Business & Technology Aligned

Effectively Manage and Scale IBM BPM Infrastructure to Support 30,000+ Users

WUG - Edinburgh

Pundarik Ranchhod
25 September 2012
v2-1

ascendant TECHNOLOGY

Agenda

- **Introductions**
- IBM BPM Deployment Challenges
- Good Practices
  - IBM BPM Topologies
  - Automation with IBM RAF
- RAF Overview
  - IBM BPM Extensions for RAF
- Summary & Questions
- Close

Introduction

- Pundarik Ranchhod
- BPM Practice – Europe
- Focus of this talk:
  - IBM BPM
  - Specifically infrastructure
  - Some practices for Scaling **and** Managing IBM BPM

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- Introductions
- **IBM BPM Deployment Challenges**
- A Solution
  - IBM BPM Topologies
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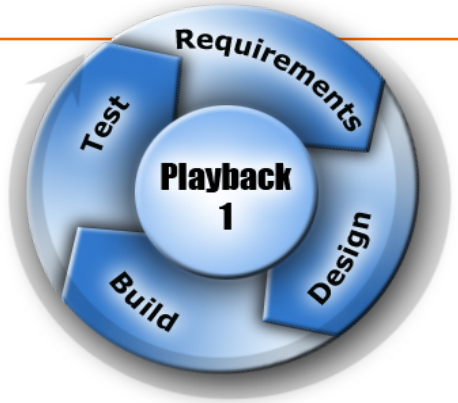
IBM BPM Challenges

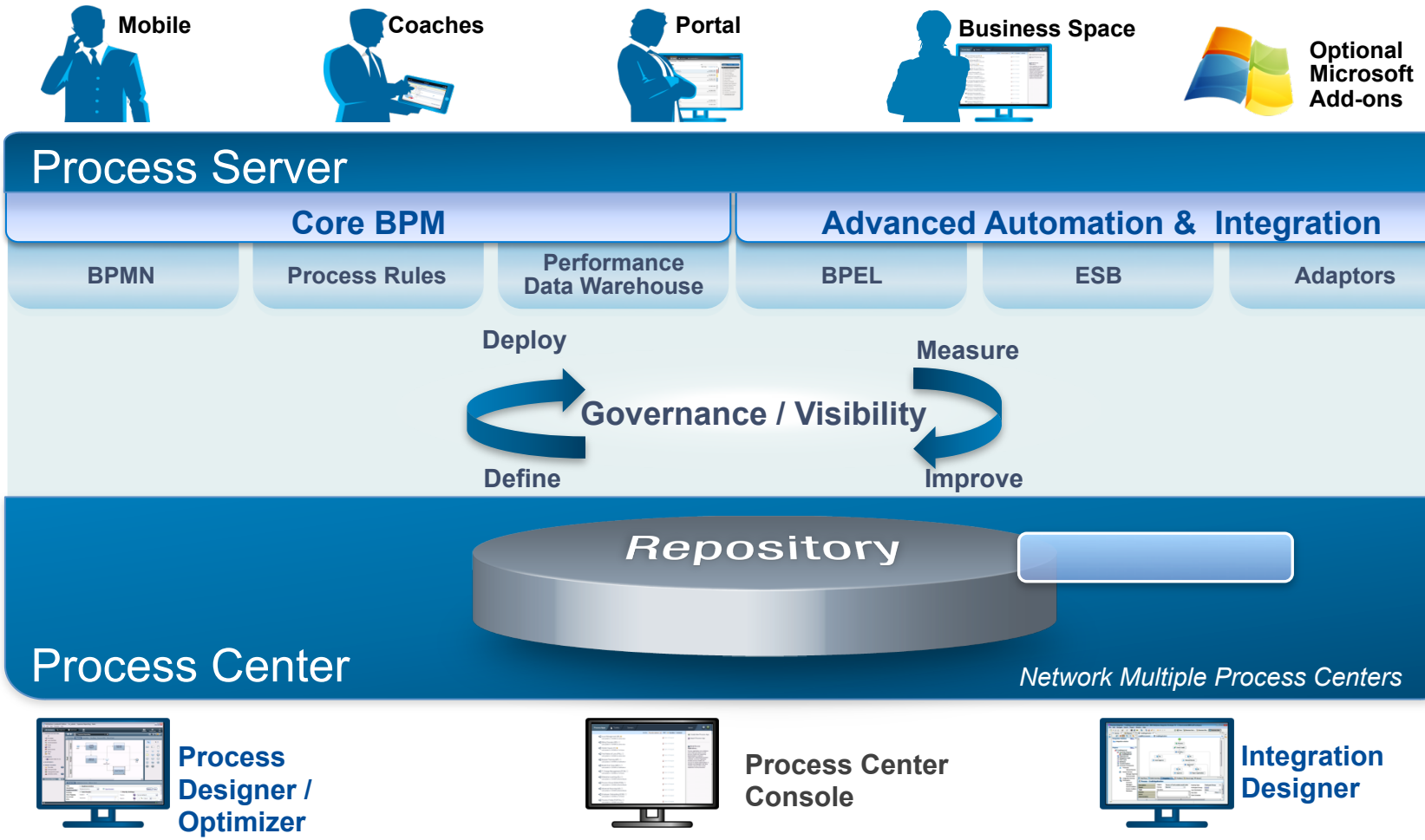


2. The infrastructure and application configuration will support the UK
significant footprint changes (eg allocation of SAN storage etc). The
   - 25,000+ users with peak activity periods
   - 24*7 service availability
   - Complex "Enterprise" processes – eg customer take-on, accoun

Inputs

- ID02 High Level and ID04 Detailed Infrastructure Designs from

IBM BPM Challenges – Components



BPM Deployment – The Challenges

Business

- **Cannot quickly deploy process applications to production**
- **Large demand for BPM from the business**

BPM Development

- **Delays due to lack of stable development & environment**
- **Poor collaboration with BPM Admin team**
- **Process Center not treated as Production system**

QA

- **Lack of clear QA process, additional strain on fragile infrastructure**
- **Lack of monitoring of environments**

Admin

- **Need to learn IBM BPM Administration and complex topologies**
- **Need to maintain large amount of custom Admin scripts**
- **Lack of skills in WebSphere to support IBM BPM infrastructure**

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Good Practices for IBM BPM Infrastructure

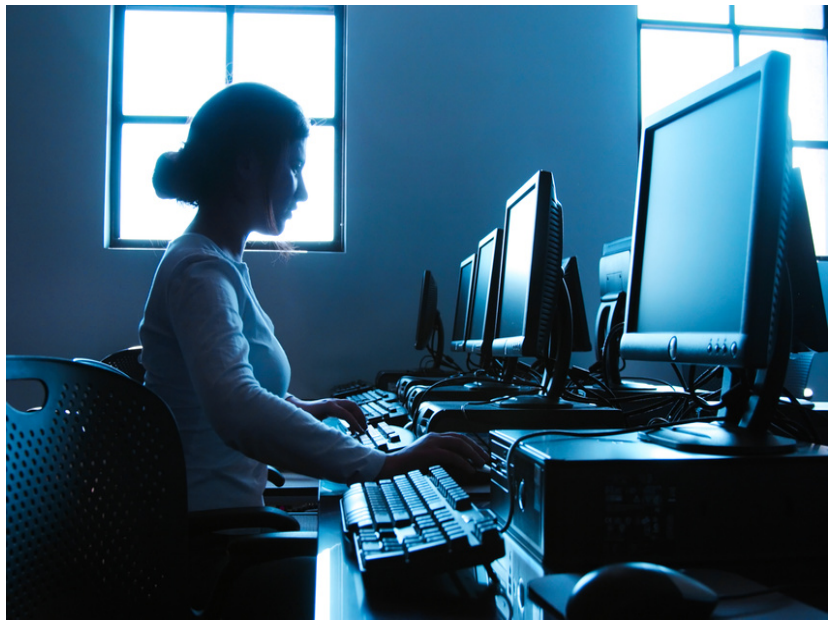
1. Start well before first BPM QuickWin Pilot

2. Investigate and select the IBM BPM topology relevant to you

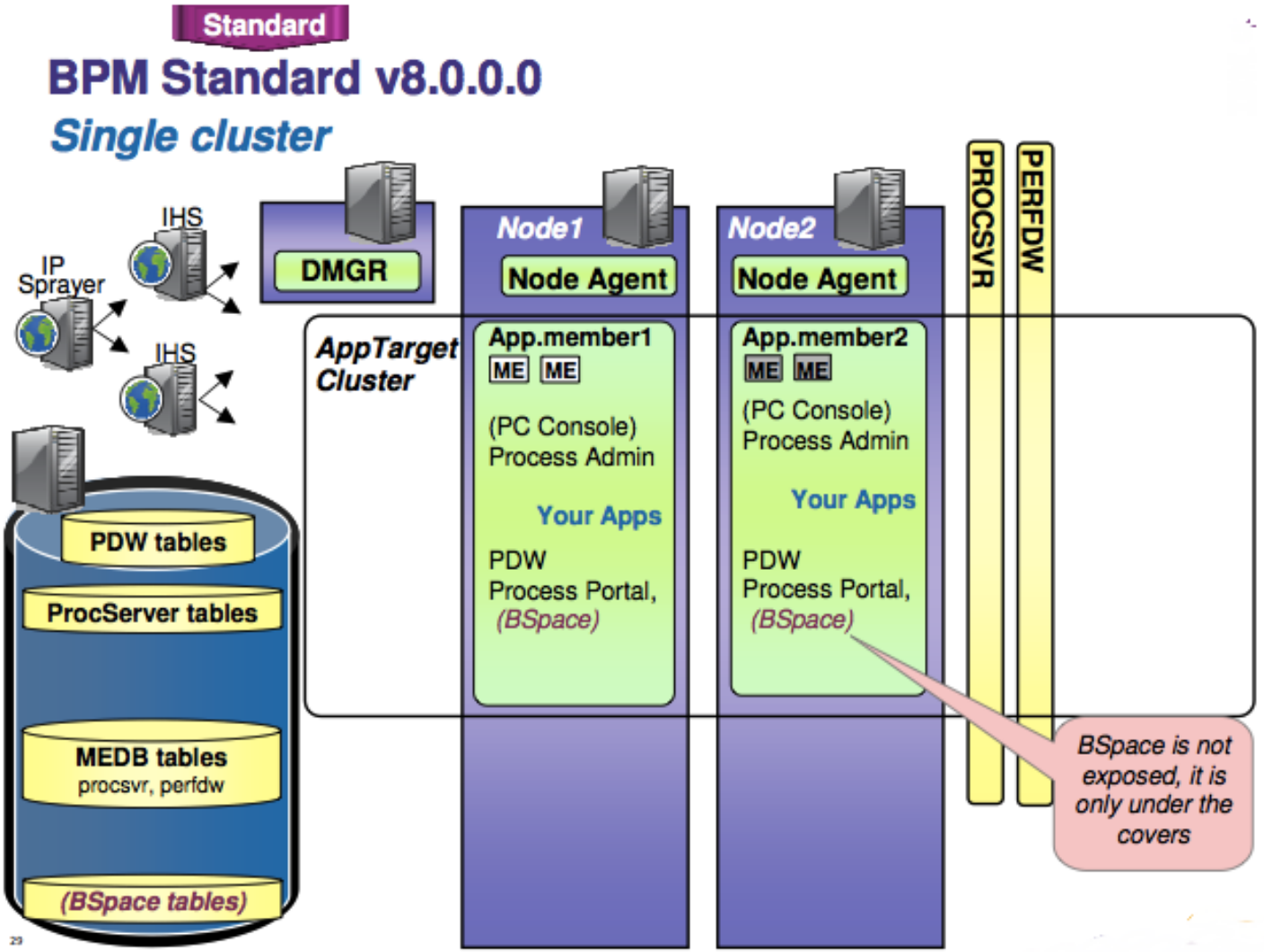
3. Create golden master topologies for Dev, Test, Staging and Prod
   - Pattern based approach

4. Use environment build automation instead of more custom scripts

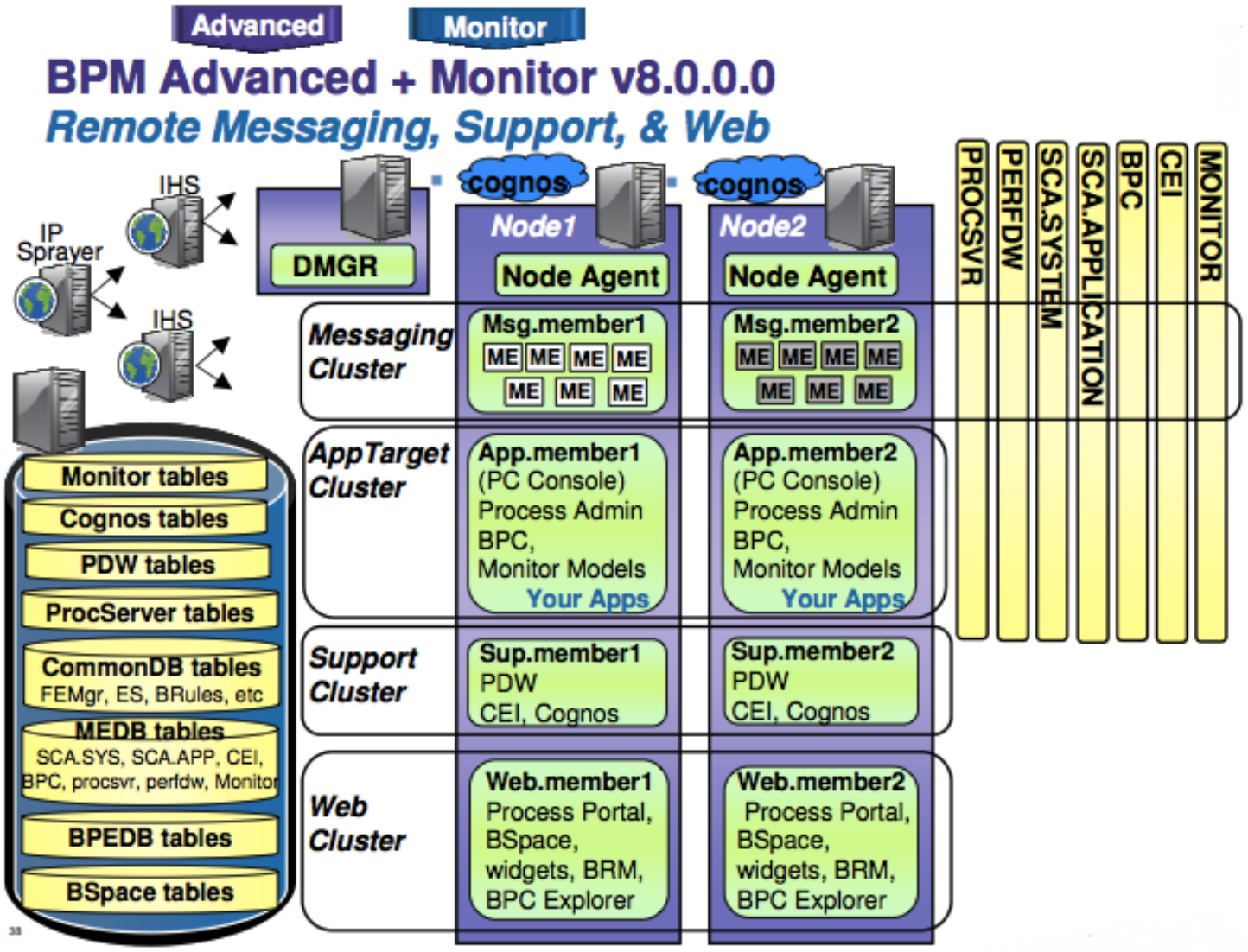
5. Enforce topology using Automation tool
   - Eliminate environment configuration drift



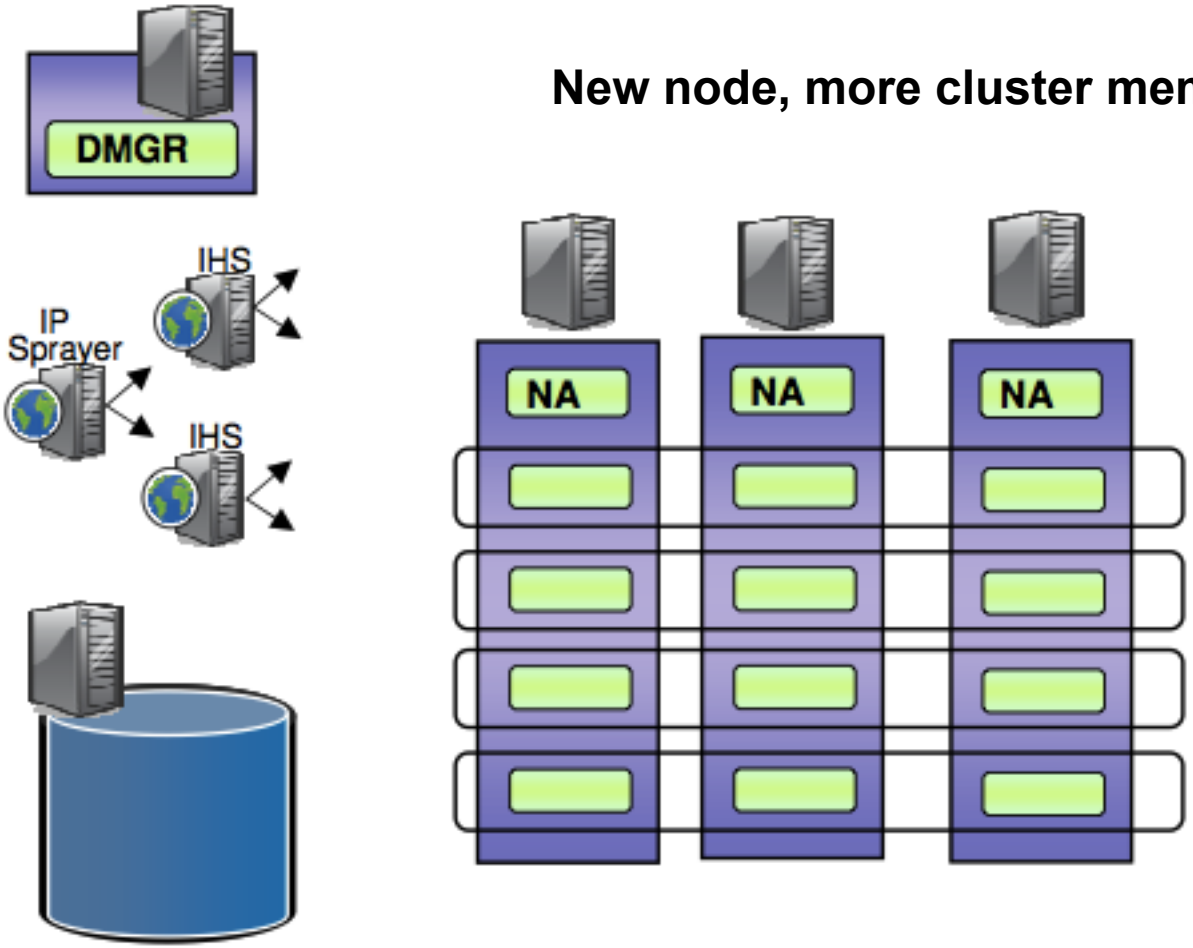
Topology – growing from this …



Topology – to this …

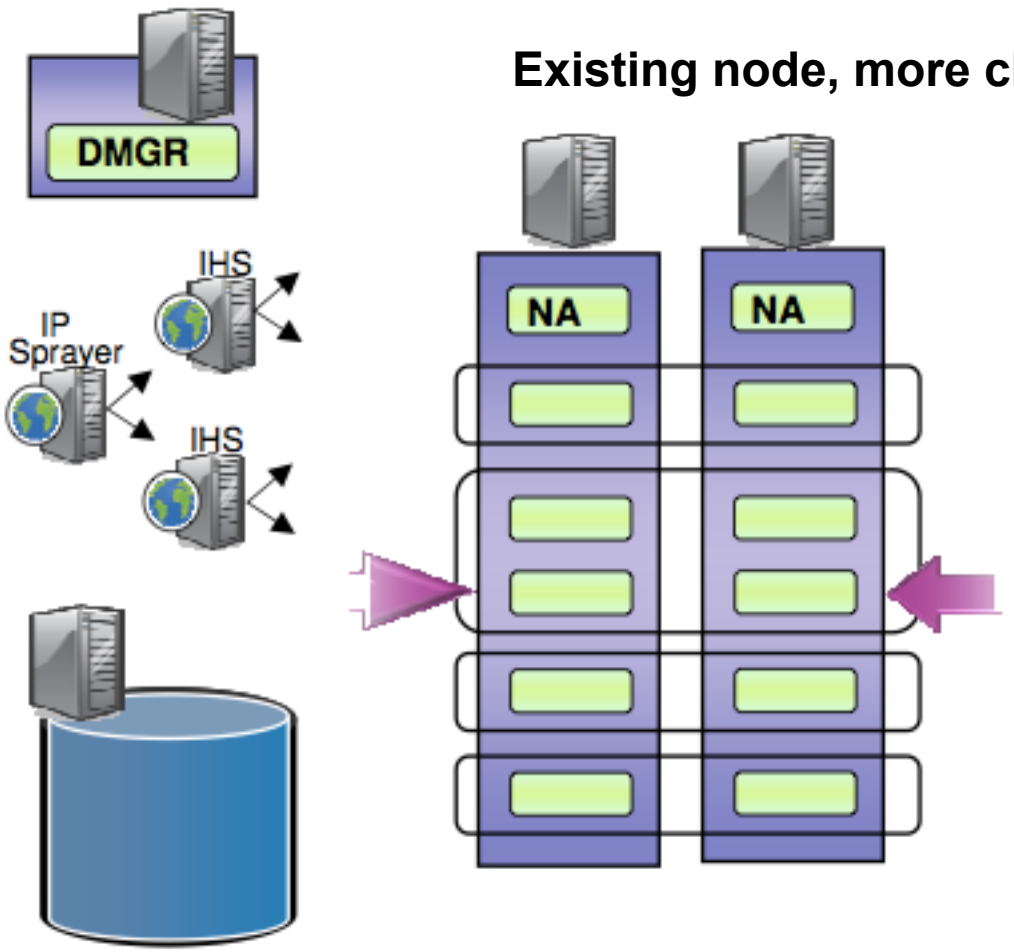


Topology – Horizontal Scaling

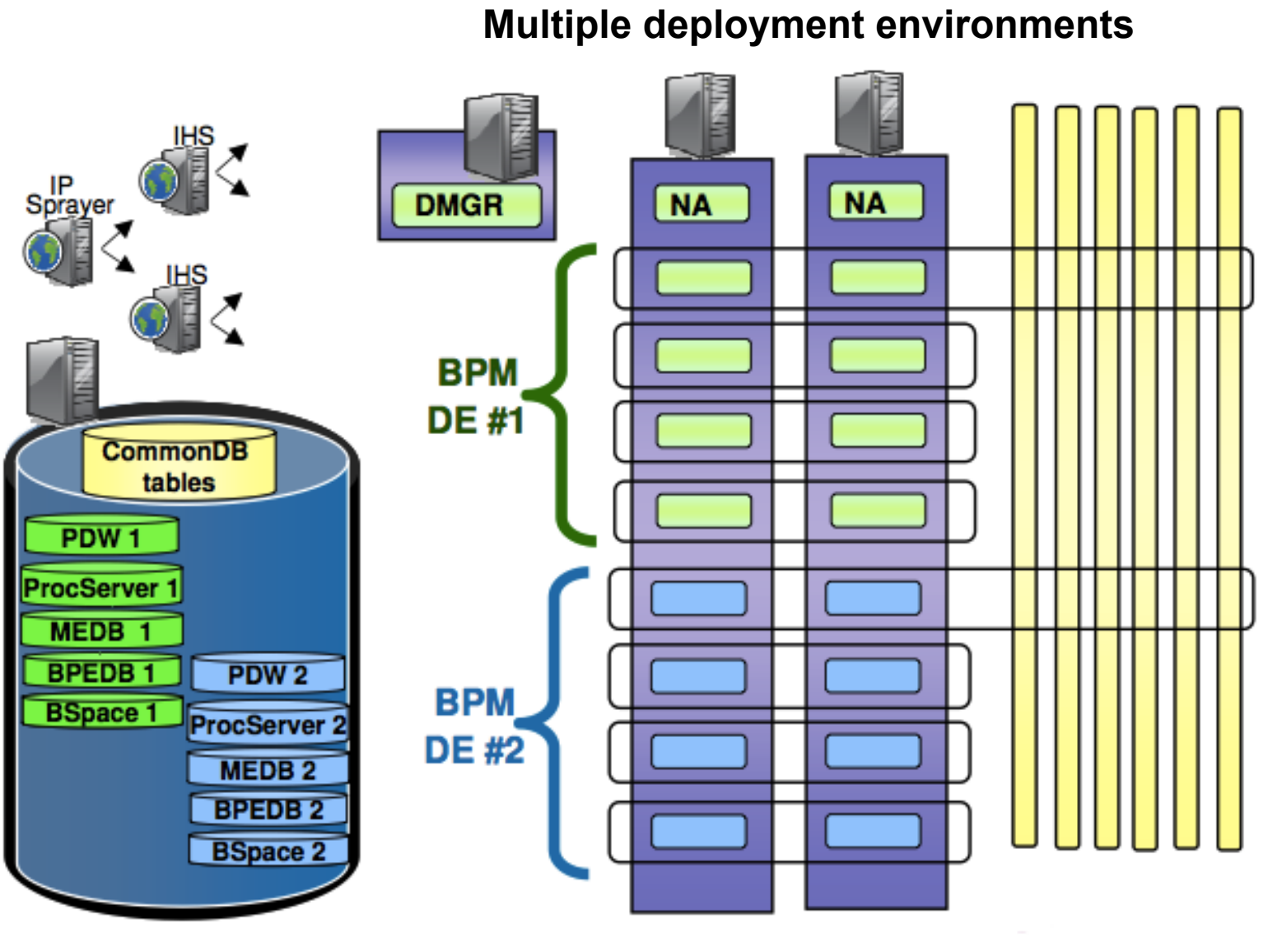


New node, more cluster members

Topology – Vertical Scaling

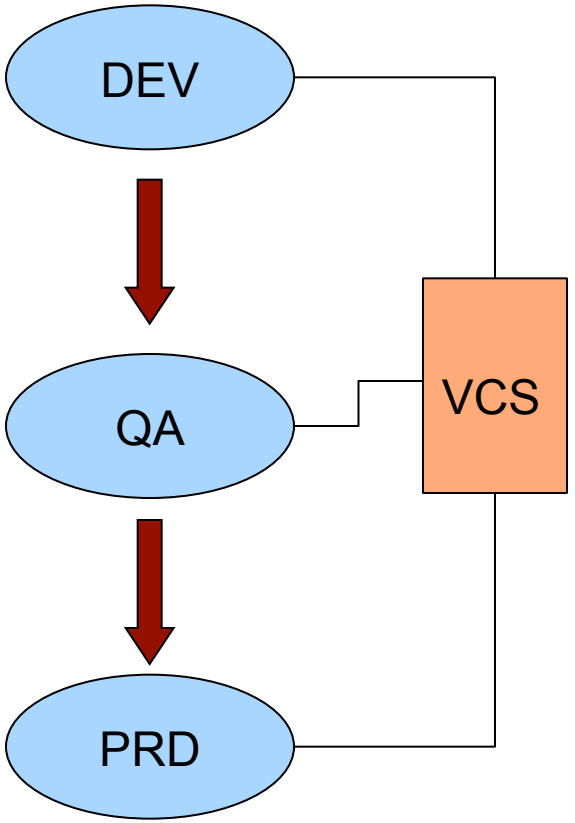


Complexity increases very quickly



But how do you enforce the topology?

- Topology selected
- Performance tuning done
- Environment configuration drift still a major issue
- Need a way to enforce and manage the selected topology



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Rational Automation Framework (RAF)

Core Capabilities

- ***Environment build-out automation***
- ***Administration automation***
- ***Deployment automation***

- **Over 900 out-of-the-box automation actions for:**
  - WebSphere Foundation: WAS, ND, IHS, WVE
  - WebSphere BPM Suite: WPS, WESB, WSRR
  - WebSphere Portal
  - WebSphere Message Broker and MQ Series
  - Weblogic, Jboss

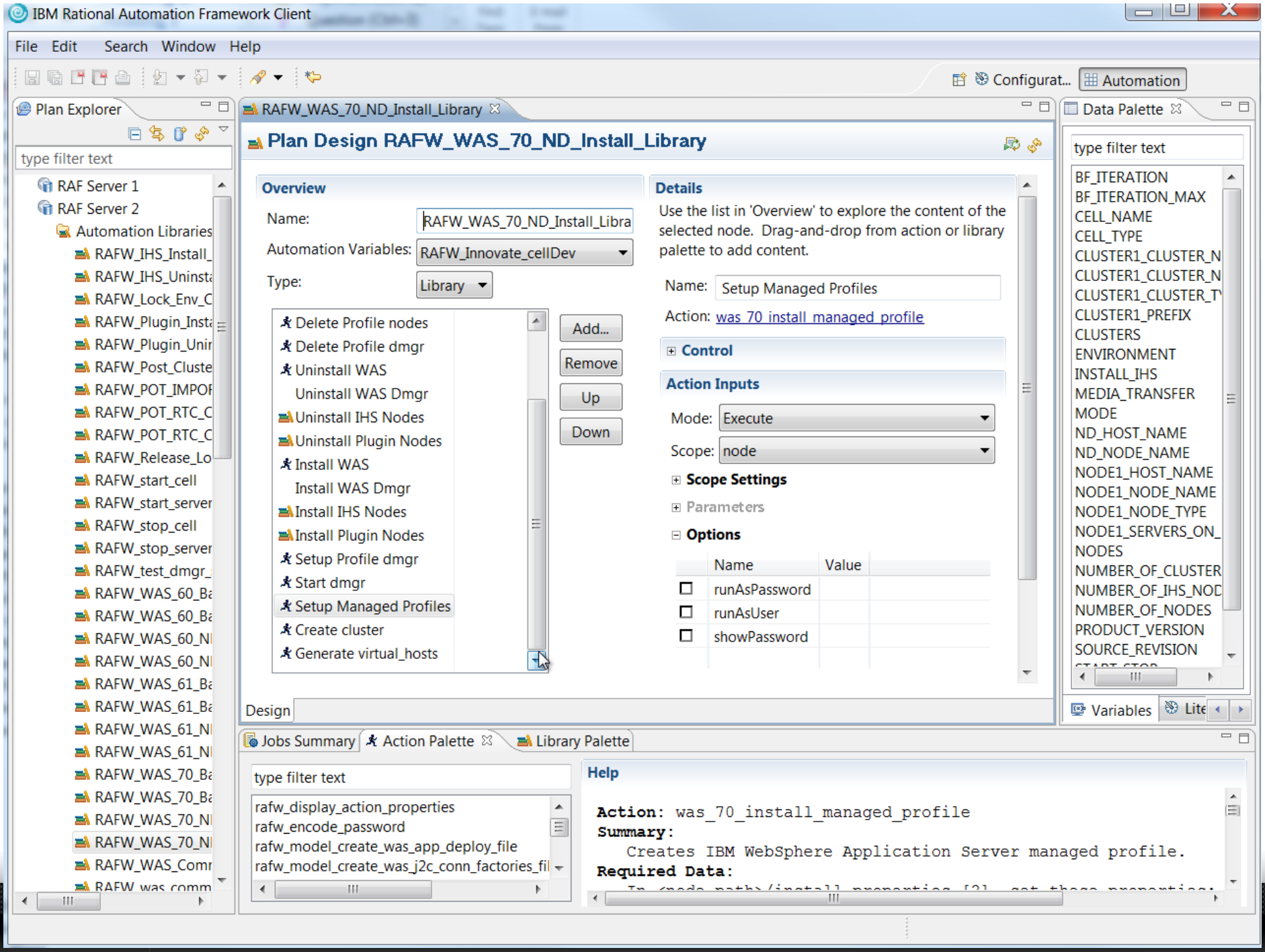
- **Ensure configuration consistency**

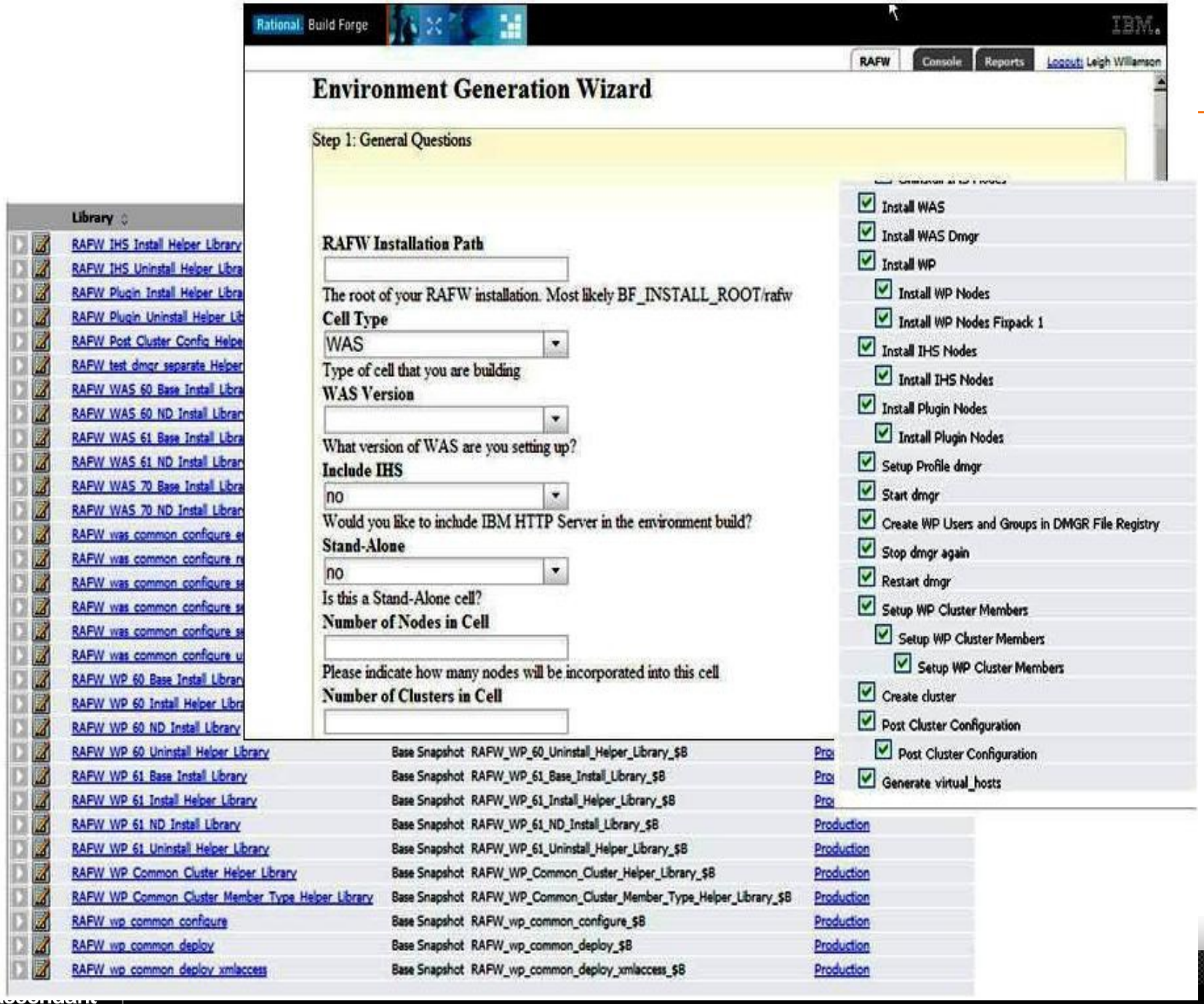
- **Facilitate administration** for:
  - Scheduling, unattended execution, notifications, role-based security and audit logging

RAF Extensions for IBM BPM

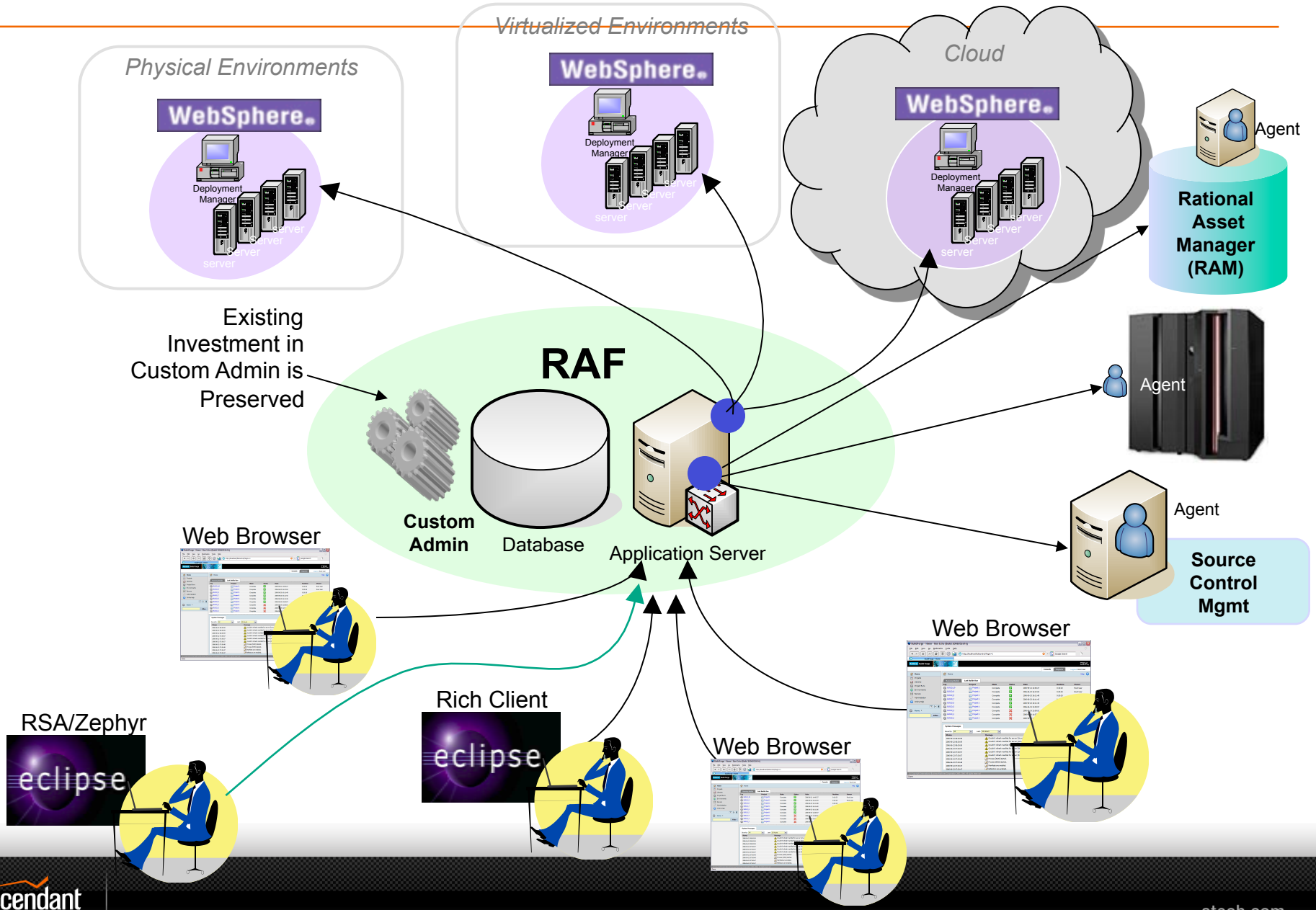
- RAF Actions and Templates
  - IBM BPM 7.0, 7.5 and 8.0
- Supports Process Server “Classic”
- Supports Process Center (Lombardi Capability)
- WebSphere Topologies
  - Single Cluster
  - Remote Messaging
    Remote Messaging and Remote SupportRemote Messaging, Support and Web
  - Cluster Topology (for Process Server)

For IBM BPM

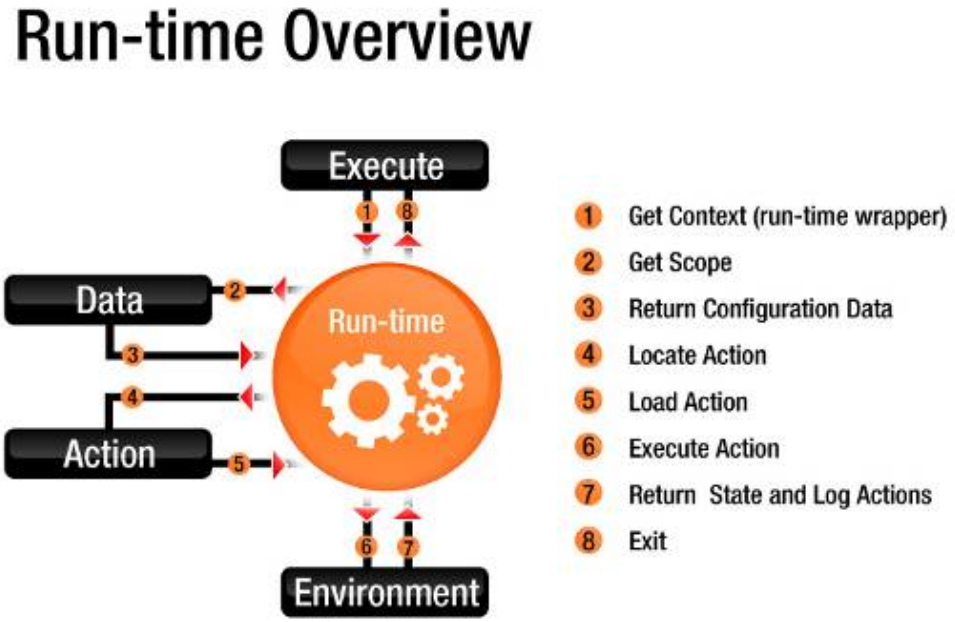

IBM Rational Automation Framework Client
File Edit Search Window Help
Configurat... Automation
Plan Explorer
type filter text
RAF Server 1
RAF Server 2
Automation Libraries
RAFW_IHS_Install_
RAFW_IHS_Uninsta
RAFW_Lock_Env_C
RAFW_Plugin_Insta
RAFW_Plugin_Unir
RAFW_Post_Cluste
RAFW_POT_IMPOF
RAFW_POT_RTC_C
RAFW_POT_RTC_C
RAFW_Release_Lo
RAFW_start_cell
RAFW_start_server
RAFW_stop_cell
RAFW_stop_server
RAFW_test_dmgr_
RAFW_WAS_60_Ba
RAFW_WAS_60_Ba
RAFW_WAS_60_NI
RAFW_WAS_60_NI
RAFW_WAS_61_Ba
RAFW_WAS_61_Ba
RAFW_WAS_61_NI
RAFW_WAS_61_NI
RAFW_WAS_70_Ba
RAFW_WAS_70_Ba
RAFW_WAS_70_NI
RAFW_WAS_70_NI
RAFW_WAS_Comr
RAFW_was_comm
RAFW_WAS_70_ND_Install_Library
Plan Design RAFW_WAS_70_ND_Install_Library
Overview
Name: RAFW_WAS_70_ND_Install_Libra
Automation Variables: RAFW_Innovate_cellDev
Type: Library
Delete Profile nodes
Delete Profile dmgr
Uninstall WAS
Uninstall WAS Dmgr
Uninstall IHS Nodes
Uninstall Plugin Nodes
Install WAS
Install WAS Dmgr
Install IHS Nodes
Install Plugin Nodes
Setup Profile dmgr
Start dmgr
Setup Managed Profiles
Create cluster
Generate virtual_hosts
Add...
Remove
Up
Down
Details
Use the list in 'Overview' to explore the content of the selected node. Drag-and-drop from action or library palette to add content.
Name: Setup Managed Profiles
Action: was 70 install managed profile
Control
Action Inputs
Mode: Execute
Scope: node
Scope Settings
Parameters
Options
Name
Value
runAsPassword
runAsUser
showPassword
Design
Data Palette
type filter text
BF_ITERATION
BF_ITERATION_MAX
CELL_NAME
CELL_TYPE
CLUSTER1_CLUSTER_N
CLUSTER1_CLUSTER_N
CLUSTER1_CLUSTER_T
CLUSTER1_PREFIX
CLUSTERS
ENVIRONMENT
INSTALL_IHS
MEDIA_TRANSFER
MODE
ND_HOST_NAME
ND_NODE_NAME
NODE1_HOST_NAME
NODE1_NODE_NAME
NODE1_NODE_TYPE
NODE1_SERVERS_ON_
NODES
NUMBER_OF_CLUSTER
NUMBER_OF_IHS_NOD
NUMBER_OF_NODES
PRODUCT_VERSION
SOURCE_REVISION
Variables
Jobs Summary
Action Palette
Library Palette
type filter text
rafw_display_action_properties
rafw_encode_password
rafw_model_create_was_app_deploy_file
rafw_model_create_was_j2c_conn_factories_fil
Help
Action: was_70_install_managed_profile
Summary:
Creates IBM WebSphere Application Server managed profile.
Required Data:


Rational. Build Forge
IBM
RAFW
Console
Reports
Logout: Leigh Williamson
Environment Generation Wizard
Step 1: General Questions
RAFW Installation Path
The root of your RAFW installation. Most likely BF_INSTALL_ROOT/rafw
Cell Type
WAS
Type of cell that you are building
WAS Version
What version of WAS are you setting up?
Include IHS
no
Would you like to include IBM HTTP Server in the environment build?
Stand-Alone
no
Is this a Stand-Alone cell?
Number of Nodes in Cell
Please indicate how many nodes will be incorporated into this cell
Number of Clusters in Cell
Install WAS
Install WAS Dmgr
Install WP
Install WP Nodes
Install WP Nodes Fixpack 1
Install IHS Nodes
Install IHS Nodes
Install Plugin Nodes
Install Plugin Nodes
Setup Profile dmgr
Start dmgr
Create WP Users and Groups in DMGR File Registry
Stop dmgr again
Restart dmgr
Setup WP Cluster Members
Setup WP Cluster Members
Setup WP Cluster Members
Create cluster
Post Cluster Configuration
Post Cluster Configuration
Generate virtual_hosts
Library
RAFW_IHS_Install_Helper_Library
RAFW_IHS_Uninstall_Helper_Libra
RAFW_Plugin_Install_Helper_Libra
RAFW_Plugin_Uninstall_Helper_Lib
RAFW_Post_Cluster_Config_Helpe
RAFW_test_dmgr_separate_Helper
RAFW_WAS_60_Base_Install_Libra
RAFW_WAS_60_ND_Install_Librar
RAFW_WAS_61_Base_Install_Libra
RAFW_WAS_61_ND_Install_Librar
RAFW_WAS_70_Base_Install_Libra
RAFW_WAS_70_ND_Install_Librar
RAFW_was_common_configure_e
RAFW_was_common_configure_re
RAFW_was_common_configure_se
RAFW_was_common_configure_se
RAFW_was_common_configure_se
RAFW_was_common_configure_u
RAFW_WP_60_Base_Install_Librar
RAFW_WP_60_Install_Helper_Libr
RAFW_WP_60_ND_Install_Library
RAFW_WP_60_Uninstall_Helper_Library Base Snapshot RAFW_WP_60_Uninstall_Helper_Library_$B
RAFW_WP_61_Base_Install_Library Base Snapshot RAFW_WP_61_Base_Install_Library_$B
RAFW_WP_61_Install_Helper_Library Base Snapshot RAFW_WP_61_Install_Helper_Library_$B
RAFW_WP_61_ND_Install_Library Base Snapshot RAFW_WP_61_ND_Install_Library_$B Production
RAFW_WP_61_Uninstall_Helper_Library Base Snapshot RAFW_WP_61_Uninstall_Helper_Library_$B Production
RAFW_WP_Common_Cluster_Helper_Library Base Snapshot RAFW_WP_Common_Cluster_Helper_Library_$B Production
RAFW_WP_Common_Cluster_Member_Type_Helper_Library Base Snapshot RAFW_WP_Common_Cluster_Member_Type_Helper_Library_$B Production
RAFW_wp_common_configure Base Snapshot RAFW_wp_common_configure_$B Production
RAFW_wp_common_deploy Base Snapshot RAFW_wp_common_deploy_$B Production
RAFW_wp_common_deploy_xmlaccess Base Snapshot RAFW_wp_common_deploy_xmlaccess_$B Production

RAF Architecture

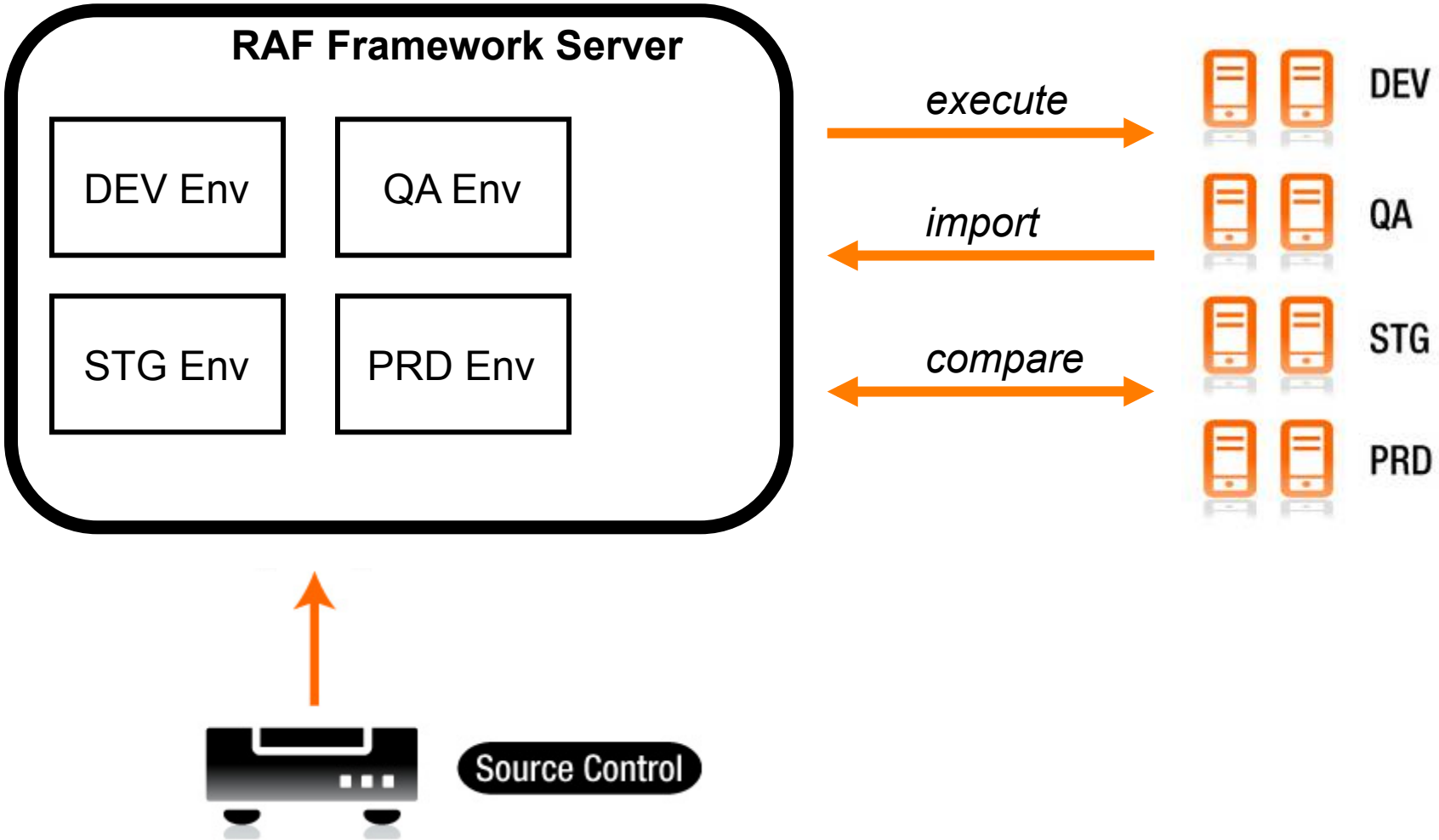


How RAF Works



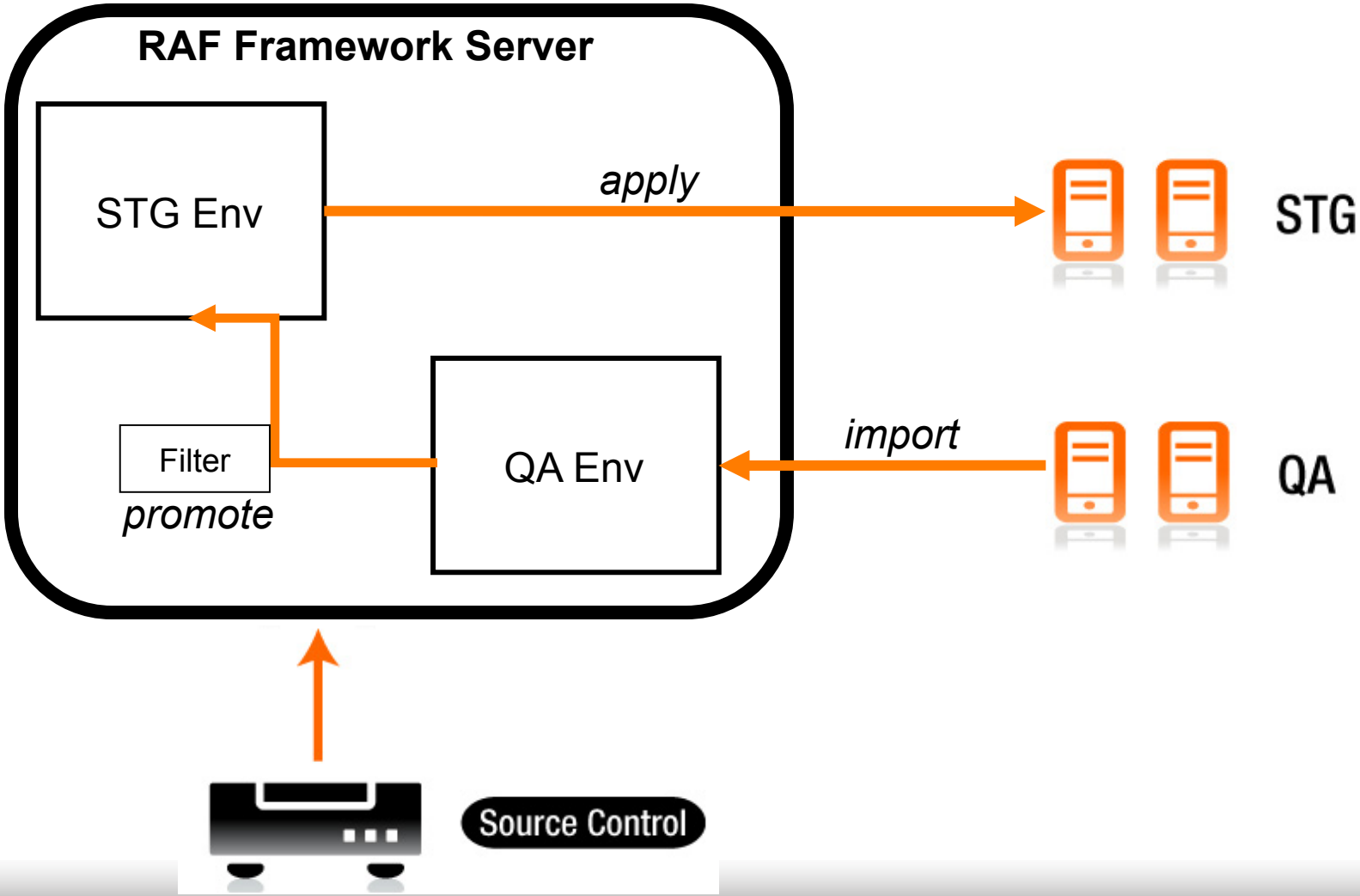
1. RAF tasks are ant under the covers
2. Every ant task is divided into 1 of three types: install, configure and deploy
3. Ant tasks dynamically bind data from the environment with the execution runtime of RAF
4. Modes control how the action is run
    - Import? Promote? Execute?
5. Push or pull with the target environment

Import, Execute and Compare Modes



“Promote” mode

Leverages new “Augment” mode



Wizard to define a cell from an existing environment

OS Group

rtimothy

Please provide the system group that WebSphere will run under

Profile Root Directory

/opt/IBM/WAS70/profiles/dmgr

Please provide the directory where the existing profile configuration is stored.

Validation Step

Successfully verified the profile root.

WebSphere Administrator User Name

wasadmin

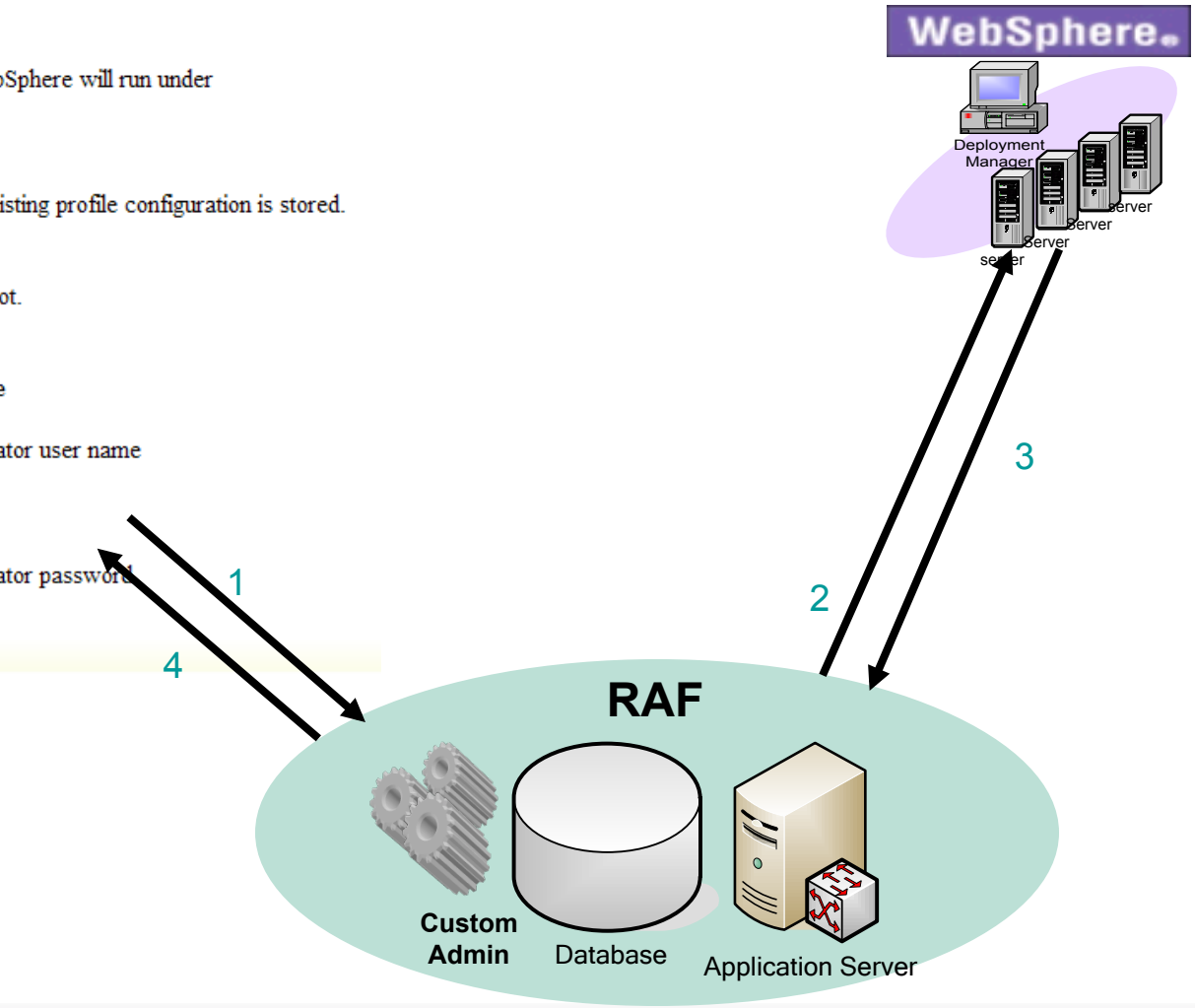
Please provide the WebSphere Administrator user name

WebSphere Administrator Password

••••••••

Please provide the WebSphere Administrator password

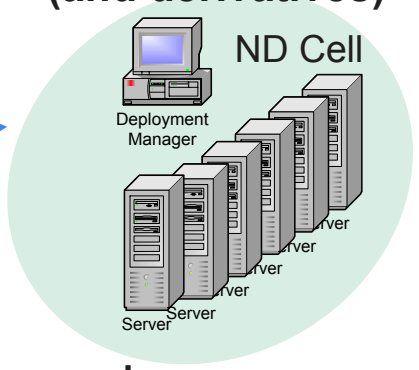
Previous Next



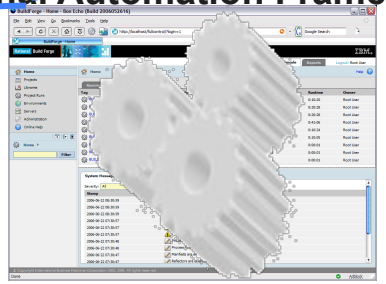
Configuration Drift Detection: Monitor Live WAS Configuration

- Every night RAF executes a scheduled comparison of the live cell configuration against the Master.
- Any difference causes an email notification to be generated and sent to WebSphere administrator for that cell.

WebSphere Application Server (and derivatives)



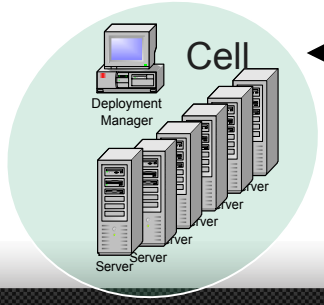
Rational Automation Framework



Email or RSS feed notification of results of configuration comparison

Master (approved) configuration stored under change control

Source Control System



Deployment Processes and SDLC

- Connect builds with configuration
- Configuration tagged together with built releases
- Several approaches to promotion in SDLC
  - Standard promote mode
  - **C**ustom **U**ser **T**emplates (CUTs)
  - Cell-kits
  - Hybrid approach
    - Ultimately it's just the environment tree that needs to get updated. This can done in an entirely custom way as well

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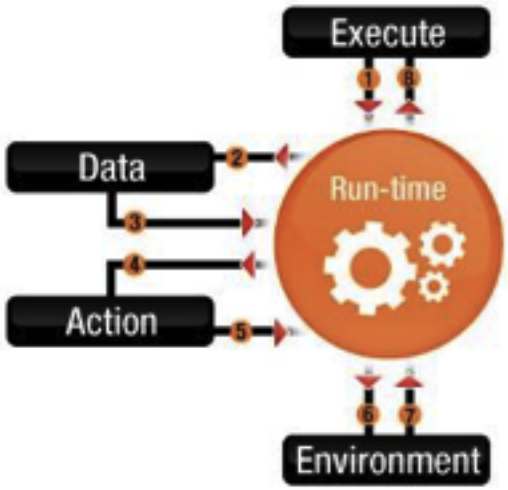
Summary



- Supporting 30K+ BPM users
  - Not only about topology
  - Or performance tuning
- Combine with Automation
- IBM RAF part of the solution
- Allows for managing multiple IBM BPM environments

References

- IBM BPM Production Topologies
  - Dawn Ahukanna & Kerri Carlson-Neumann
  - IMPACT 2012 Session 2261

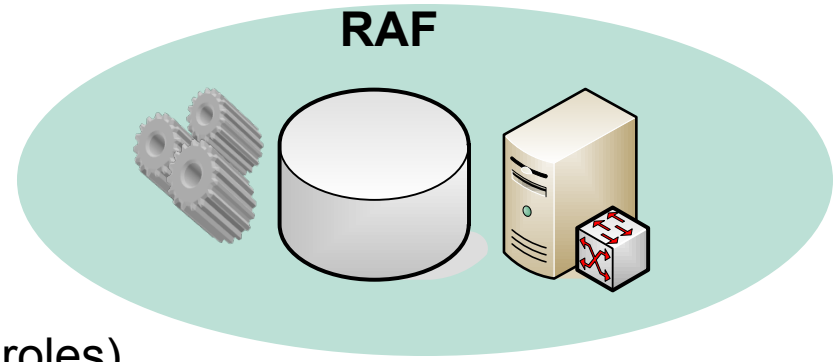
- IBM Redbook : IBM BPM 7.5 Production Topologies

- Leveraging the Rational Automation Framework to Accelerate your Migration to IBM Business Process Manager 7.5
  - Scott Bybee, Ascendant


Thank
You

Additional Useful Capabilities in RAF

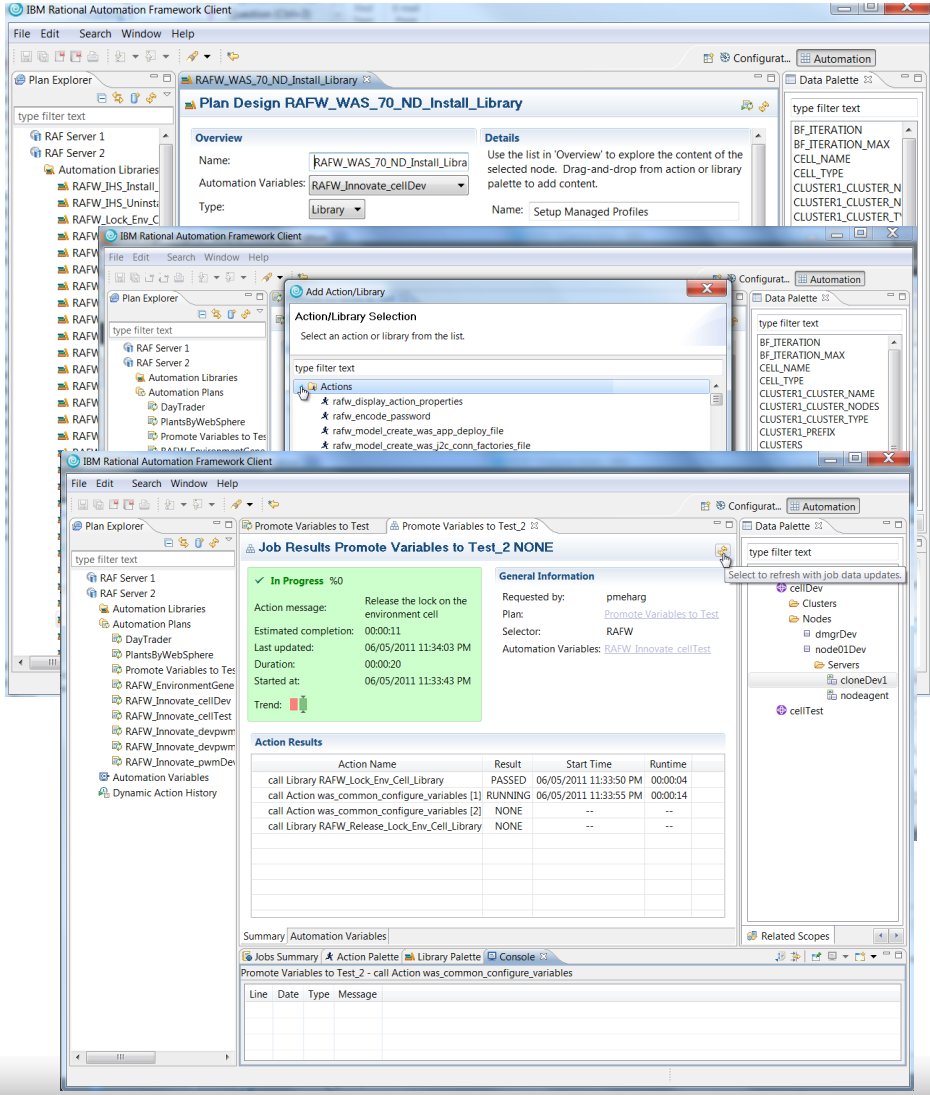
- Command-line, Web interface and new Eclipse UI
- Predefined automation libraries
- Environment generation wizard
- Extensive on-line help



- Security layers (custom roles & isolation of roles)
  - WebSphere Administrator
  - Release Engineer
  - Application Developer
- Ability to thread tasks (horizontal clustered environment)
- Notifications – email and RSS
- Highly customizable end-to-end Automation solution!

Eclipse User Interface

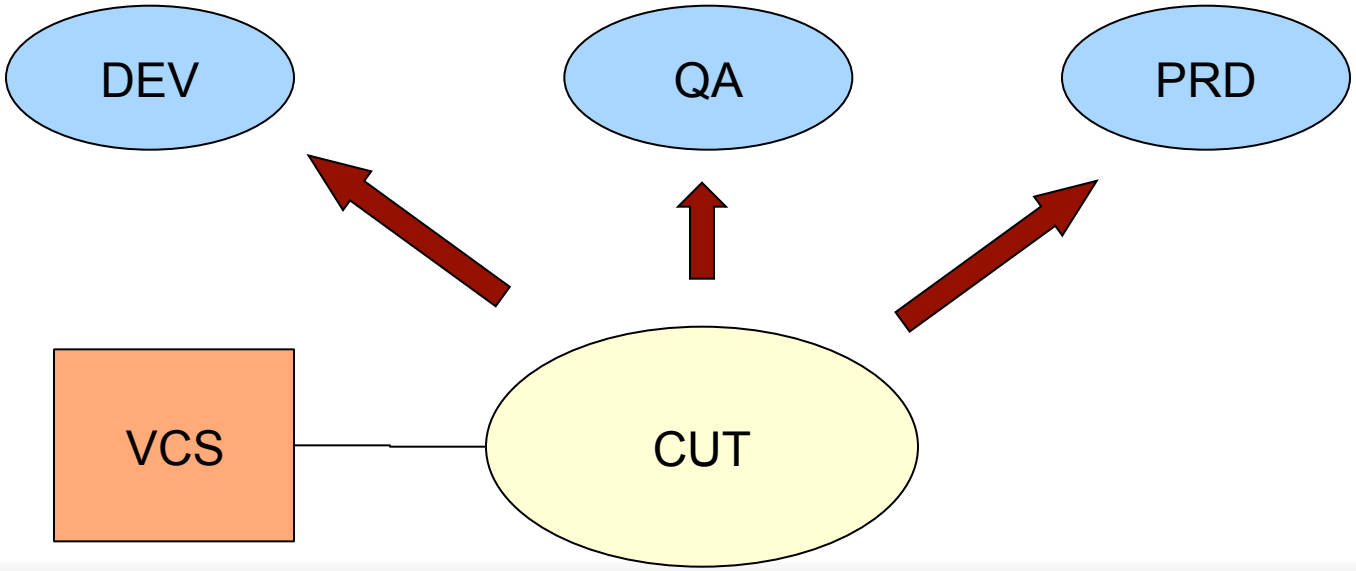
- Manage configurations interactively
  - Edit XML entities in rich editors
- Drag-&-drop capability for making new items
  - Must adjust configuration after drop
- Compare contents in different environments
  - Previous versions could only compare RAF cell against the runtime for the same cell
- Can use to leverage the embedded Build Forge engine in RAF as well
  - Run jobs, edit projects, see results, etc
  - Need licensing for BF if to use for build/release capabilities



Custom User Templates

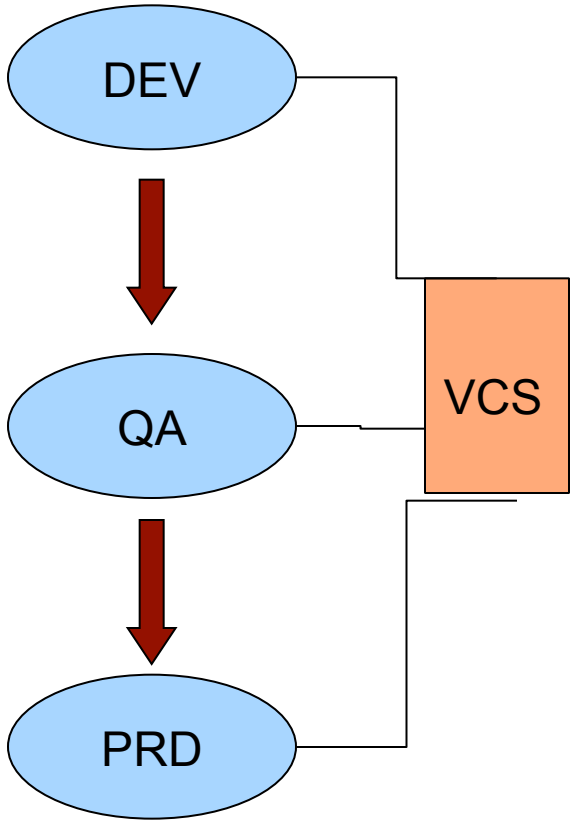
- CUT versioned
  - Contains templated versions of configuration
  - Property files contain unique information for each environment
  - CUT's can include other templates

- Supports increased variability between environments



Promote Mode

- Best for homogenous environments
  - Apps, topology and basic configuration same for all environments
- Promotion from dev all the way through production
- Single promote.properties file for each environment
  - Contains unique information (jdbc urls, passwords and so on)



VCS: Version Control System

Cell kits

- Best for heterogenous environments
  - Different kits applied in different environments
- Kits are versioned in VCS
  - Contain templated version of configuration plus the apps
  - Kits are then installed into an existing cell configuration
  - Kits can then be versioned separately from the environments and follow their own release cycles