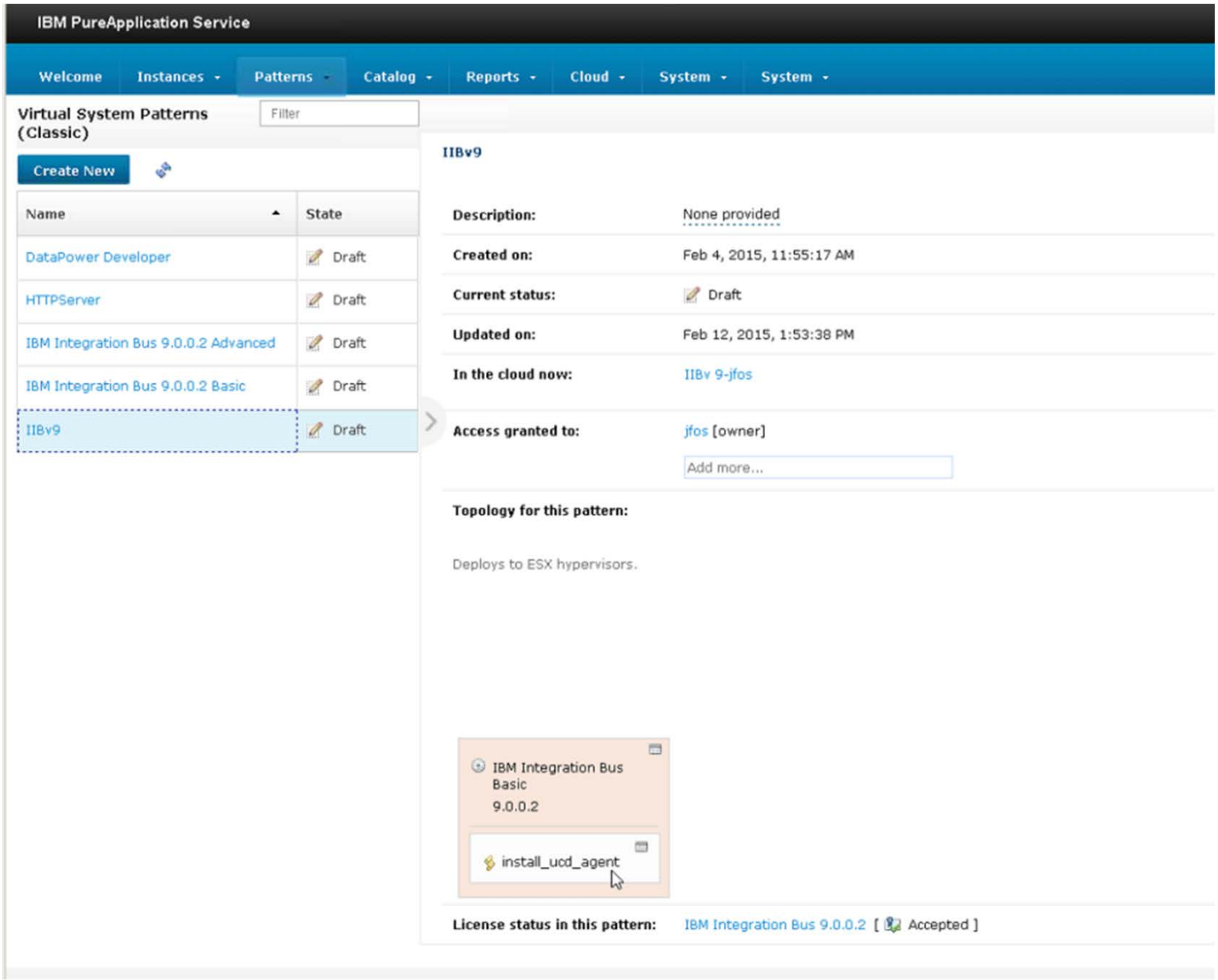

Setting IBM Information Broker Properties

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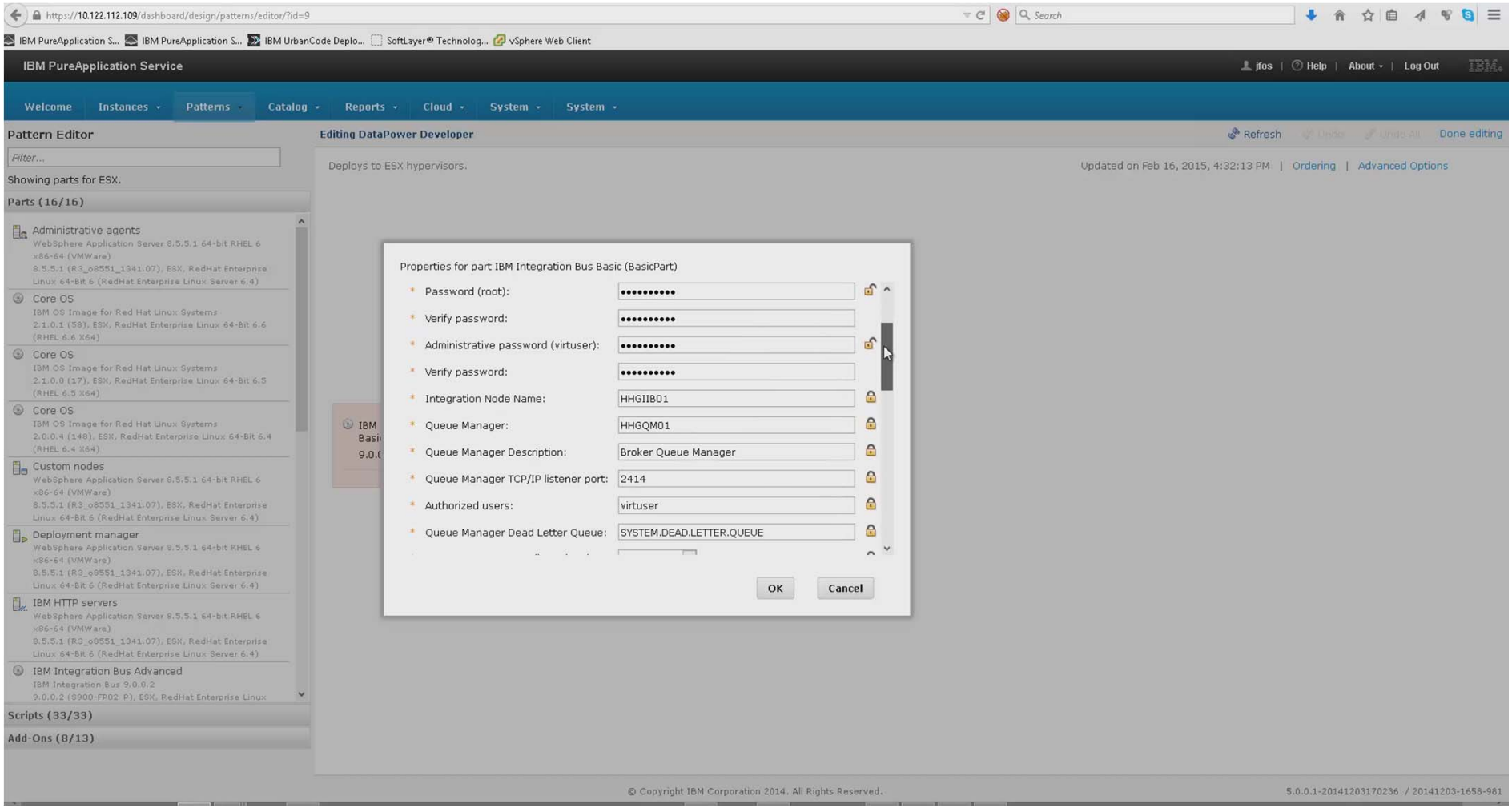

IIB Lifecycle Management with UCD

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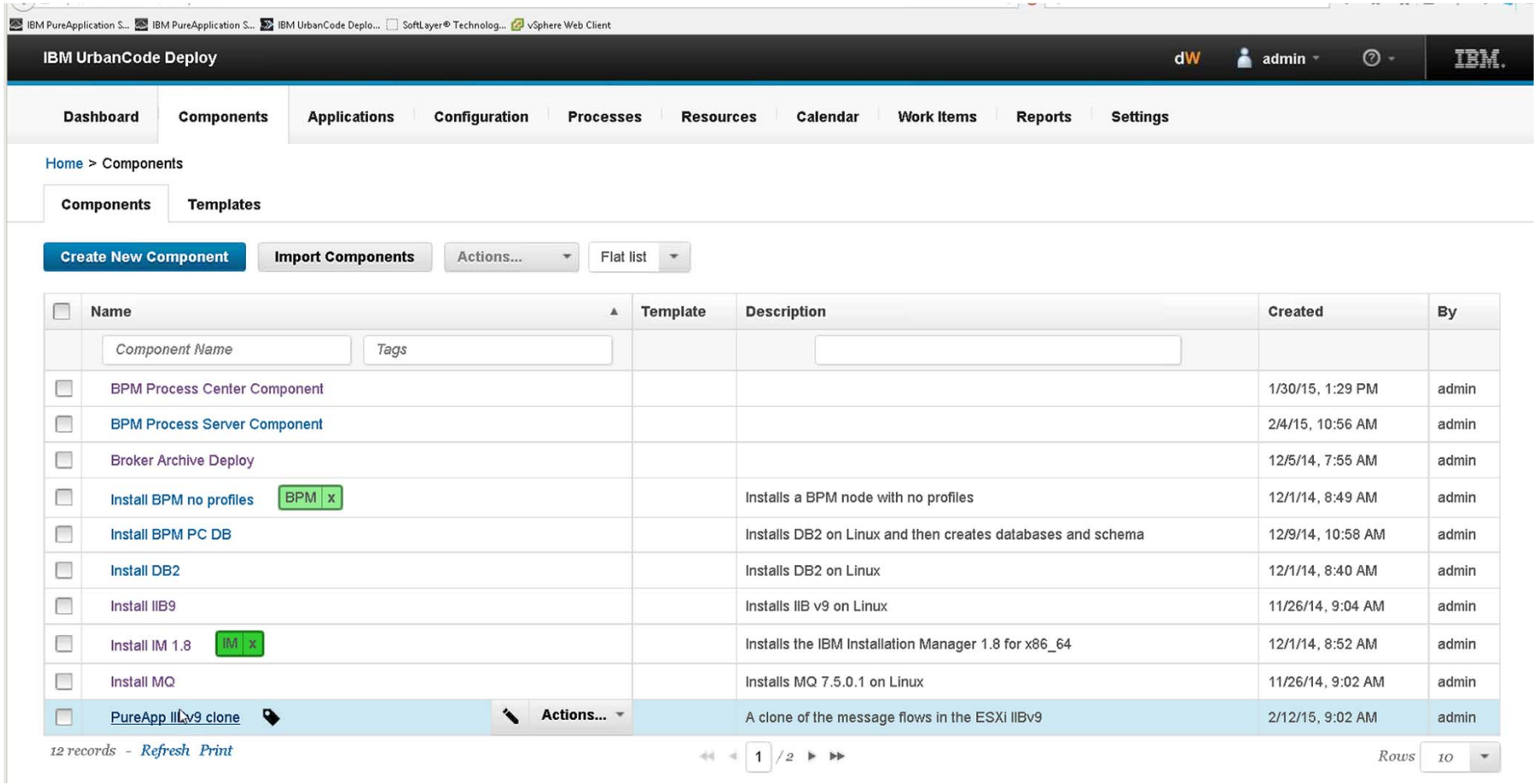

Deploying IIB and a specific BAR file from the UCD “Big Bang” Project

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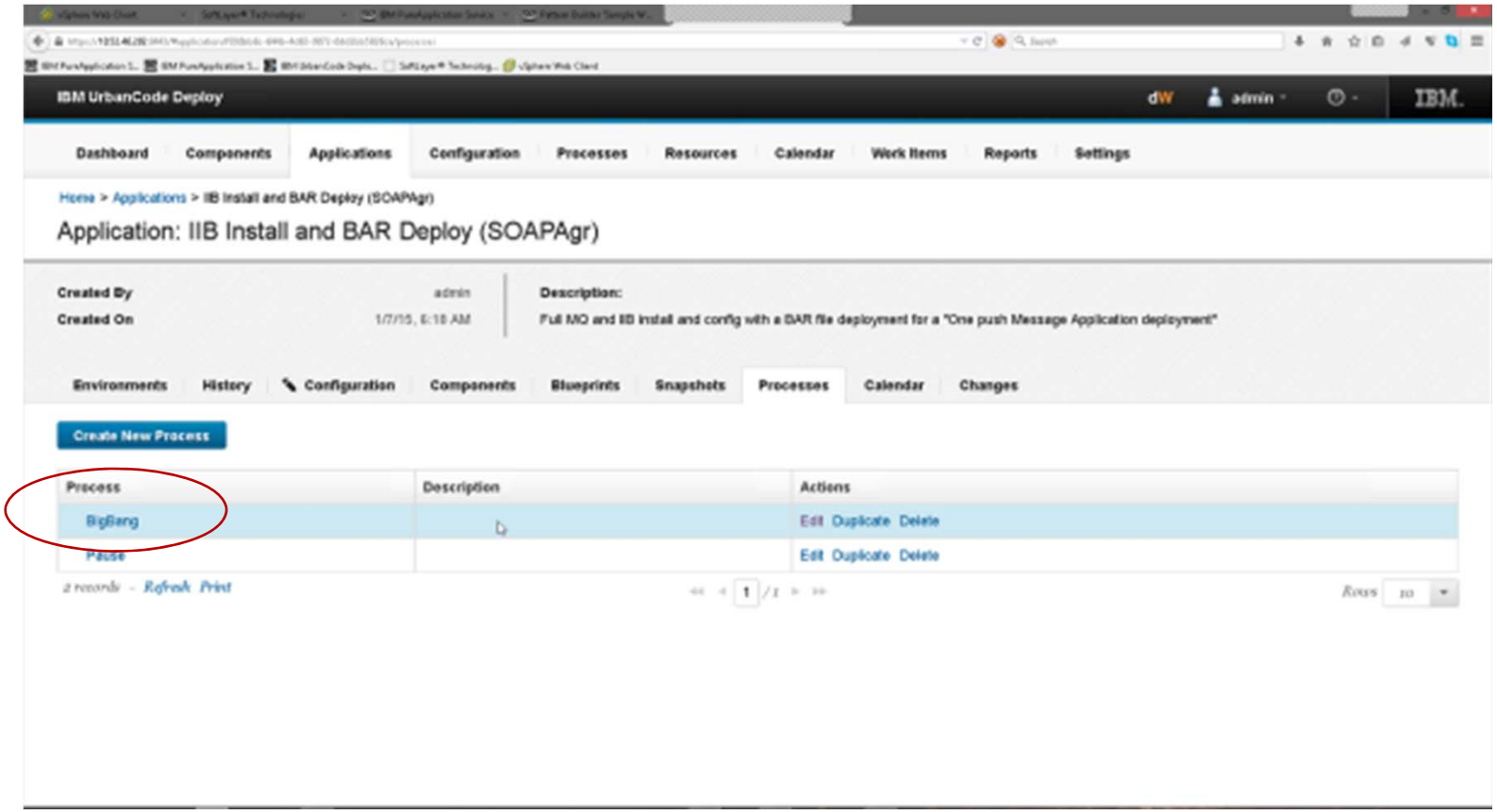

UrbanCode Deploy process steps

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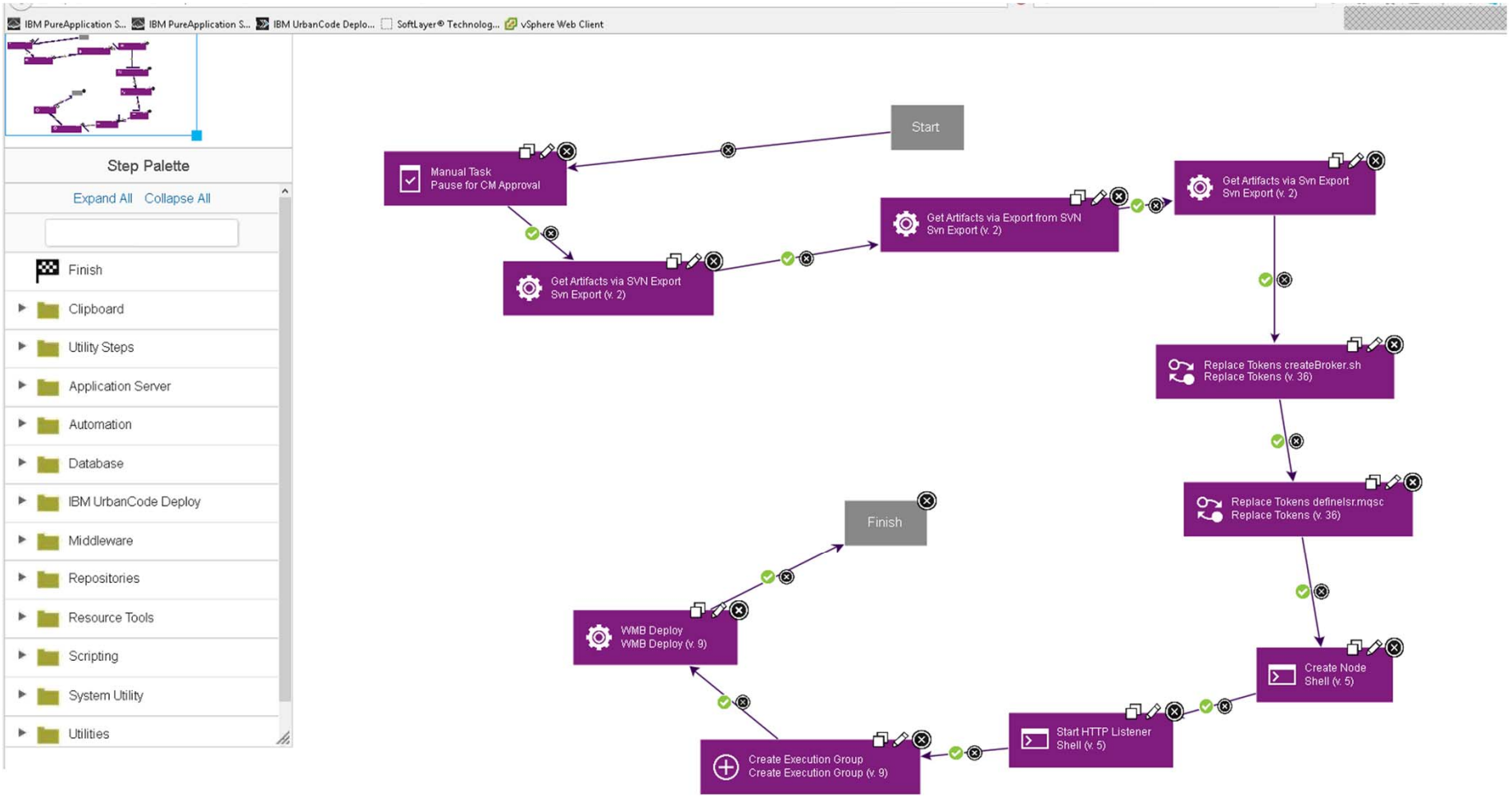
- Process steps



Big Bang IIB Full Deploy or Redeploy in Seven Minutes

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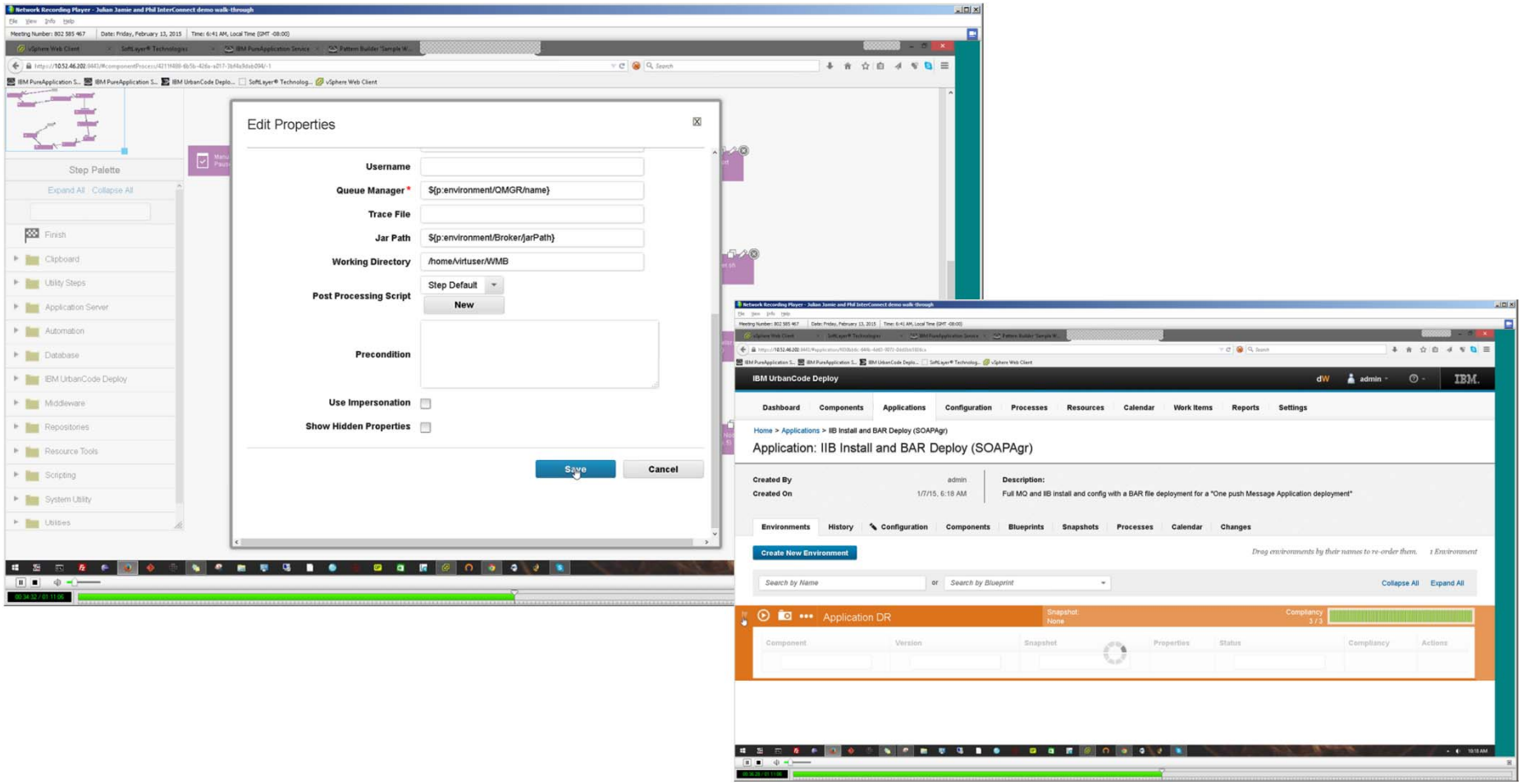

UCD Deployment Dashboard

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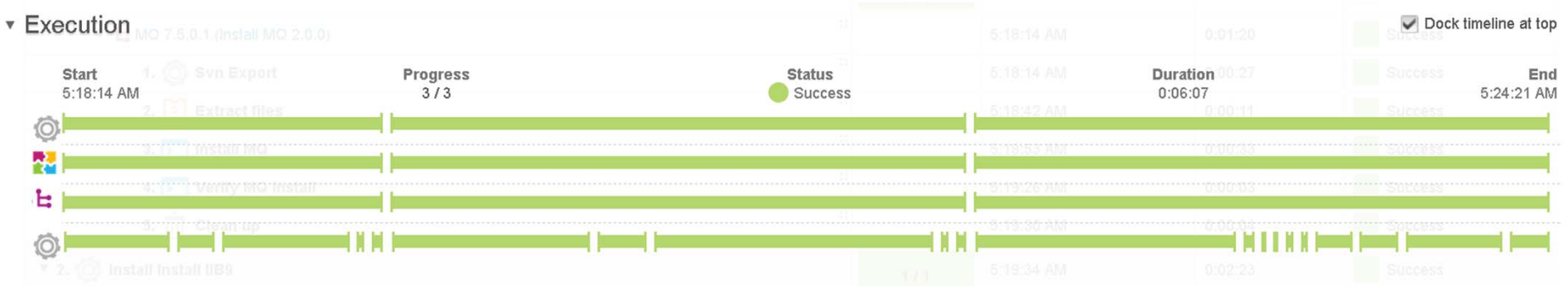
- Now get your standard operating environment for IIB
- Everything gets installed

▼ 3. Install Broker Archive Deploy	1 / 1	5:21:58 AM	0:02:23	Success
▼ Broker Archive Deploy	1 / 1	5:21:58 AM	0:02:23	Success
▼ Deploy BAR File (Broker Archive Deploy 1.0.1)		5:21:58 AM	0:02:23	Success
1. Manual Task: Pause for CM Approval		5:21:58 AM	0:01:05	Complete
2. Get Artifacts via Svn Export		5:23:11 AM	0:00:03	Success
3. Get Artifacts via Export from SVN		5:23:08 AM	0:00:02	Success
4. Get Artifacts via SVN Export		5:23:04 AM	0:00:04	Success
5. Replace Tokens createBroker.sh		5:23:14 AM	0:00:03	Success
6. Replace Tokens defineIsr.mqsc		5:23:18 AM	0:00:03	Success
8. WMB Deploy		5:24:09 AM	0:00:11	Success
9. Create Node		5:23:21 AM	0:00:11	Success
10. Start HTTP Listener		5:23:32 AM	0:00:11	Success
11. Create Execution Group		5:23:44 AM	0:00:25	Success
Total Execution	3 / 3	5:18:14 AM	0:06:07	Success



QRadar monitoring security incidents from all clouds

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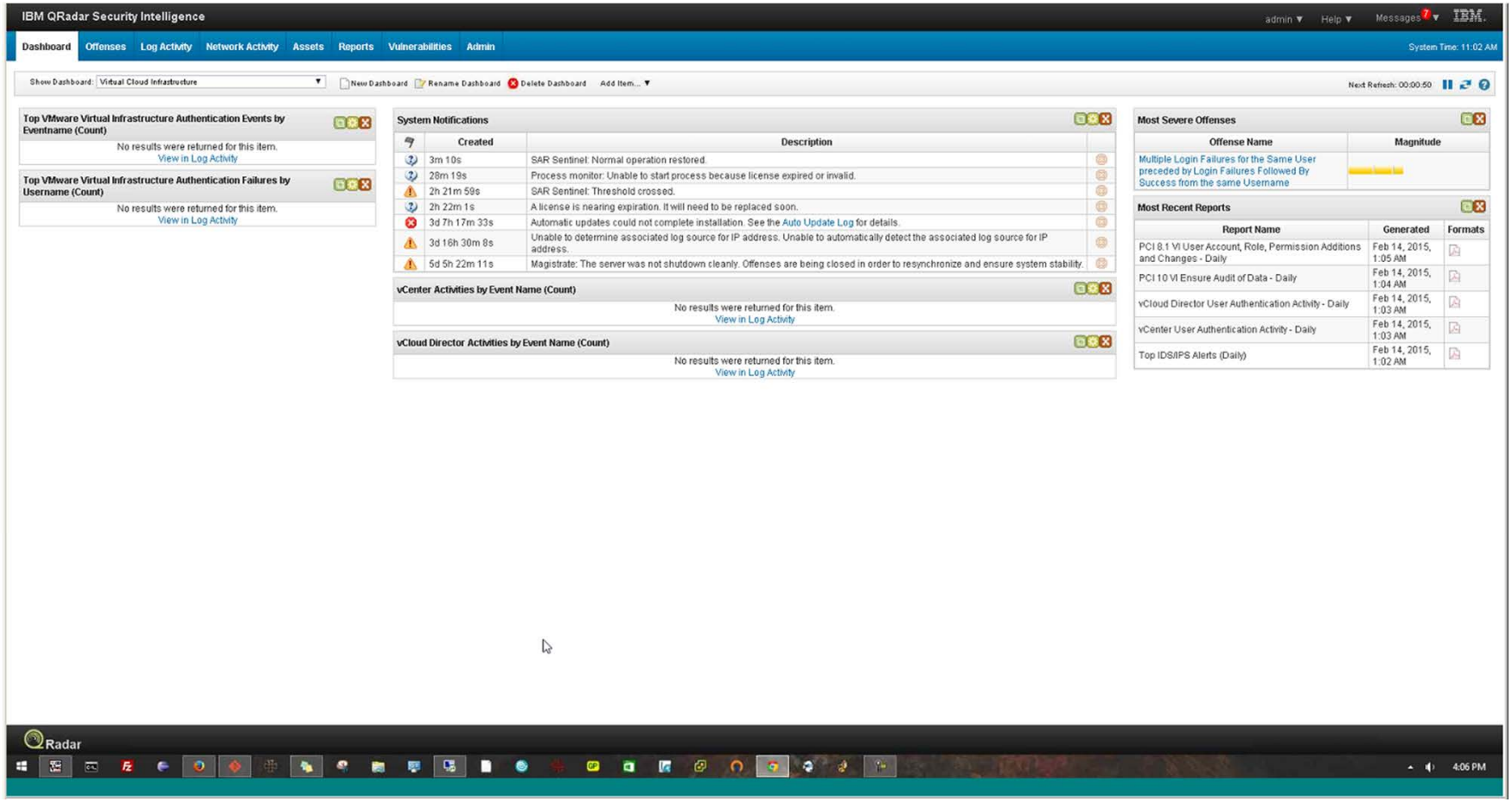

QRadar demo.mp4

QRadar DSM Parses the DataPower Logs

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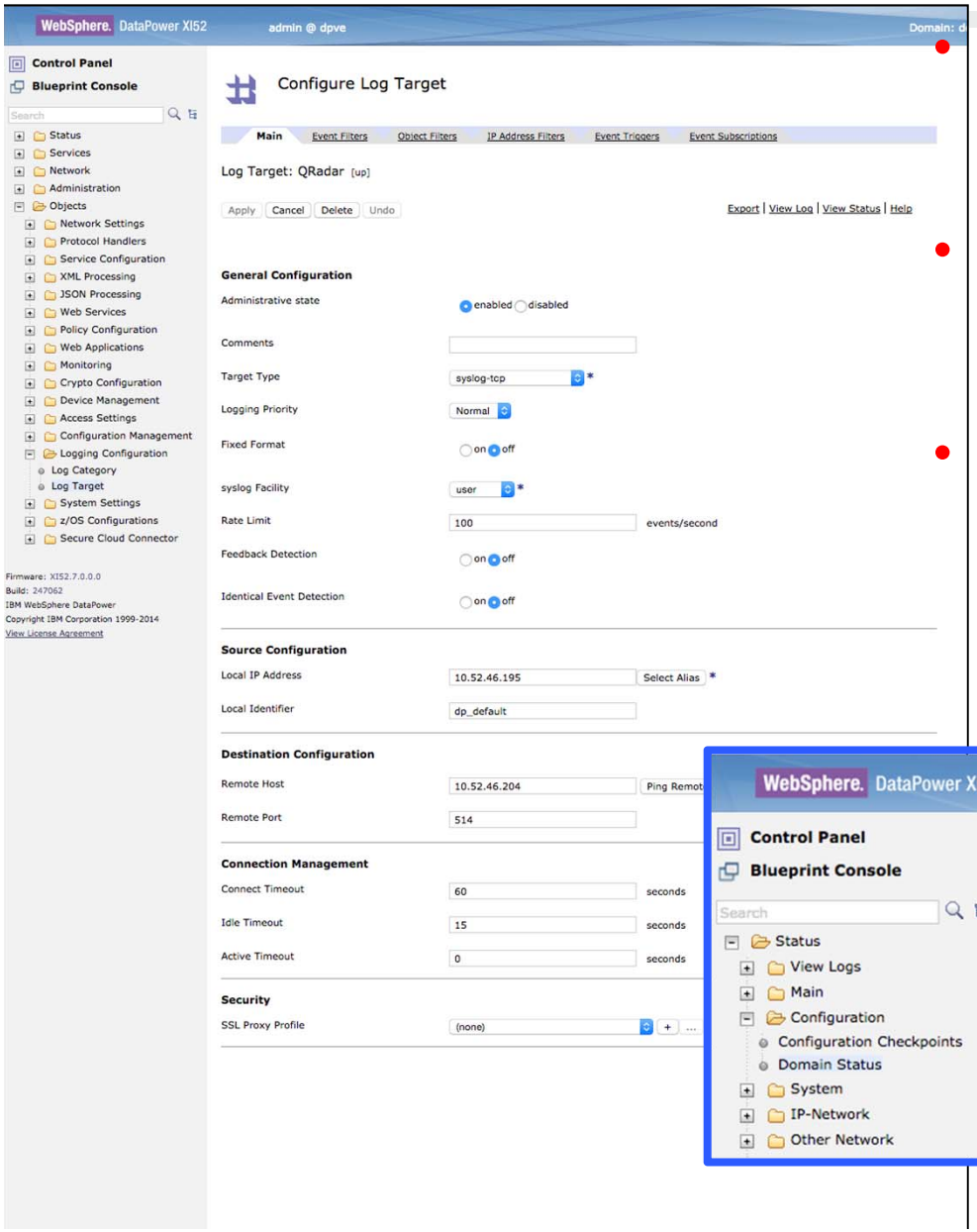
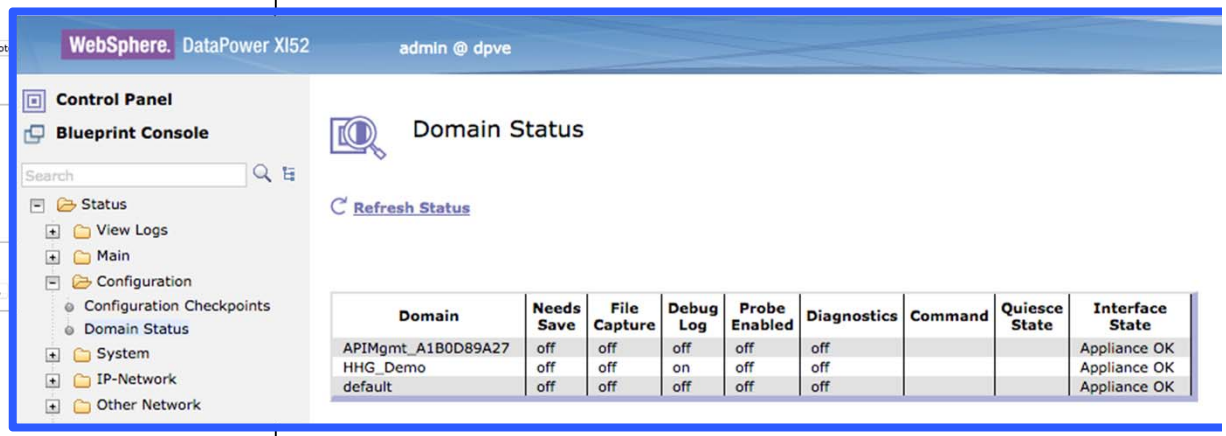


- IBM API Management deploys and manages it's own domain on the DataPower Gateway
- There is also a second HHG Demo domain on the DataPower for routing
- The DataPower DSM module for QRadar it's just a parser to manage the monitoring by looking at the logs from both DataPower domains



QRadar View

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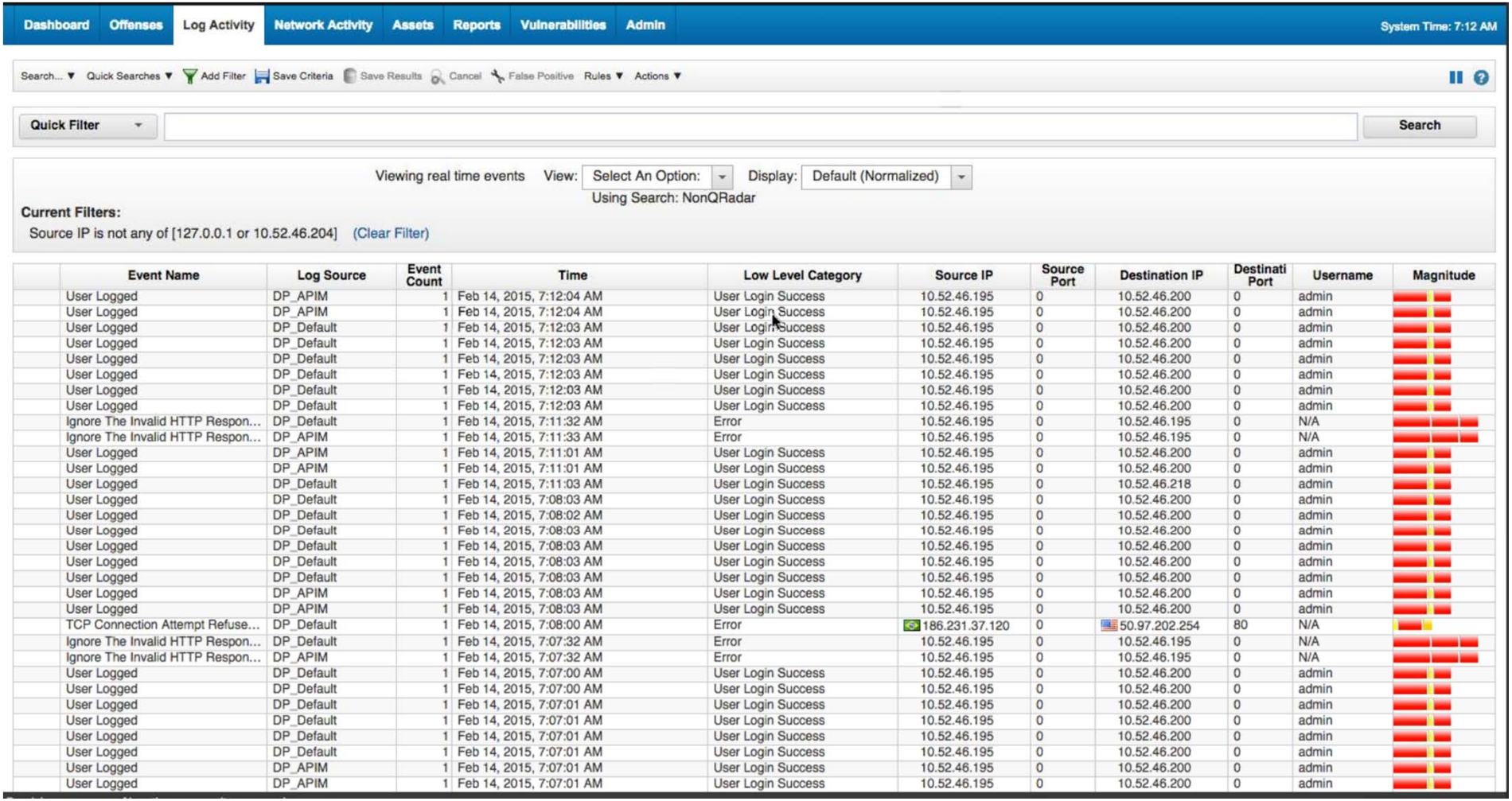

Event Name	Log Source	Event Count	Time	Low Level Category	Source IP	Source Port	Destination IP	Destinati Port	Username	Magnitude
User Logged	DP_APIM	1	Feb 14, 2015, 7:12:04 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_APIM	1	Feb 14, 2015, 7:12:04 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:12:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:12:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:12:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:12:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:12:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:12:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
Ignore The Invalid HTTP Respon...	DP_Default	1	Feb 14, 2015, 7:11:32 AM	Error	10.52.46.195	0	10.52.46.195	0	N/A	
Ignore The Invalid HTTP Respon...	DP_APIM	1	Feb 14, 2015, 7:11:33 AM	Error	10.52.46.195	0	10.52.46.195	0	N/A	
User Logged	DP_APIM	1	Feb 14, 2015, 7:11:01 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_APIM	1	Feb 14, 2015, 7:11:01 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:11:03 AM	User Login Success	10.52.46.195	0	10.52.46.218	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:08:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:08:02 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:08:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:08:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:08:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:08:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_APIM	1	Feb 14, 2015, 7:08:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_APIM	1	Feb 14, 2015, 7:08:03 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
TCP Connection Attempt Refuse...	DP_Default	1	Feb 14, 2015, 7:08:00 AM	Error	186.231.37.120	0	50.97.202.254	80	N/A	
Ignore The Invalid HTTP Respon...	DP_Default	1	Feb 14, 2015, 7:07:32 AM	Error	10.52.46.195	0	10.52.46.195	0	N/A	
Ignore The Invalid HTTP Respon...	DP_APIM	1	Feb 14, 2015, 7:07:32 AM	Error	10.52.46.195	0	10.52.46.195	0	N/A	
User Logged	DP_Default	1	Feb 14, 2015, 7:07:00 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:07:00 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:07:01 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:07:01 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:07:01 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_Default	1	Feb 14, 2015, 7:07:01 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_APIM	1	Feb 14, 2015, 7:07:01 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	
User Logged	DP_APIM	1	Feb 14, 2015, 7:07:01 AM	User Login Success	10.52.46.195	0	10.52.46.200	0	admin	

Multi-Cloud monitoring with IBM QRadar

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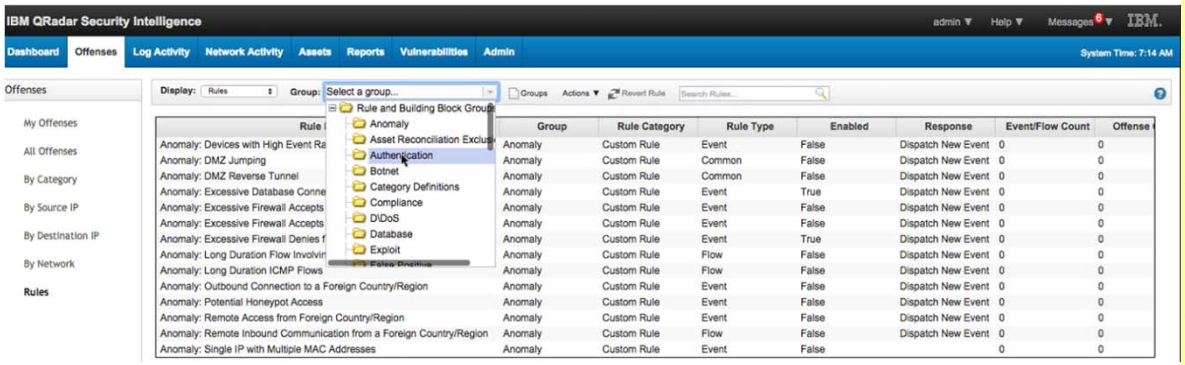
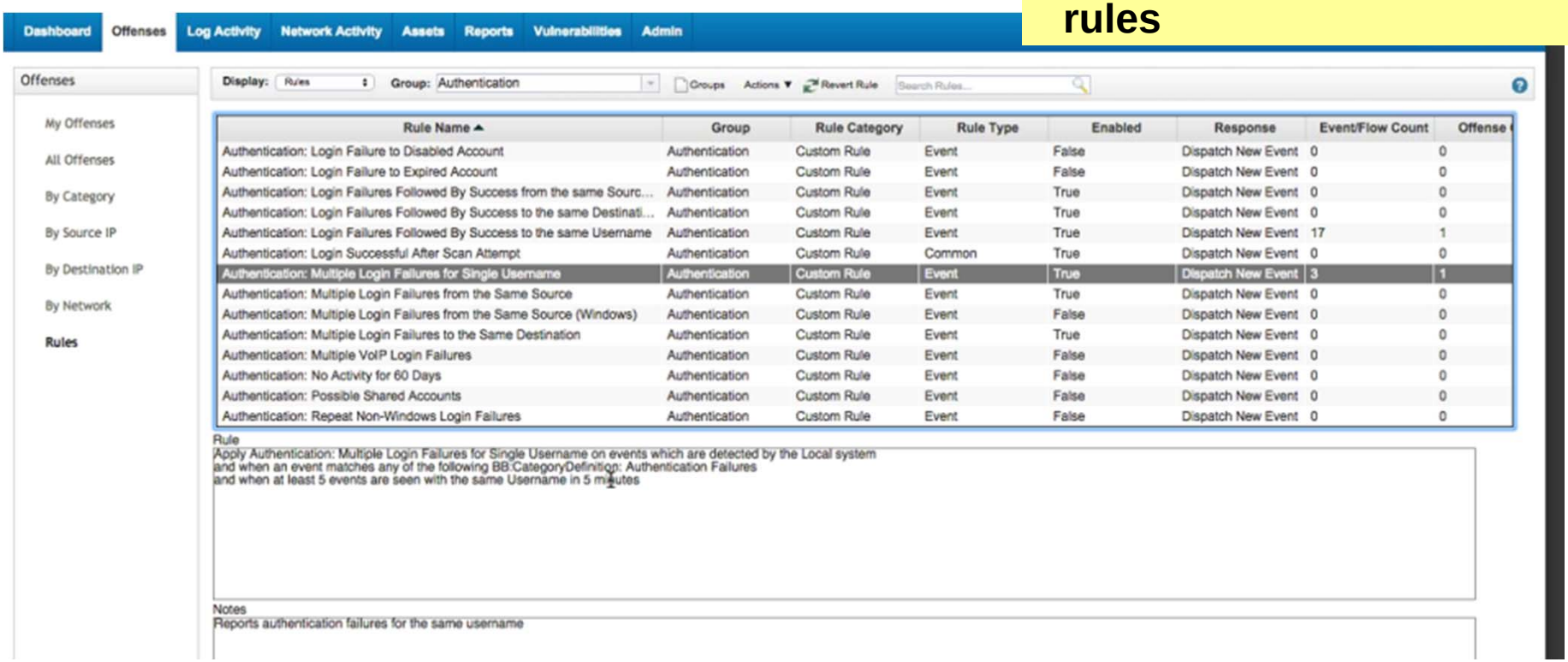


- QRadar also monitors the other logs within the HHG multiple clouds
- There are many built-in rules.
- It is also easy to edit, extend or create your own rules



IBM QRadar flags “Offenses” through rules…

Many rules are available out of the box

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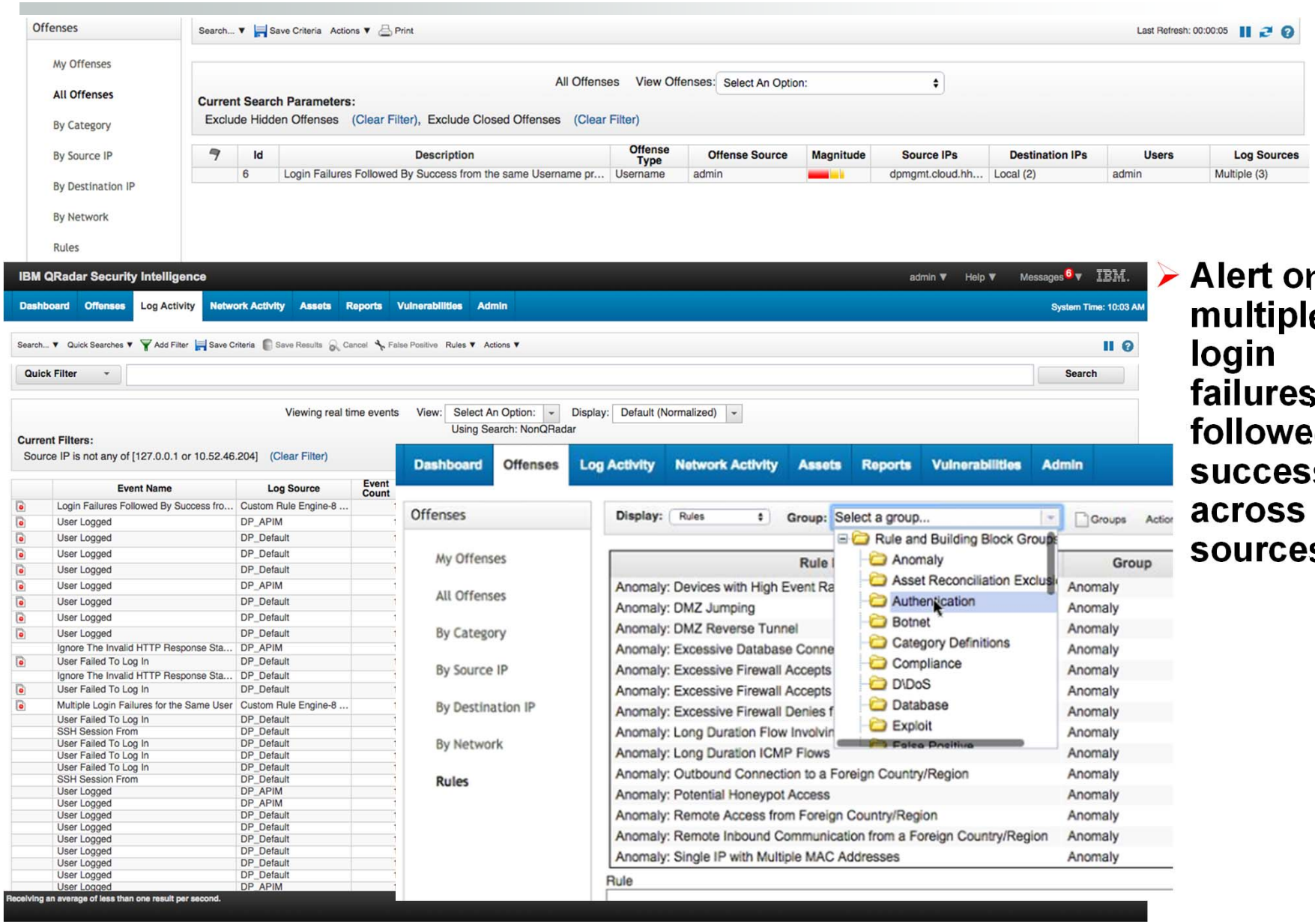

- **Alert on multiple login failures followed by success across log sources**

Multiple login attempts to the DataPower monitored by QRadar

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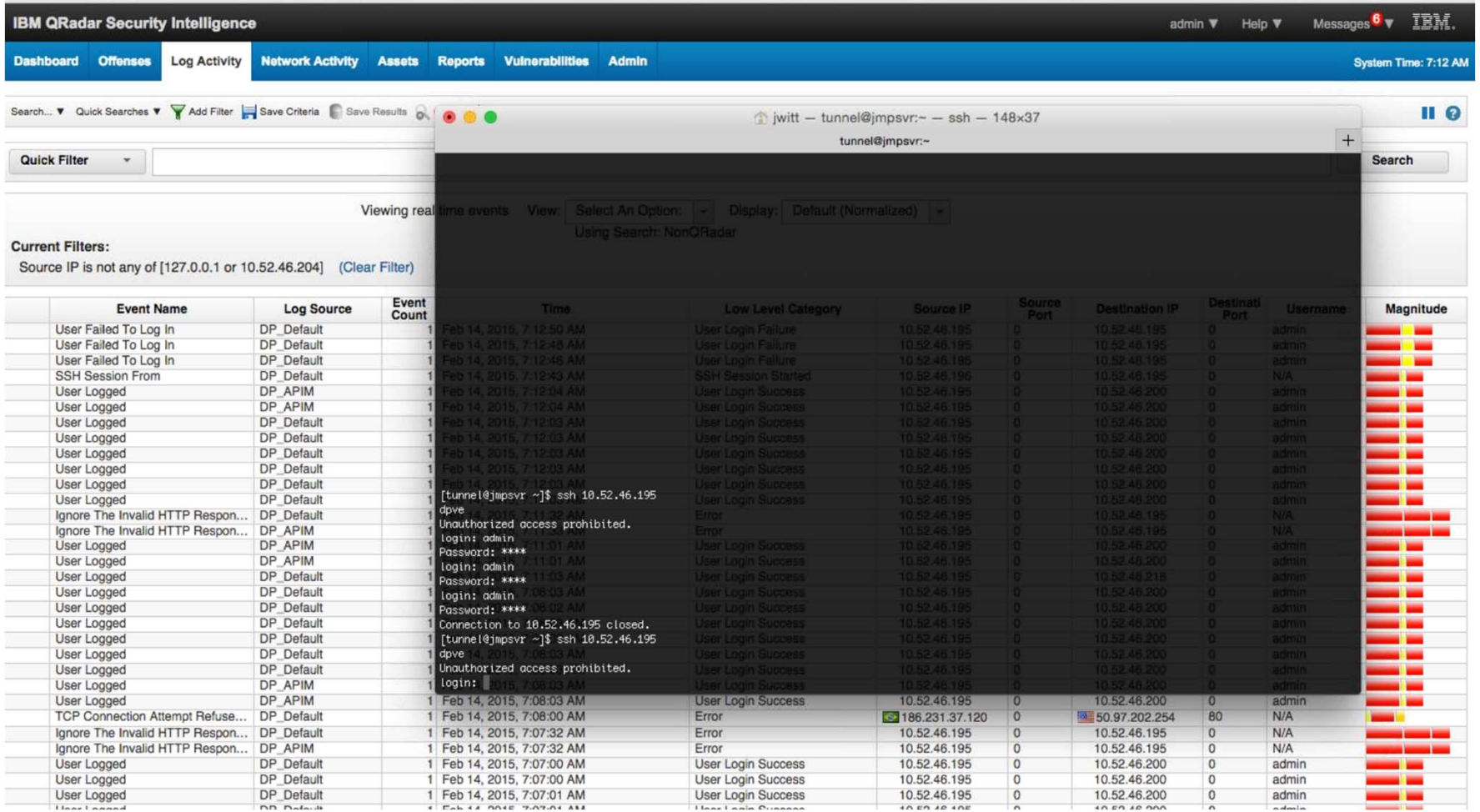

Id	Description	Offense Type	Offense Source	Magnitude	Source IPs	Destination IPs	Users	Log Sources
7	Multiple Login Failures for the Same User preceded by Login Fail...	Username	admin		dpmgmt.cloud.hh...	Local (2)	admin	Multiple (3)

Multiple Login Failures for the Same User
preceded by Login Failures Followed By Success from the same Username

QRadar Rule Wizard allows for easy customizations based on out-of-the-box rules

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Rule Name ▲	Group	Rule Category	Rule Type	Enabled	Response	Event/Flow Count	Offense
Authentication: Login Failure to Disabled Account	Authentication	Custom Rule	Event	False	Dispatch New Event	0	0
Authentication: Login Failure to Expired Account	Authentication	Custom Rule	Event	False	Dispatch New Event	0	0
Authentication: Login Failures Followed By Success from the same Sourc…	Authentication	Custom Rule	Event	True	Dispatch New Event	0	0
Authentication: Login Failures Followed By Success to the same Destinati…	Authentication	Custom Rule	Event	True	Dispatch New Event	0	0
Authentication: Login Failures Followed By Success to the same Username	Authentication	Custom Rule	Event	True	Dispatch New Event	17	1
Authentication: Login Successful After Scan Attempt	Authentication	Custom Rule	Common	True	Dispatch New Event	0	0
Authentication: Multiple Login Failures for Single Username	Authentication	Custom Rule	Event	True	Dispatch New Event	3	1
Authentication: Multiple Login Failures from the Same Source	Authentication	Custom Rule	Event	True	Dispatch New Event	0	0
Authentication: Multiple Login Failures from the Same Source (Windows)	Authentication	Custom Rule	Event	False	Dispatch New Event	0	0
Authentication: Multiple Login Failures to the Same Destination	Authentication	Custom Rule	Event	True	Dispatch New Event	0	0
Authentication: Multiple VoIP Login Failures	Authentication						
Authentication: No Activity for 60 Days	Authentication						
Authentication: Possible Shared Accounts	Authentication						
Authentication: Repeat Non-Windows Login Failures	Authentication						

Rule

Apply Authentication: Multiple Login Failures for Single Username on events which are detected by the
and when an event matches any of the following BB:CategoryDefinition: Authentication Failures
and when at least 5 events are seen with the same Username in 5 minutes

Notes

Reports authentication failures for the same username

Rule Wizard: Rule Test Stack Editor

Which tests do you wish to perform on incoming events?

Test Group: All

Export as Building Block

Type to filter

- when the local network is **one of the following networks**
- when the **destination** network is **one of the following networks**
- when the IP protocol is one of the following **protocols**
- when the Event Payload contains **this string**
- when the source port is one of the following **ports**
- when the destination port is one of the following **ports**
- when the local port is one of the following **ports**
- when the remote port is one of the following **ports**
- when the source IP is one of the following **IP addresses**
- when the destination IP is one of the following **IP addresses**
- when the local IP is one of the following **IP addresses**

Rule (Click on an underlined value to edit it)
Invalid tests are highlighted and must be fixed before rule can be saved.

Apply Authentication: Multiple Login Failures for Single User on events which are detected by the Local system
and when an event matches any of the following BB:CategoryDefinition: Authentication Failures
and when at least 5 events are seen with the same Username in 5 minutes

Please select any groups you would like this rule to be a member of:

- Anomaly
- Asset Reconciliation Exclusion
- Authentication
- Botnet
- Category Definitions

Notes (Enter your notes about this rule)

Reports authentication failures for the same username

A Second Look at API Driven Cloud Management

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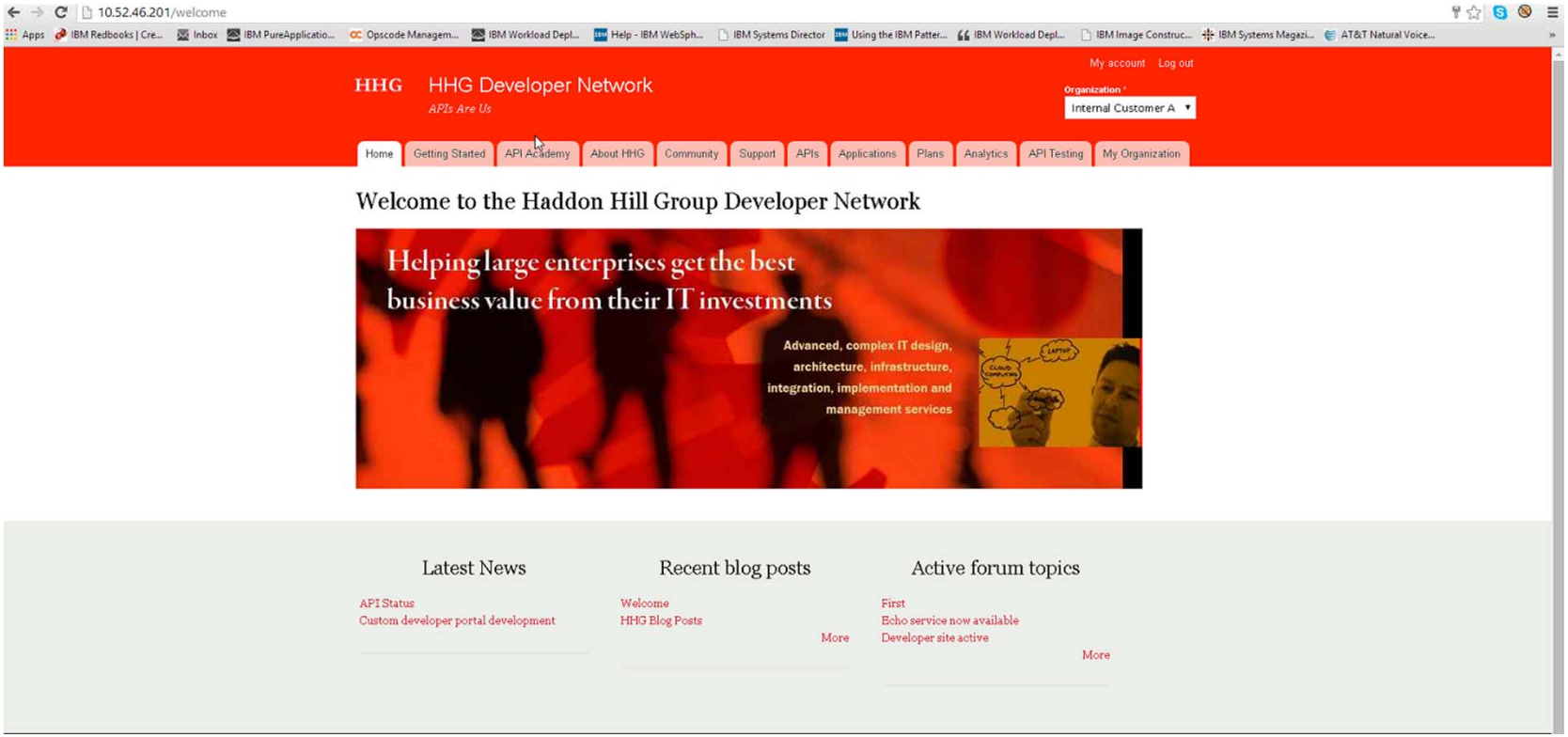

Developer Portal.mp4

Testing APIs Available to that Developer

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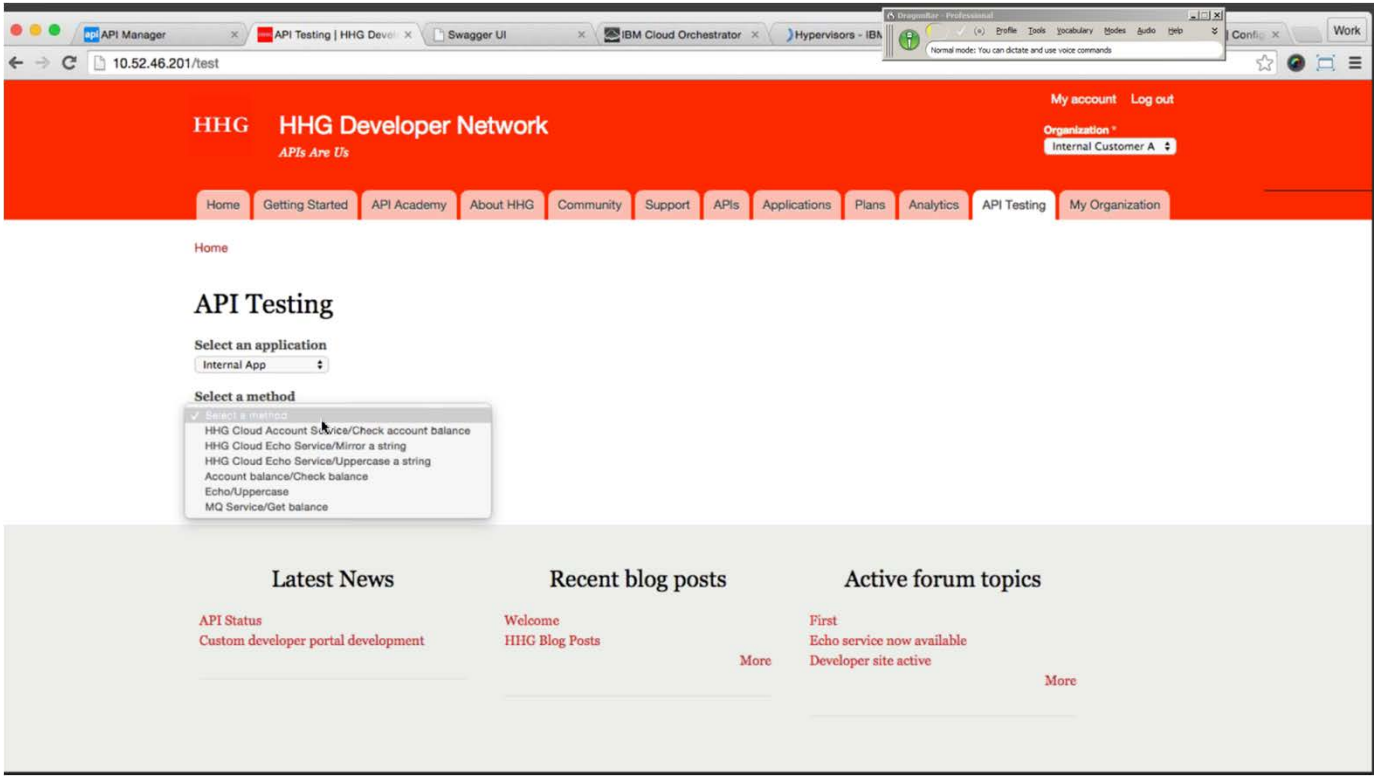

IBM Cloud Orchestrator Can Manage HHG's Three Clouds

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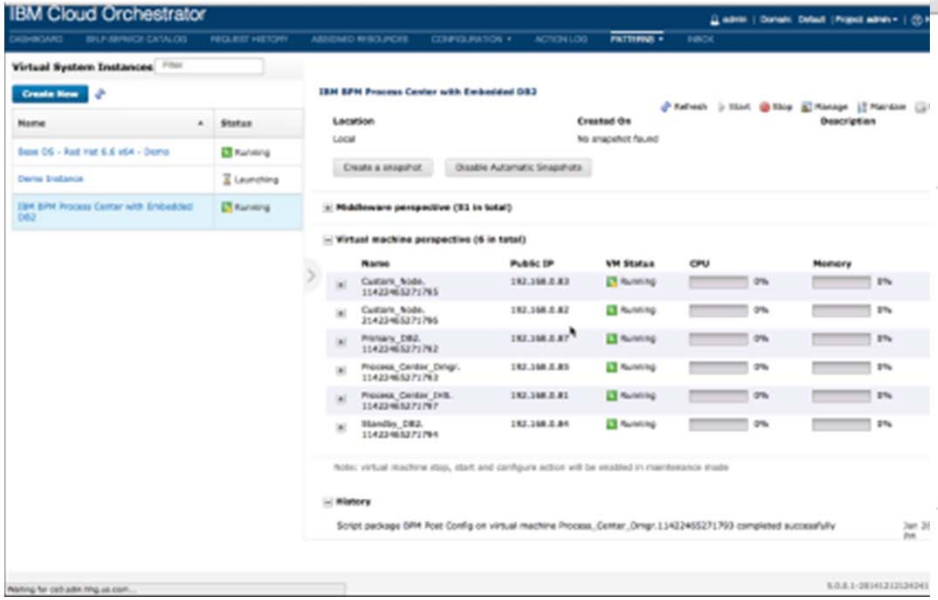

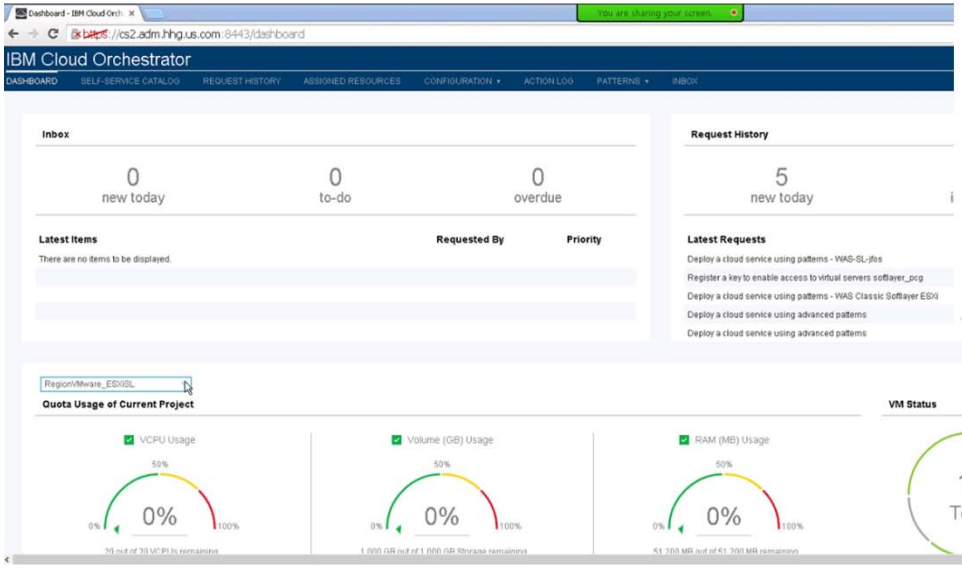

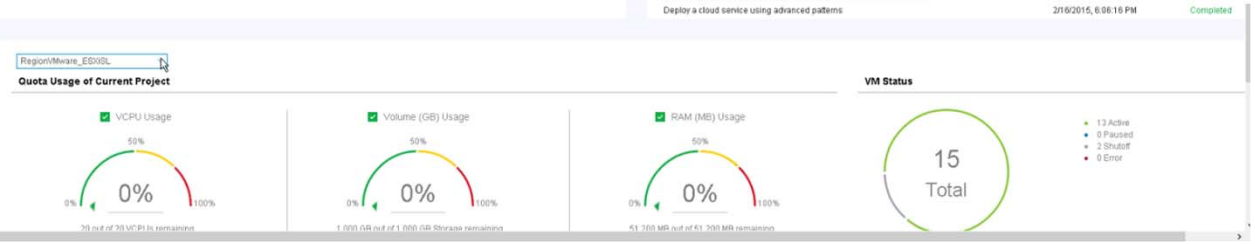

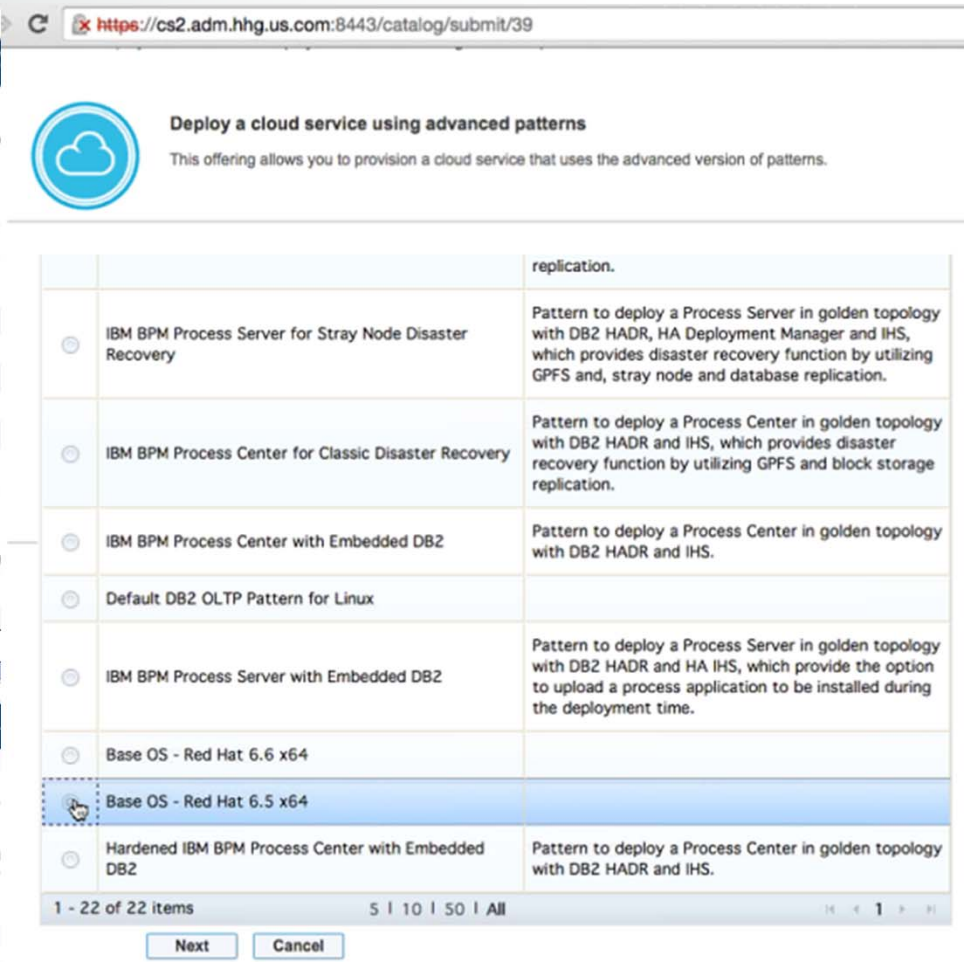

IBM Cloud Orchestrator Self Service Catalog Across HHG's Three Clouds

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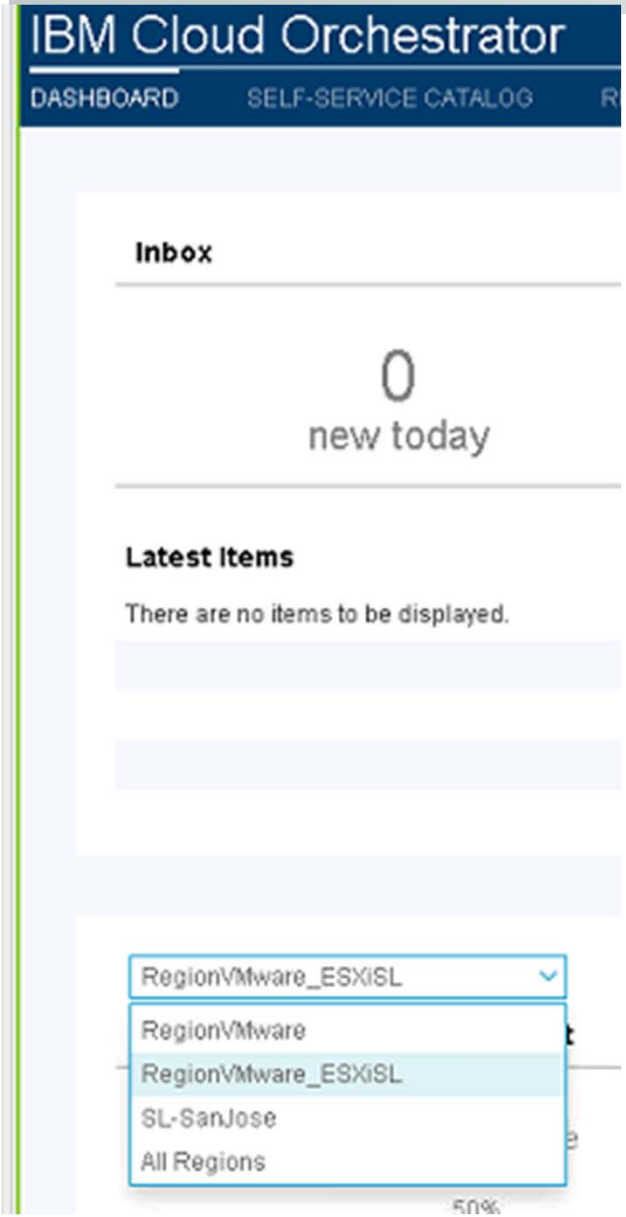

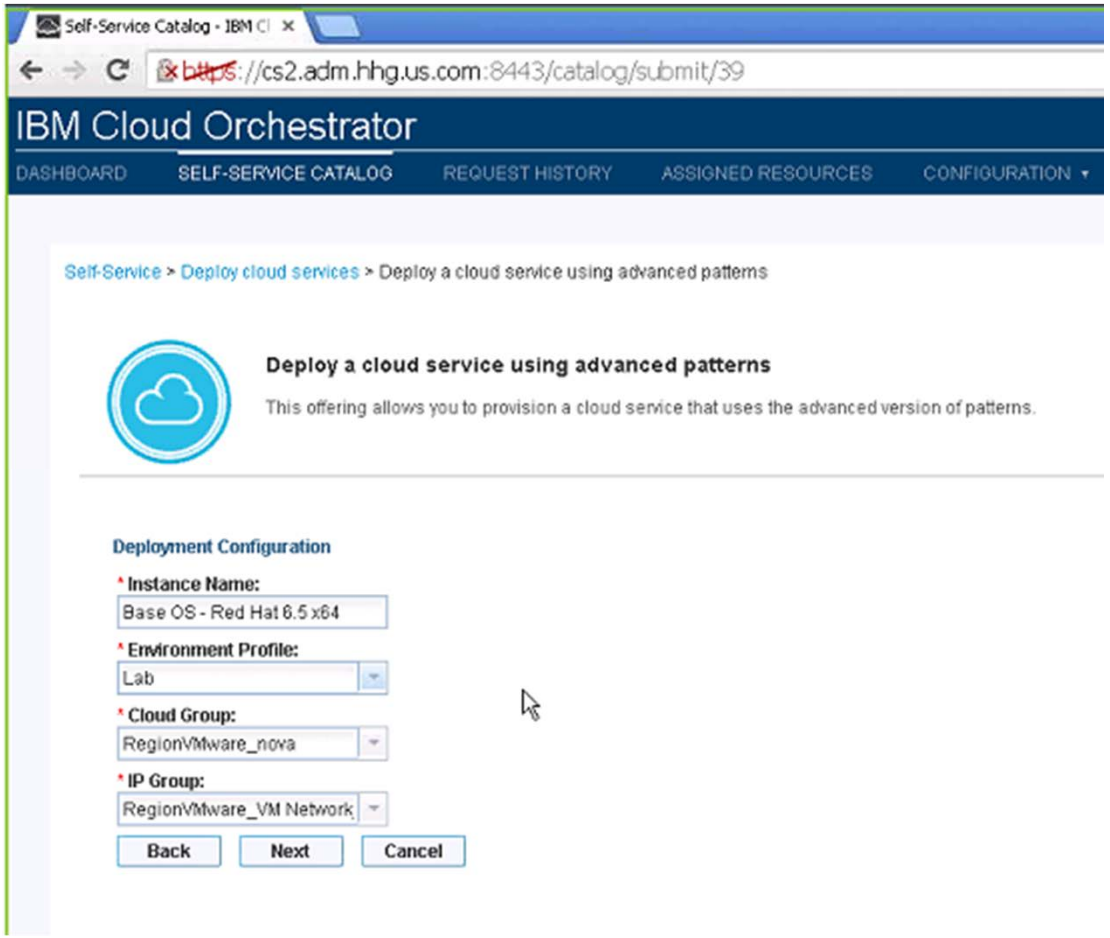

The ICO BPM pattern looks just like PureApp

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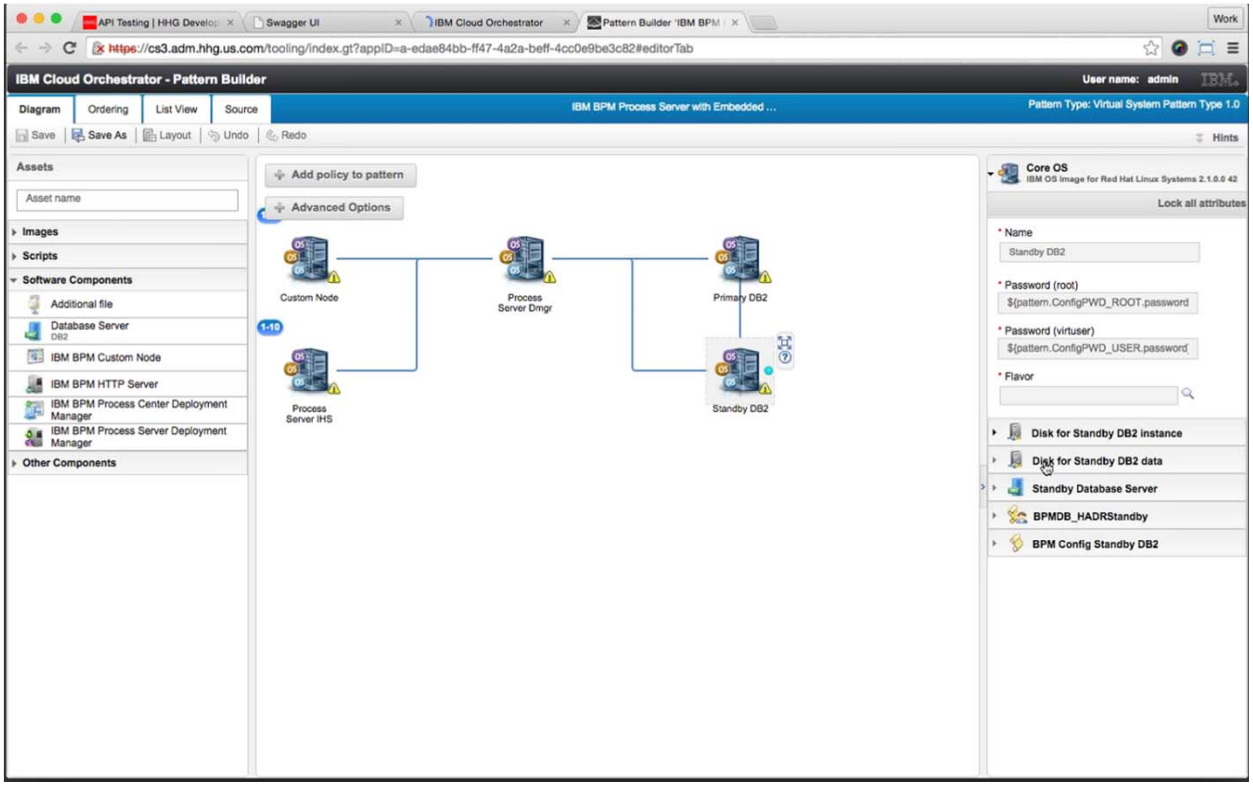

ICO BPM Pattern

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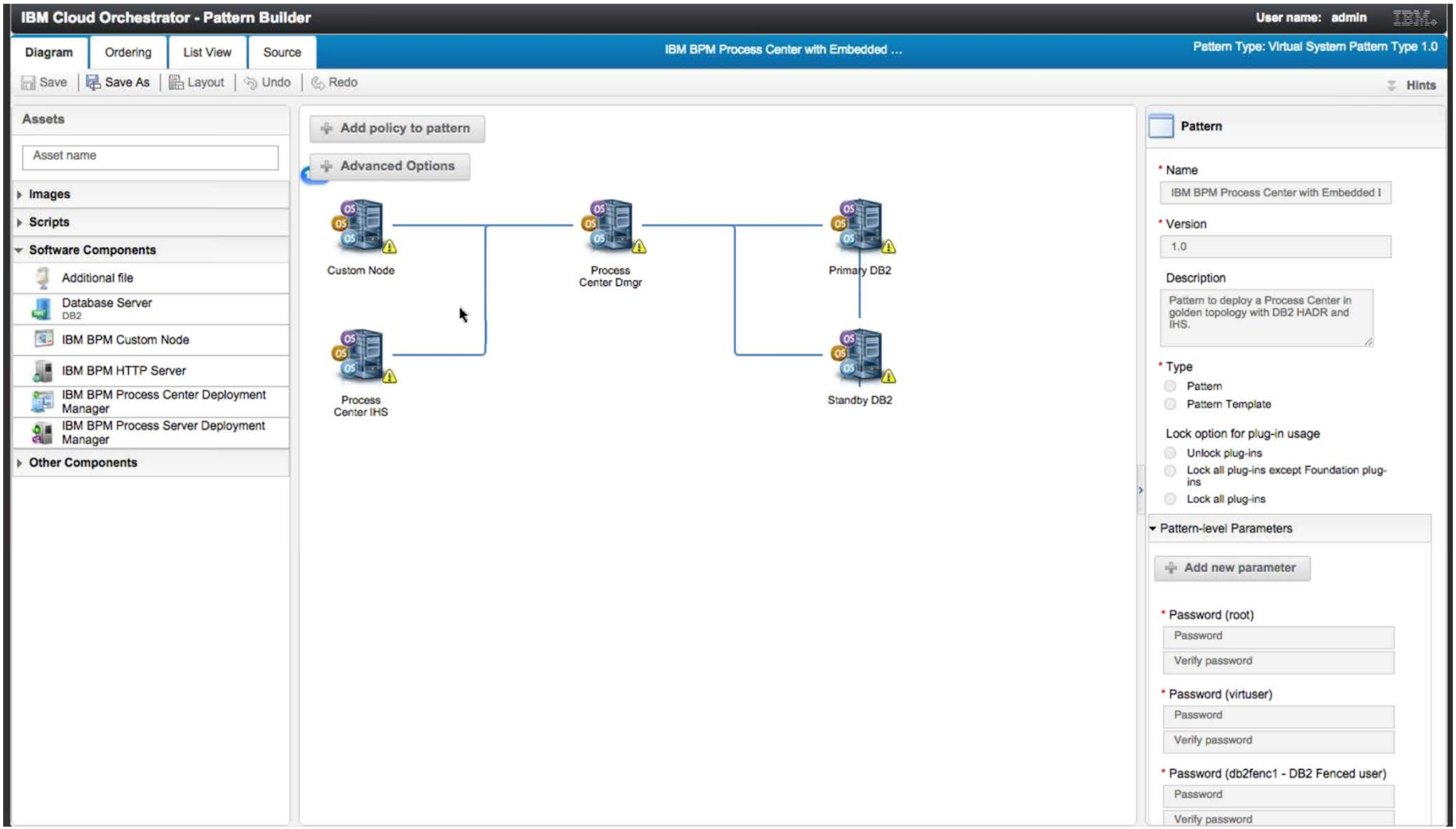

ICO Deployment

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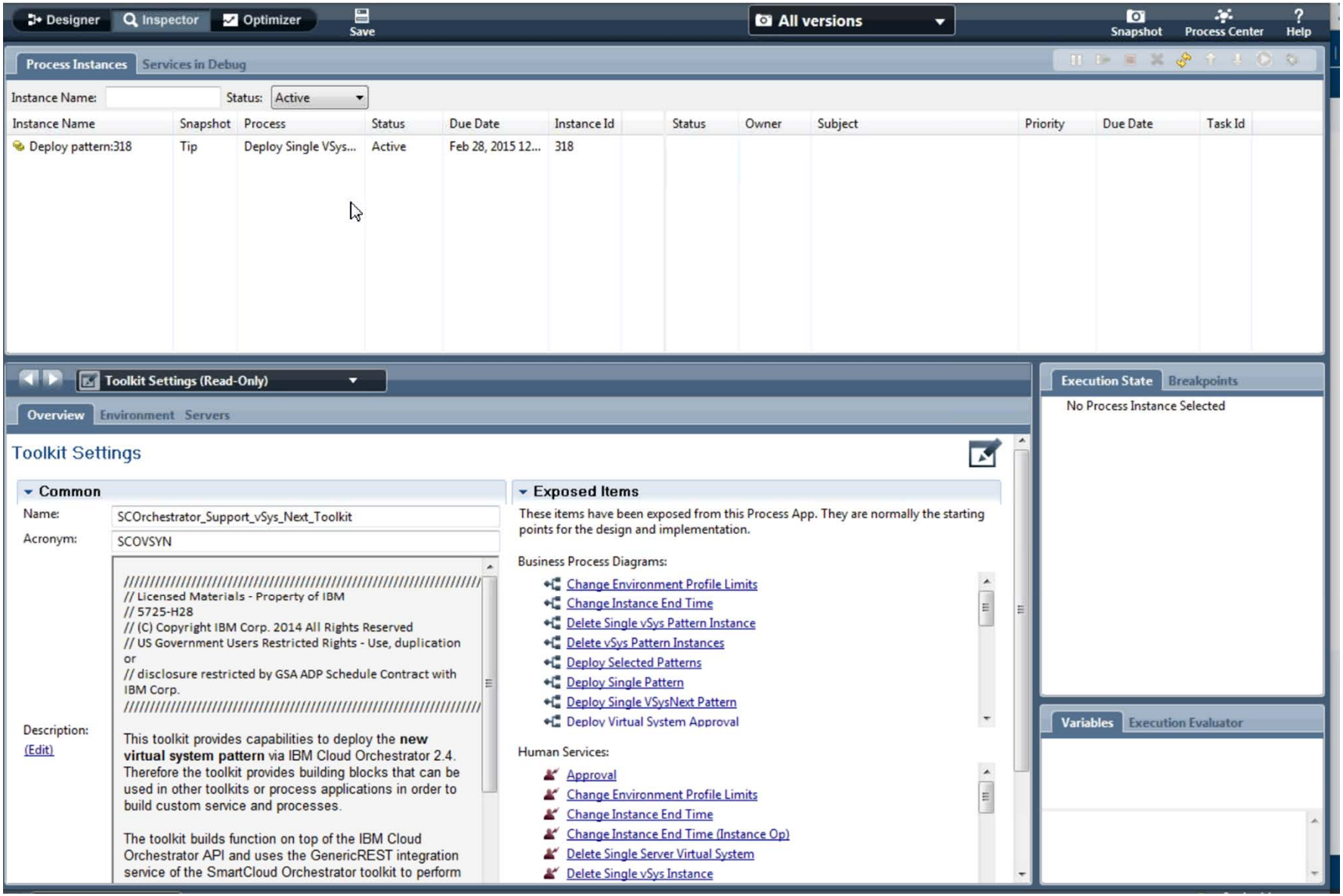

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Questions?