

11437

CICS Platform and Applications Advanced Concepts

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Cloud-style CICS development, deployment, and operations Sessions

SHARE Lunch & Learn “CICS Transaction Server
V5.1 open beta”

11435 CICS Platform and Applications Basics

**11437 CICS Platform and Applications Advanced
Concepts**

Pain Points

Deploying and un-deploying applications is a high skill complex job due to the number of separate artifacts

*Customers would like to see usage / charging, availability / **SLA at the application level***

Elastic scale is a requirement, but it needs to be managed within the constraints of the customers resources and business environment

Policy

In support of both applications and platforms, a new, dynamic policy-based management capability is introduced.

The behavior of applications and platforms can be controlled during run time, based on predefined policies.

These policies are enacted when tasks that are running exceed certain predefined thresholds.

<http://www.ibm.com/software/cics/openbeta/>

Five Essential Characteristics of Cloud Computing

Measured Service. Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). **Resource usage can be monitored, controlled, and reported**, providing transparency for both the provider and consumer of the utilized service.

Real World Example: Phone Contract

200 free minutes

Unlimited text messages

500MB of data

“You have now used 80% of your data allowance”

Policy

Controls resource consumption

Consists of one or more rules in an XML document

Threshold: CPU, storage, database access, ...

Action: message, event, abend

Scoped

Single Application operation

Single Application

All Applications on a Platform

Policy Examples

“Abend any application running on the Retail Banking Platform that tries to request any 24-bit storage”

“I want to see a message if Version 1.1 of the Order Update Application allocates more than 1MB of storage”

“The Cart browse operation shouldn’t use more than 1 millisecond of CPU”

Policy Lifecycle

- Scoped using packaging not configuration
 - *Platform*
 - Application
 - Application operation
- Policies can be reused
 - Between Platforms
 - Between environments
- Policies can be managed independently
 - Add rules
 - Adjust thresholds
 - Change actions

Information Center

Software information center

Search: **Go** [Scope: All topics](#)

Contents

- Information Center home
- CICS Transaction Server for z/OS, Version 5.1
 - Product overview
 - What's new
 - Platform as a Service (PaaS) capabilities
 - Applications
 - Platforms
 - Policies
 - Capability and scalability advancements
 - Discontinued functions
 - Changes to the CICS Explorer and CICS Explorer
 - General information
 - Scenarios
 - Getting started
 - Getting started with CICSplex SM
 - Getting started with cloud-style deployment**
 - Getting started with events
 - Getting started with Java
 - Getting started with intercommunication
 - Getting started with web services
 - Installing

IBM Confidential

[CICS Transaction Server for z/OS, Version 5.1 open beta](#) > [Getting started](#)

Getting started with cloud-style deployment

If you want to try out a cloud-style deployment for one of your existing CICS® applications, you can use this phased approach.

To try out the complete process first, using one of the sample applications supplied with CICS, you can follow through the scenario [Scenario: Deploying an application in a PaaS](#).

Stage 1: Create a platform

In CICS, you can use a Platform as a Service (PaaS) to deploy and manage Software as a Service (SaaS)-based CICS applications over multiple CICS regions. The platform provides services to the applications. In this stage of your cloud-style deployment, you can set up a platform including CICS regions where your existing CICS application is installed. To create a platform, you must be using CICSplex® SM to manage your CICS regions.

Use the CICS Explorer® or the CICS Explorer SDK to create a CICS Platform Bundle project and export it to zFS. The platform bundle is a type of management bundle that describes the platform.

Getting started with cloud-style deployment

Stage 1: Create a platform

Getting started with cloud-style deployment

Stage 1: Create a platform

Stage 2: Create an application

Getting started with cloud-style deployment

Stage 1: Create a platform

Stage 2: Create an application

Stage 3: Add application entry points

Getting started with cloud-style deployment

Stage 1: Create a platform

Stage 2: Create an application

Stage 3: Add application entry points

Stage 4: Add resources for the application

Getting started with cloud-style deployment

Stage 1: Create a platform

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Stage 4: Add resources for the application

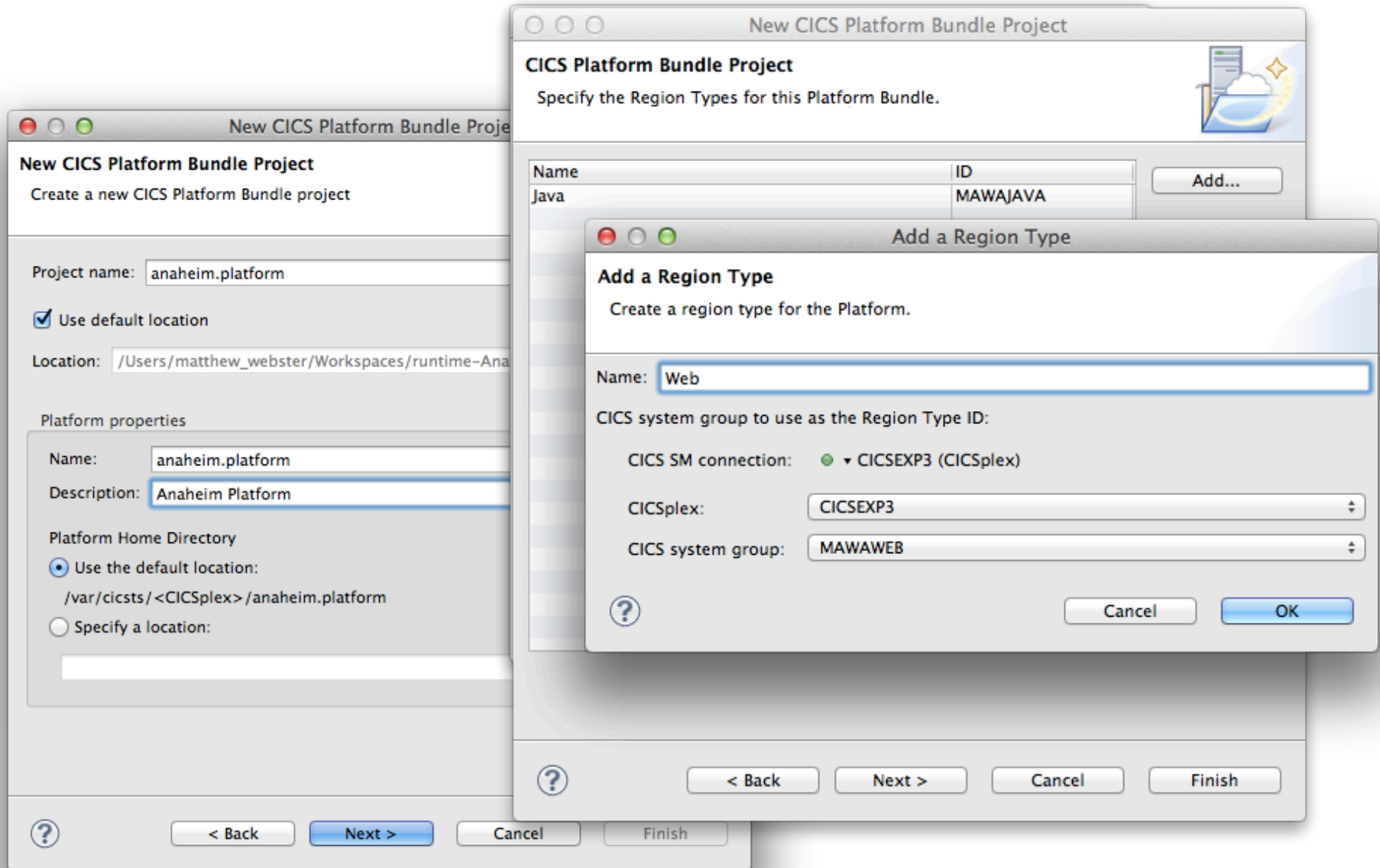
Stage 5: Add a policy

Stage 4 is optional. You don't have to change your system or application(s) to get started!

Stage 1: Create a platform

- Why?
 - Need to abstract the underlying topology
 - Need to prevent disruptive change
 - Need to guarantee system level
- How?
 - Create a CICS Platform *management* bundle
 - Define region types
 - Deploy Platform bundle to zFS
 - Create & install Platform definition (PLATDEF)
 - Activate Platform (PLATFORM)

New CICS Platform Bundle Project



“Bottom-up” Scenario: bring your own CICSplex

Chose an existing system group for each region type

Groups and Regions “adopted” at INSTALL

Strictly control changes to topology

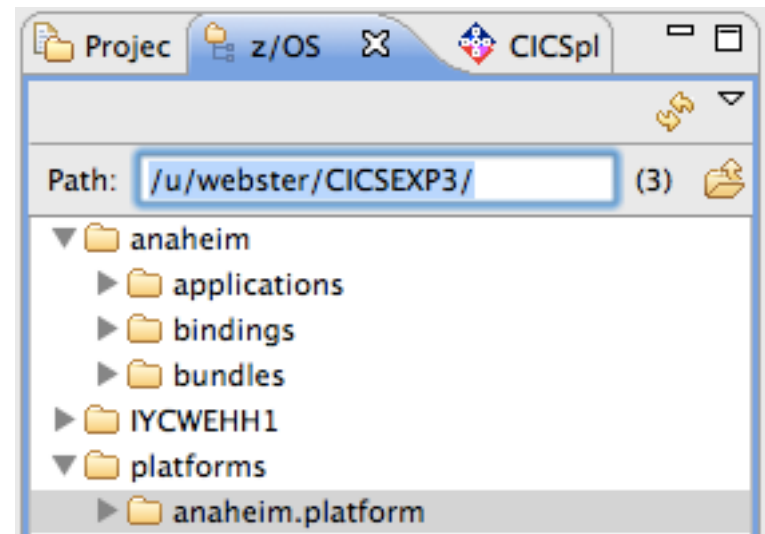
Region START/STOP for *rapid elasticity*

Compatibility with WLM, RTA, BAS, ...

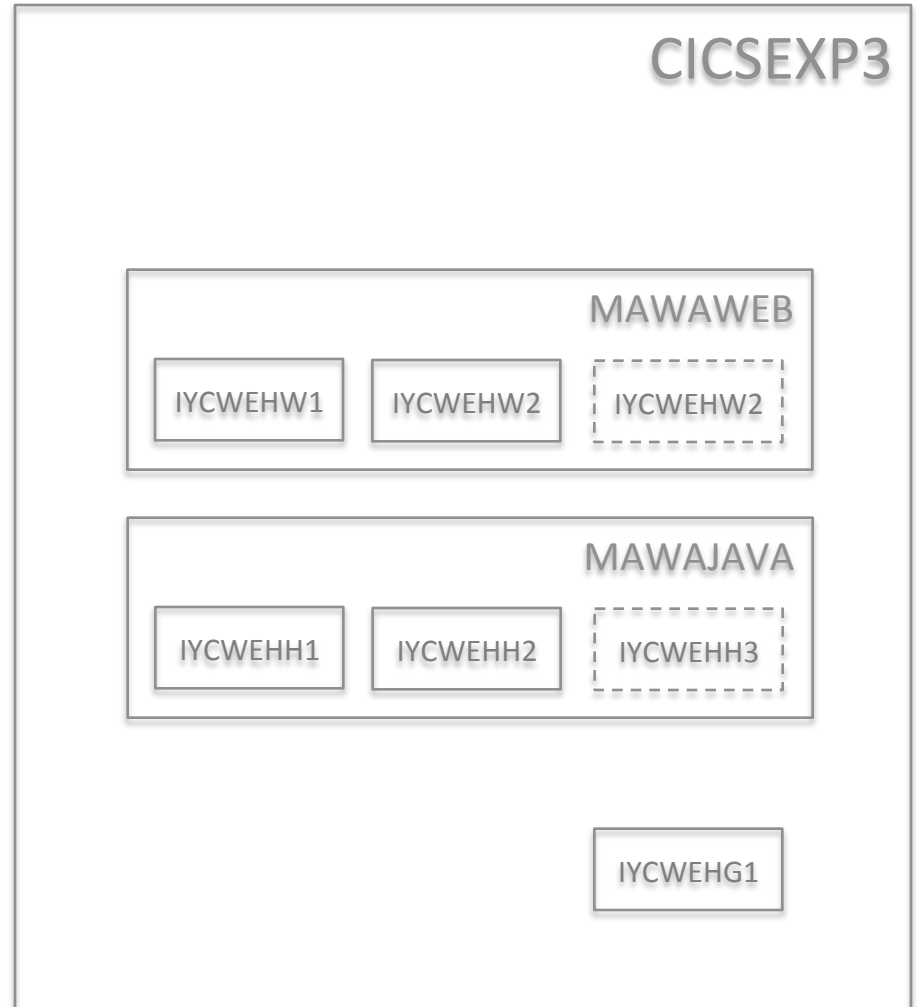
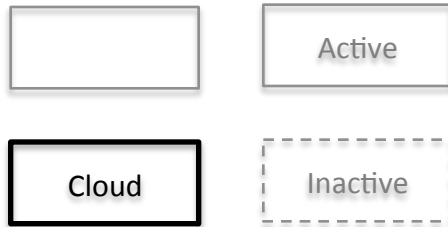
Standard zFS Directory Structure

```
/var/cicsts/CICSEXP3/platforms/anaheim.platform  
/var/cicsts/CICSEXP3/platforms/sanfrancisco.platform  
/var/cicsts/CICSEXP3/platforms/...
```

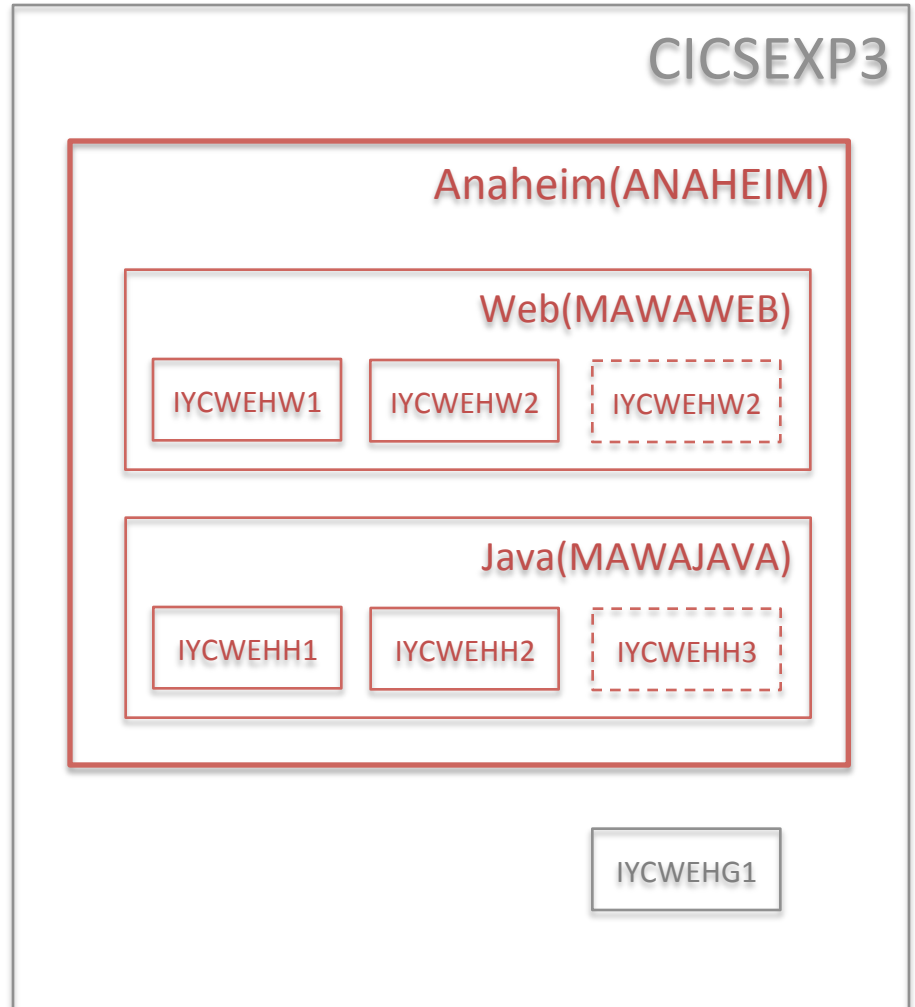
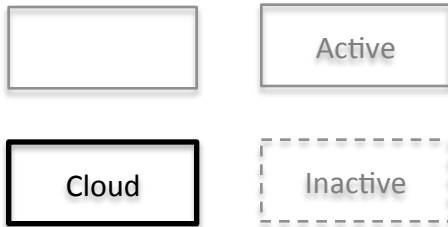
```
/var/cicsts/CICSEXP3/anaheim/applications  
/var/cicsts/CICSEXP3/anaheim/bundles
```



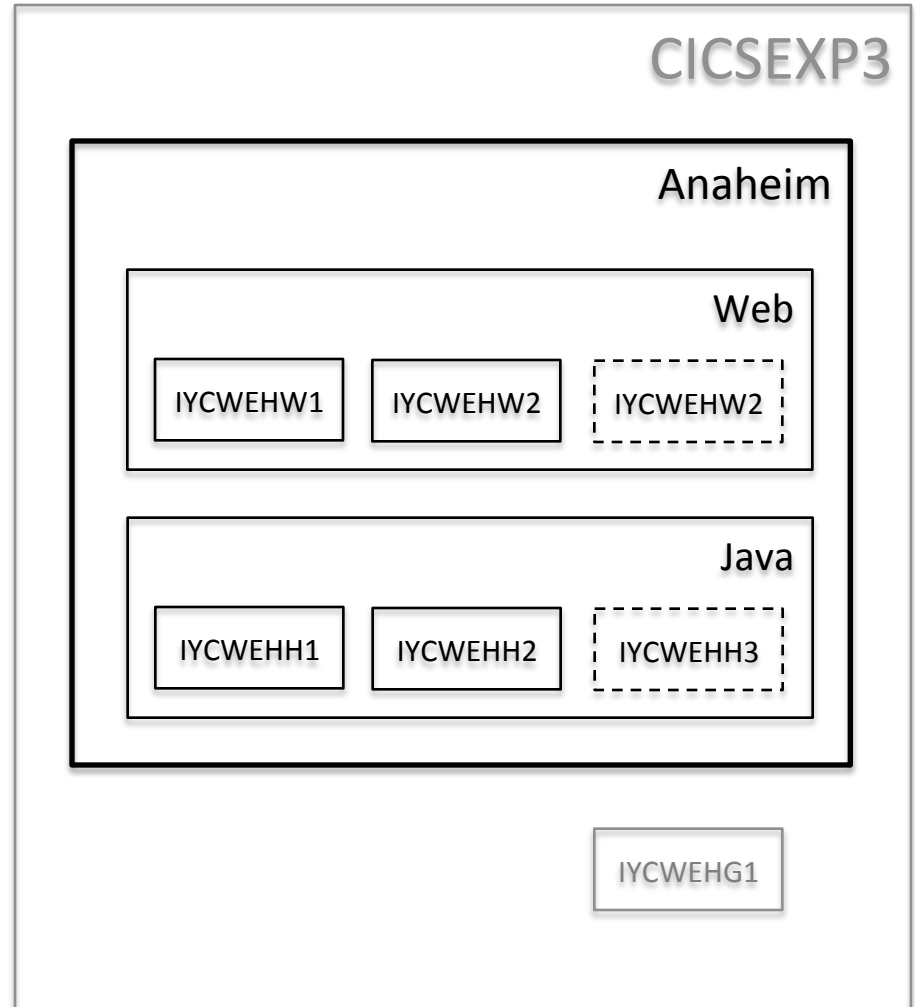
Existing CICSplex CICSEXP3



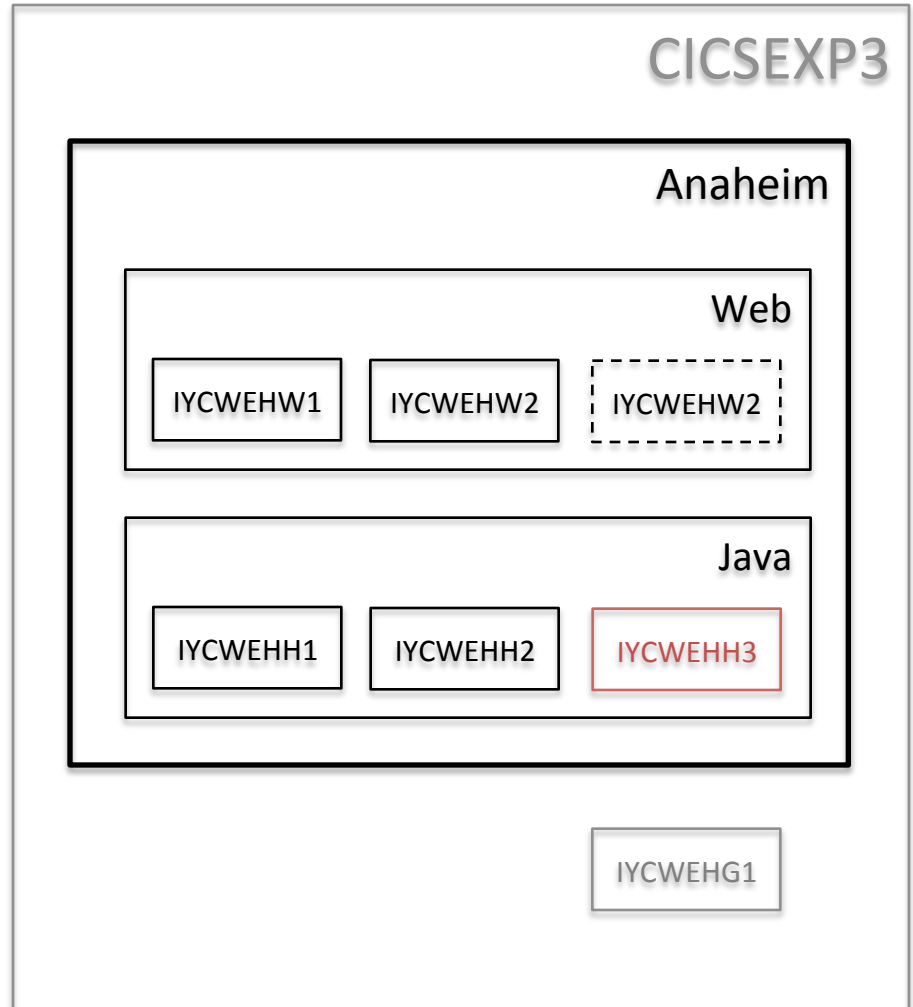
Adopt Groups in CICSEXP3



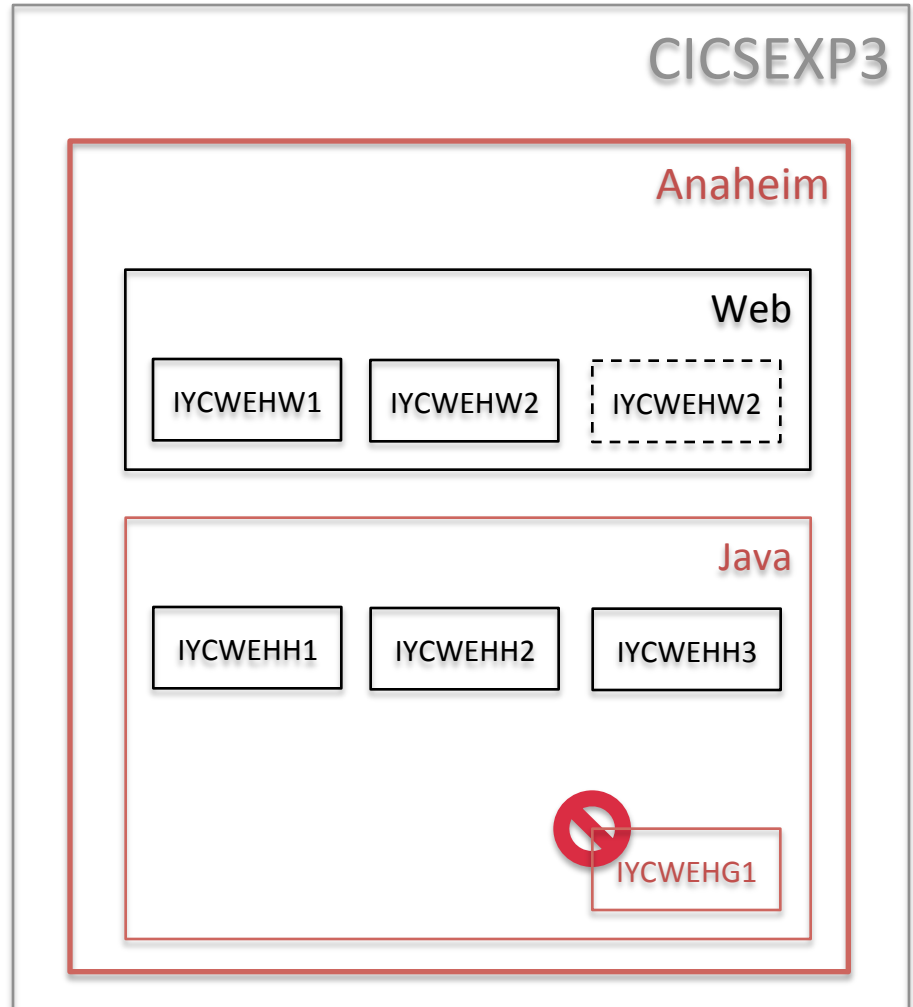
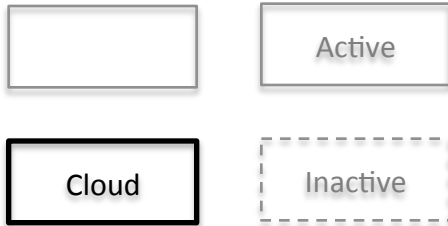
Adopt Groups in CICSEXP3



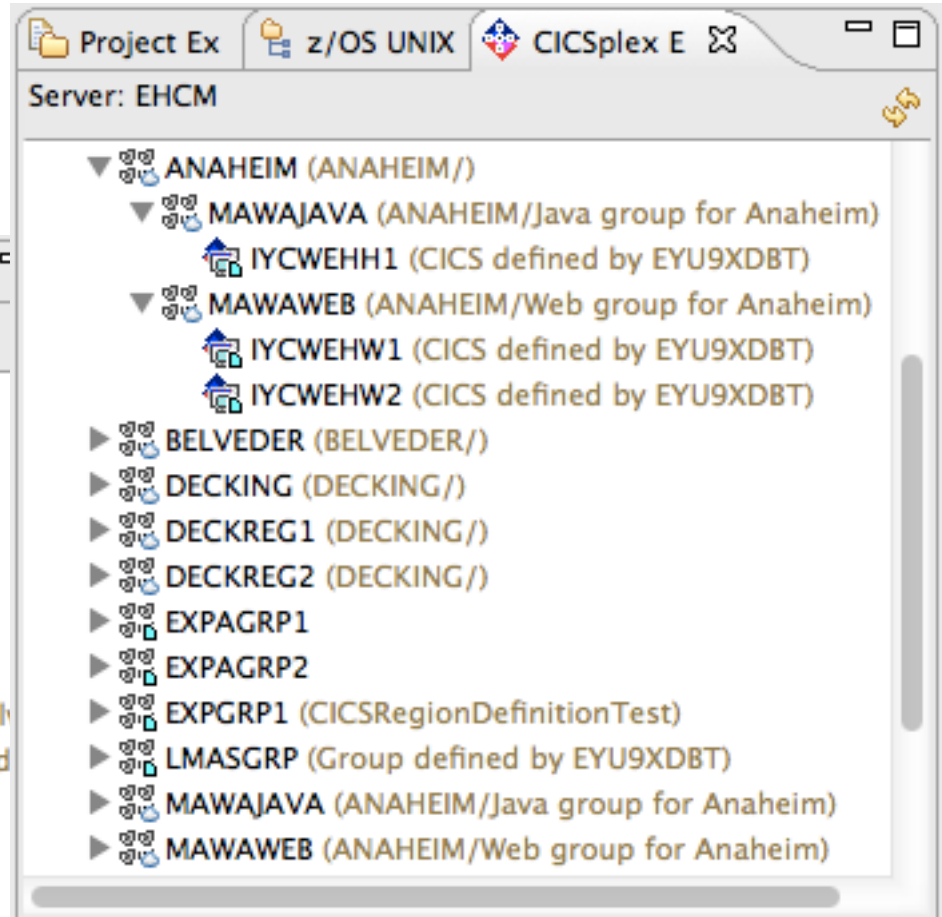
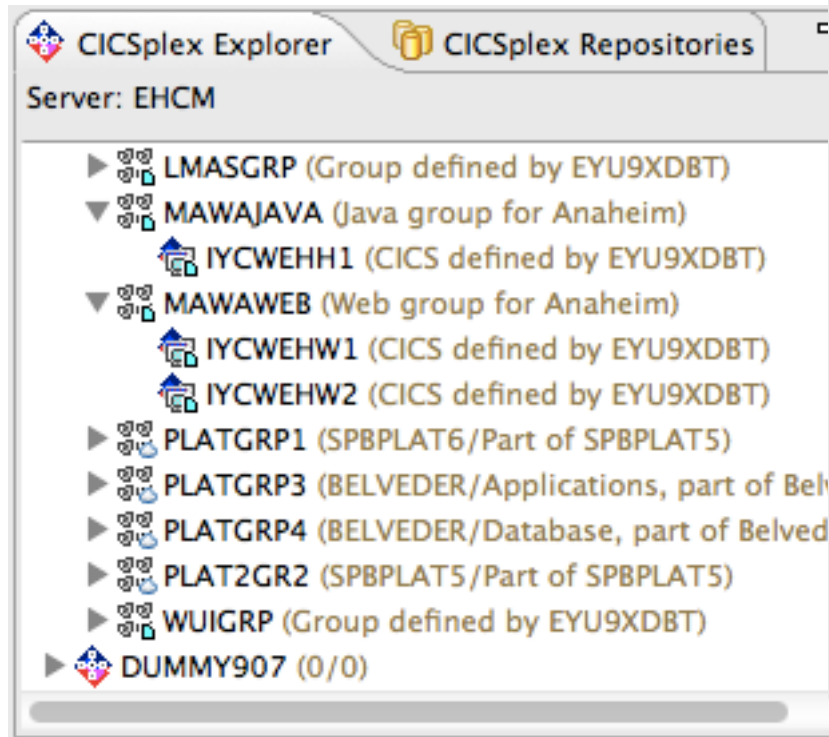
START/STOP Regions



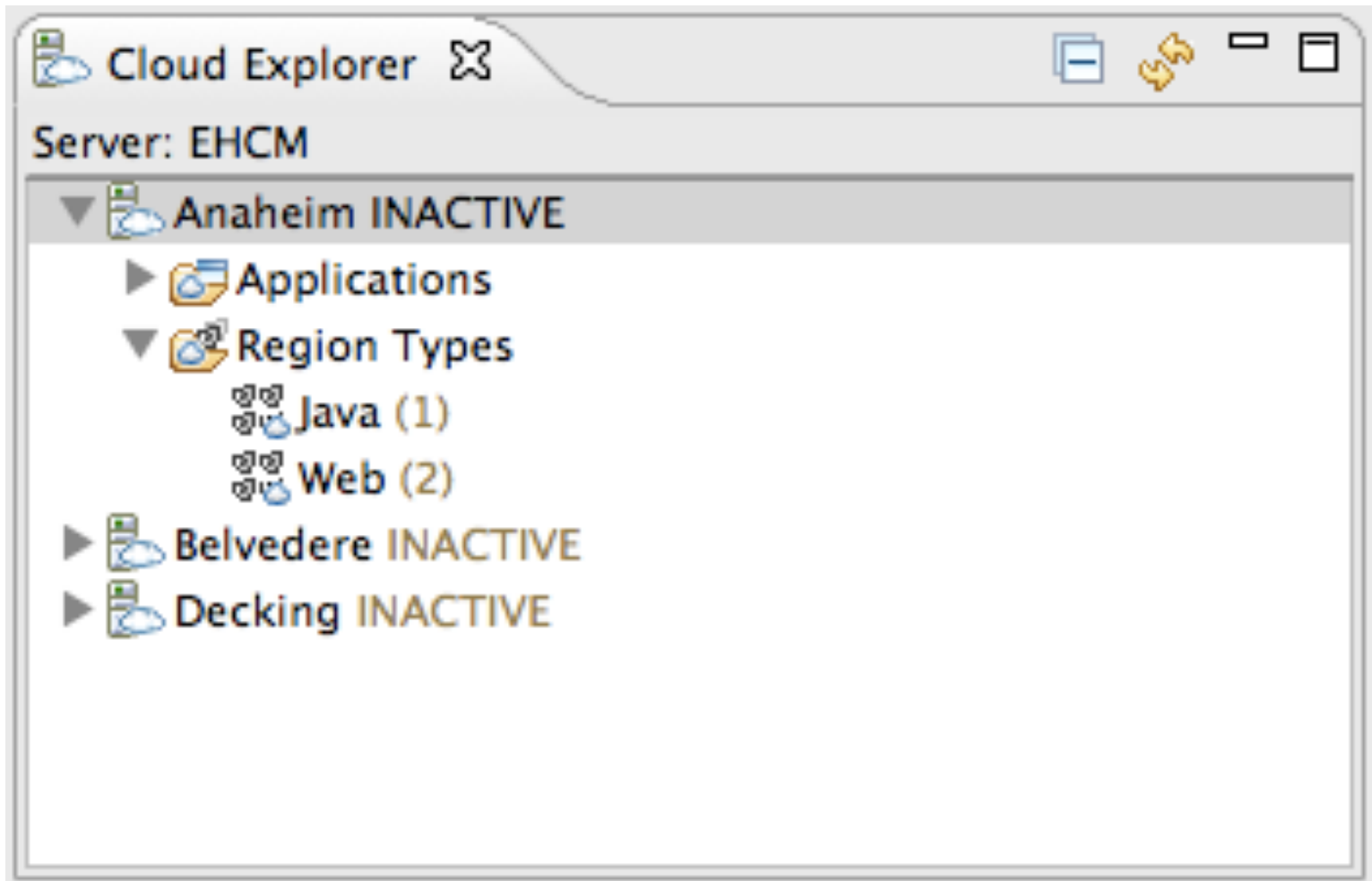
Control Topology Changes



Adopt MAWAJAVA & MAWAWEB



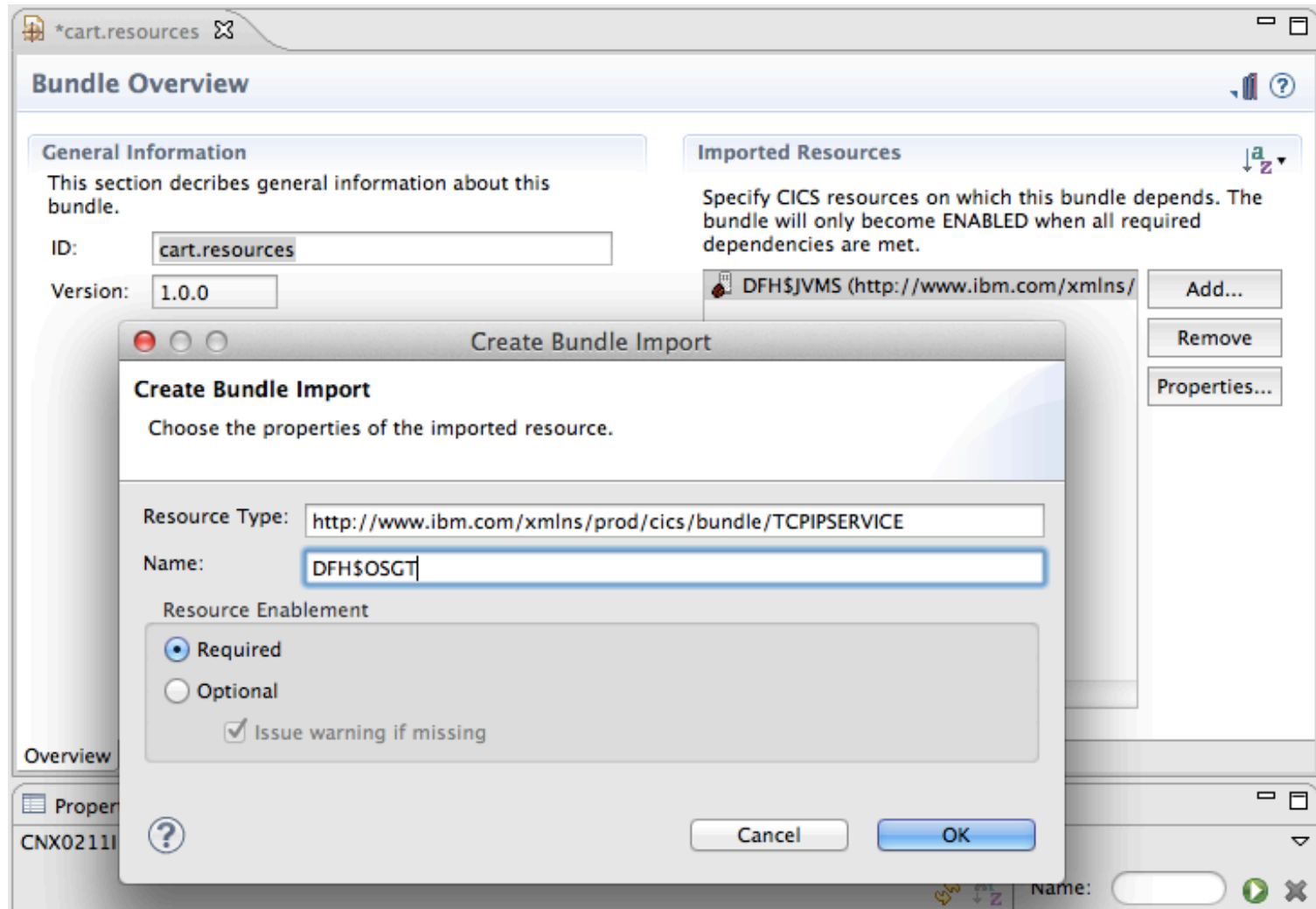
New “Cloud Explorer” view



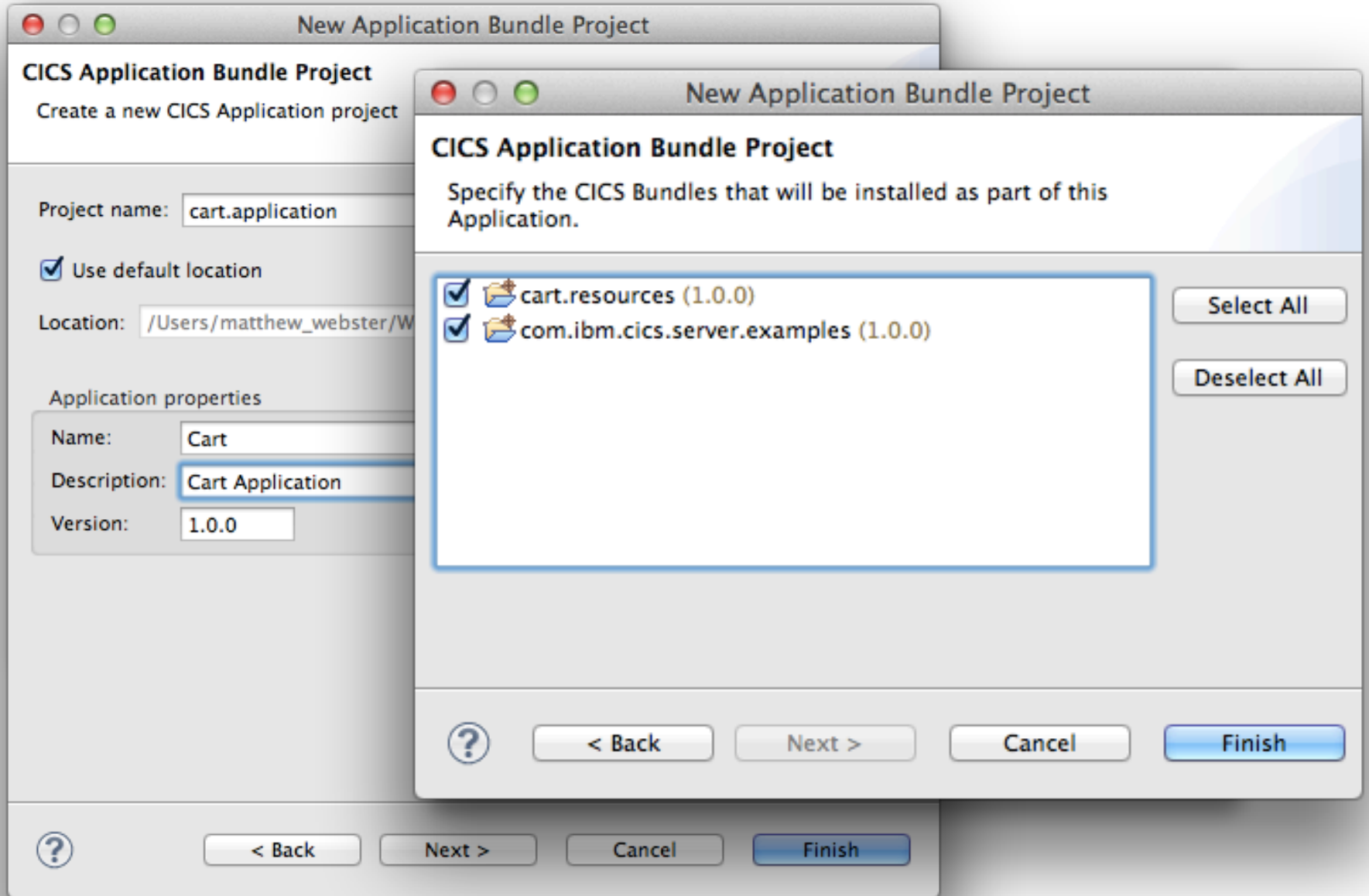
Stage 2: Create an application

- Why?
 - Don't have to change existing definitions
 - Easily determine lifecycle status
 - Allows Application definition to evolve
- How?
 - Create the required CICS bundle(s)
 - Add imports for all resources and dependencies
 - Create a CICS Application *management* bundle
 - Reference required CICS bundle(s)
 - Deploy Application bundle to zFS
 - Create & INSTALL Application definition (APPLDEF)
 - ENABLE Application (APPLCTN)

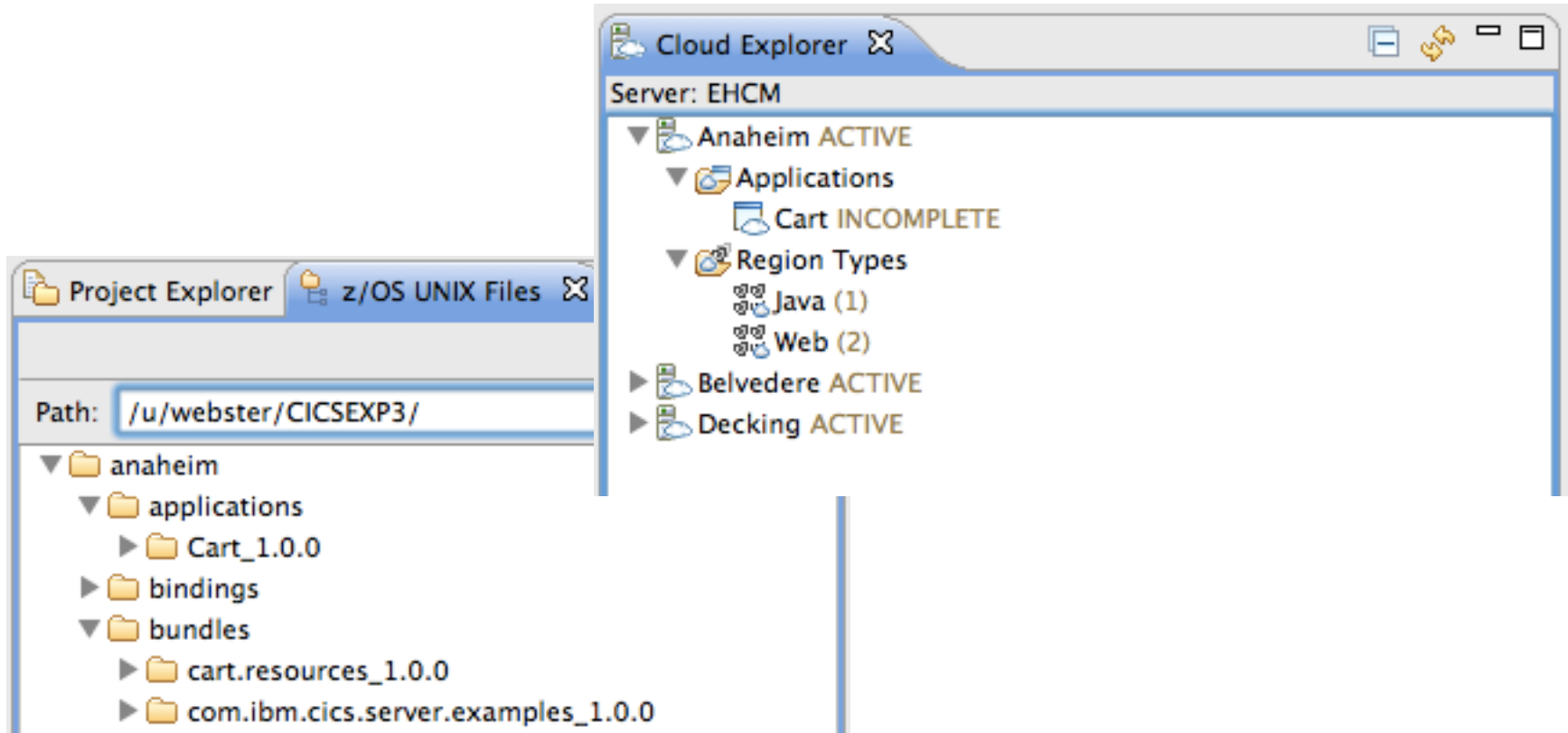
Add Imports for JVMSERVER, TCPIP SERVICE, PROGRAM, URIMAP



New CICS Application Bundle Project



Application Deployed and Installed



Stage 3: Add application entry points

- Why?
 - Associate Tasks with a specific Application
 - Measure resource consumption by Application
 - Preparation for Policy enforcement
- How?
 - Add an entry point using the manifest editor
 - Re-deploy and INSTALL the Application

DFJ\$JWB1 is “browse”

cart.resources

Application Entry Points

Entry Points
Specify CICS resources to declare as an entry point.

Operation	Resource Name	Resource Type
browse	DFJ\$JWB1	http://www.ibm.com/xmlns/prod/cics/bundle/PROGRAM

Add...
Remove
Properties...

Overview | **Entry Points** | Policy Scopes

Stage 4: Add resources for the application

- Why?
 - Lifecycle CICS resources with Application
- How?
 - Add a CICS bundle definition for each resource
 - Remove any redundant import(s)
 - Re-deploy and INSTALL the Application

Define URIMAP and PROGRAM

New URI Mapping Definition

Create URI Mapping Definition

Bundle: cart.resources

Name:

Description:

Host:

Path:

Usage

Server

File

Client Port:

Atom Atomservice:

Pipeline Pipeline:

Open editor

New Program Definition

Create Program Definition

Bundle: cart.resources

Name:

Description:

Program Type

Assembler, C/C++, COBOL, or PL/I

Java

Service Name:

JVM Server:

Open editor

Create an Application entry point

Operation name:

Stage 5: Add a policy

- Why?
 - Control resource consumption
- How?
 - Create a new CICS bundle
 - Define a Policy
 - Add a rule
 - Deploy the new CICS bundle with an Application

CPU Rule for Cart browse

Create Policy Definition

Add a rule
Add a policy rule to define what action is taken when a task exceeds a specified condition.

Policy Information

Name: (is also the bundle part name)
Description:

Rule Information

Name:
Description:

What is the condition that triggers the rule?

Type: Item:

Operator: Value: Unit:

What action should be taken when the rule's condition is exceeded?

Issue message DFHMP3001
 Emit event to
 EP Adapter
 EP Adapter Set
 Abend task with abend code AMPB

Open Editor

Application Context

TASK attach or PROGRAM LINK

If PROGRAM is an entry point set context if we don't have one already e.g. “/Anaheim/Cart/1/0/0/browse”

FS, DPL, START, ...

Propagate context

GETMAIN, READ, ...

Check thresholds and action if necessary

TASK complete

Cut monitoring data including context

Summary

Measure and control resource usage at the Application or operation level using Platforms and Policy

Control CPU, storage, database access and file requests as well as different types of storage usage

Five stage plan to getting started with cloud-style development, deployment & management

QUESTIONS

Related Cloud-Style CICS Sessions

Monday

11417: CICS Project Opening and Product Update

Tuesday

SHARE Lunch & Learn "CICS Transaction Server V5.1 open beta"

11434: CICS Explorer - A System Programmer Perspective

11435: CICS Platform and Applications Basics

Wednesday

11437: CICS Platform and Applications Advanced Concepts

11439: Event Processing: Insight into Your CICS Systems and Business

11441: Managing CICS Resources in a Unix File System: Best Practices

11442: CICS and Java: How the JVM Server transforms Java in CICS

Thursday

11448: Core Foundations and Scalability

Friday

11458: Modernizing CICS -- Hands-on Lab, Part 1 of 2

11459: Modernizing CICS -- Hands-on Lab, Part 2 of 2

More Information



- “CICS TS V5.1 open beta”
 - <http://www.ibm.com/software/cics/openbeta/>
- SHARE Proceedings (Past Conferences)
 - 8272: Best Practices for CICS Systems Management
<http://share.confex.com/share/116/webprogram/Session8272.html>
- Videos
 - <https://www.ibm.com/developerworks/mydeveloperworks/blogs/cicsdev/tags/video>