Five CICS Multi-Versioning Scenarios that Reduce the Risk of Change

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Insert Custom Session QR if Desired.

Abstract

CICS Transaction Server 5.2 introduces many new features that will help you manage the application lifecycle, in particular the transition from the current version of an application to a new version of an application. Think "newcopy," but smarter.

The CICS Application and Platform capabilities introduced in CICS TS 5 will help you manage applications as a single entity, reducing the risk associated with application updates, and providing you with capabilities to roll back to an earlier version of an application if things don't go to plan.

Come to this session to see five examples of how the multi-version capabilities in CICS TS 5.2 can help you better control application changes in your organization.

Why do I need Application Multi-versioning?

Agile methodologies allow developers to increase the rate of change of applications in response to business needs

IT operations needs to respond by deploying applications into production more frequently while reducing cost and maintaining reliability

Multi-versioning allows you to deploy new applications, application features or bug fixes while minimizing any impact to existing users or requiring additional infrastructure

Five CICS Multi-Versioning Scenarios

1. Web Scenario: New Features

2. Traditional 3270 Scenario: Bug Fix

3. MQ Scenario: Phase In

4. Server Consolidation

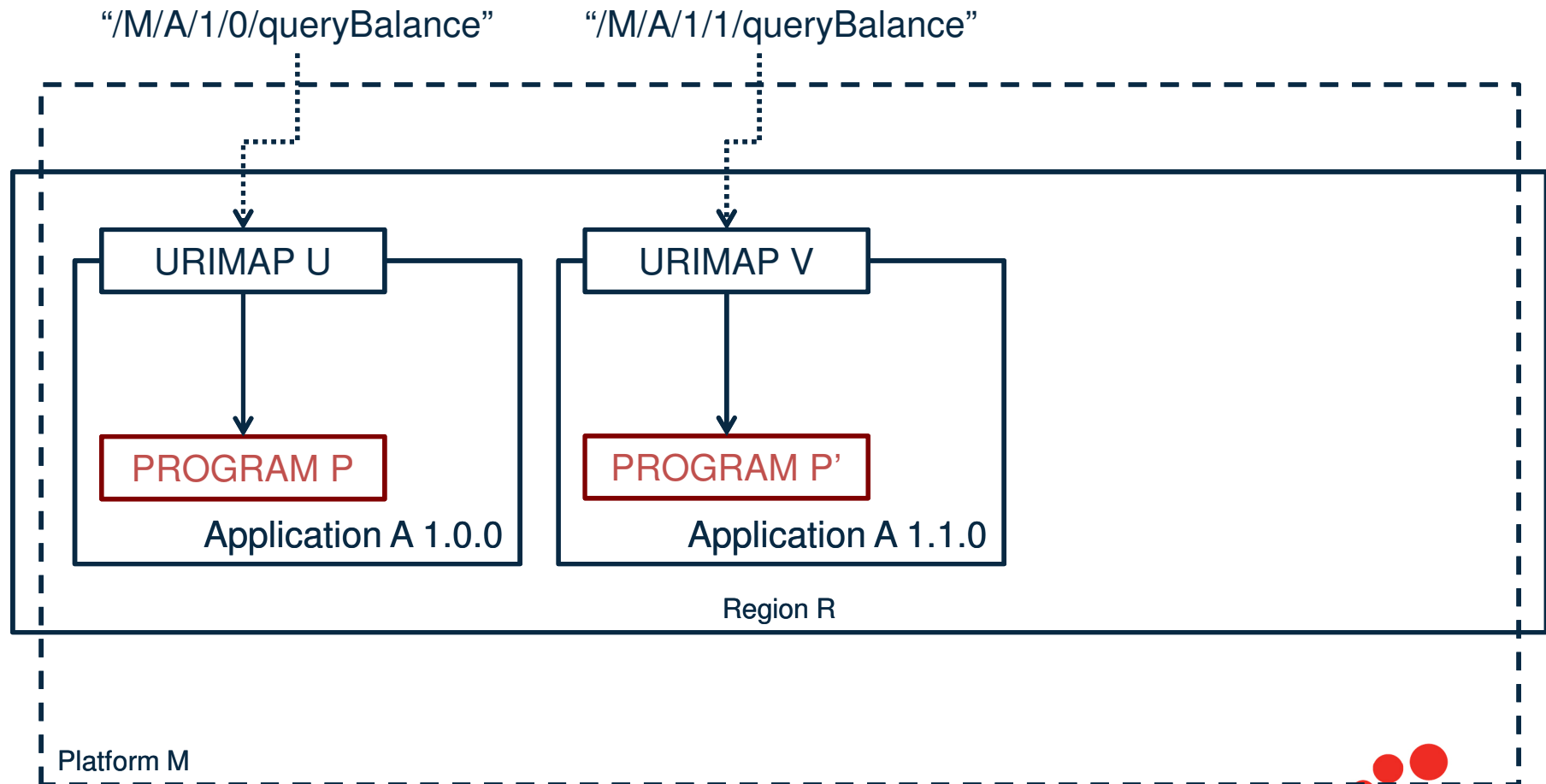5. Application Modernization

Scenarios

Web Scenario: New Features

"The mobile guys need a new feature but I'm concerned about the potential performance impact for the existing high volume web site. This is a pilot so I really don't want to spin up new regions just to support a few users. I'm also still trying to move the back office users off an old version of the application."

Application versions 1.0.0 & 1.1.0 are hosted on the same Region(s)

"/M/A/1/0/queryBalance"   "/M/A/1/1/queryBalance"

URIMAP U   URIMAP V

PROGRAM P   PROGRAM P'

Application A 1.0.0   Application A 1.1.0

Region R

Platform M

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Can simply add version 1.2.0 without affecting the users of versions 1.0.0 and 1.1.0

"/M/A/1/0/queryBalance"   "/M/A/1/1/queryBalance"   "/M/A/1/2/queryBalance"

URIMAP U   URIMAP V   URIMAP W

PROGRAM P   PROGRAM P'   PROGRAM P''

Application A 1.0.0   Application A 1.1.0   Application A 1.2.0

Region R

Platform M
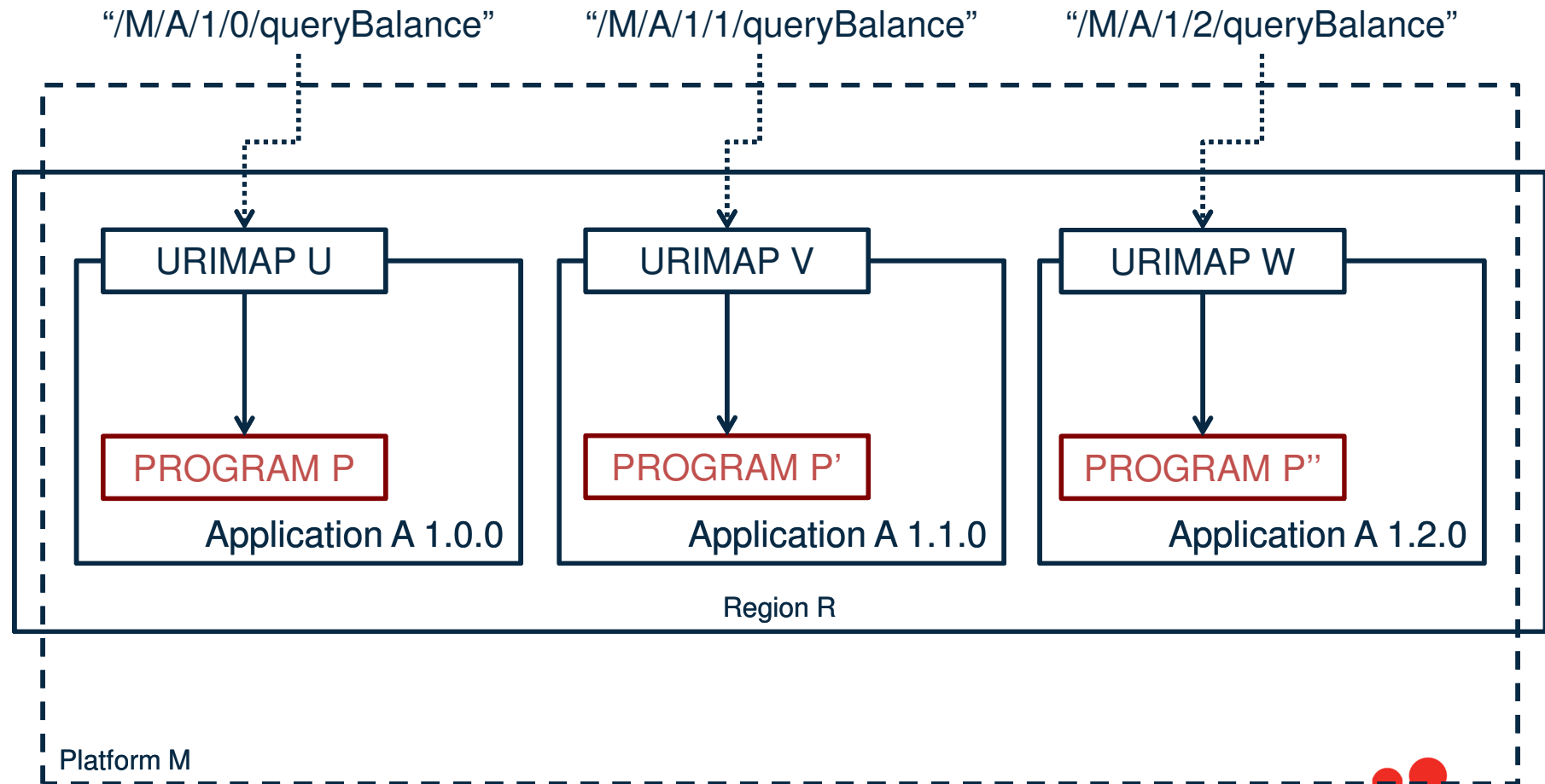
Can eventually retire version 1.0.0 when users have moved to a higher version (by looking at Monitoring data)

"/M/A/1/1/queryBalance"

"/M/A/1/2/queryBalance"

URIMAP V

URIMAP W

PROGRAM P'

PROGRAM P''

Application A 1.1.0

Application A 1.2.1

Region R
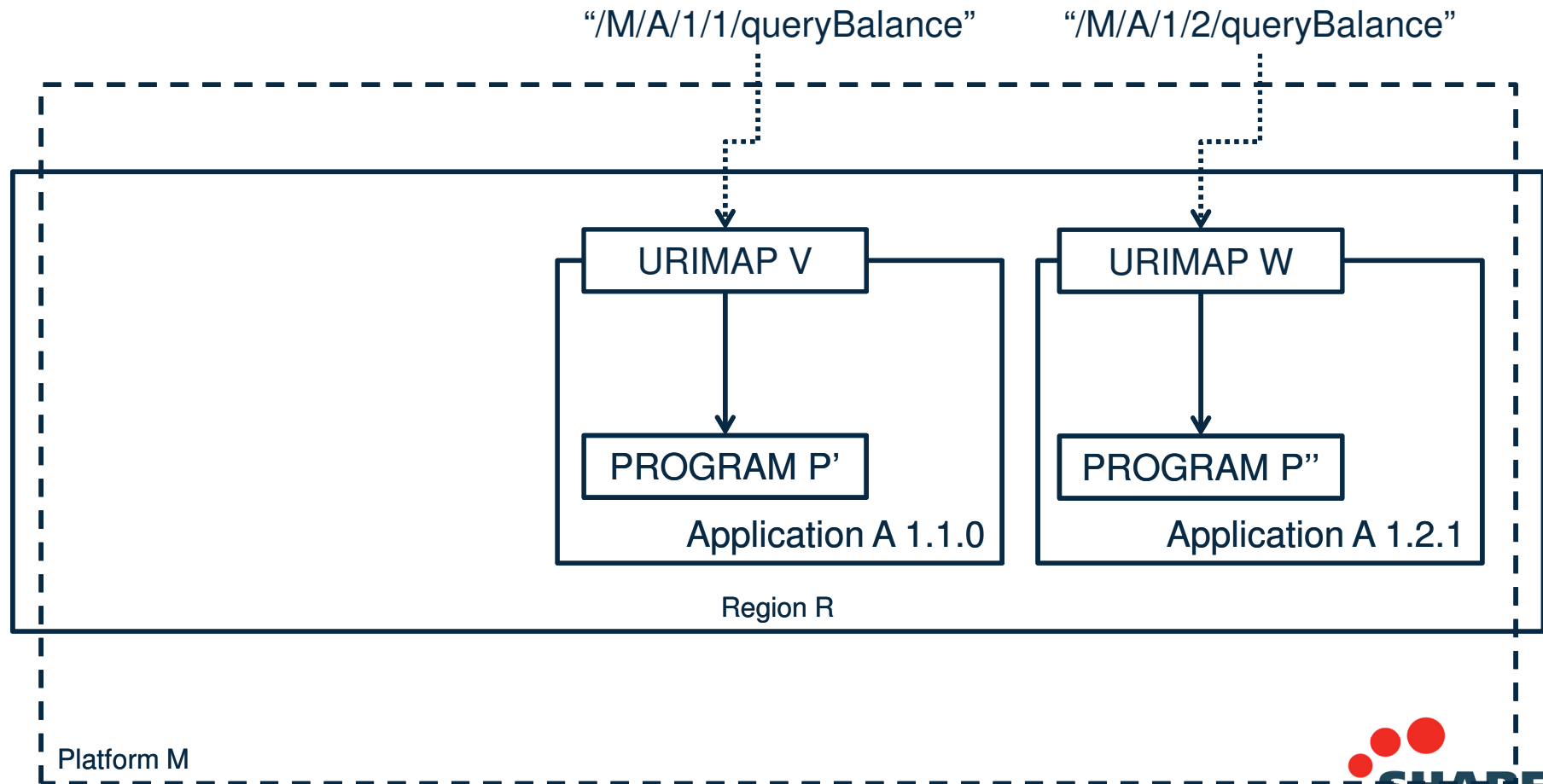
Platform M

Demo

Hosting two versions of a CICS application
concurrently on the same platform
using the
CICS Transaction Server for z/OS V5.2
and CICS Explorer V5.2

http://ibmtvdemo.edgesuite.net/software/htp/cics/2014_06_05_2311_Cloud_web_application_concurre.mp4

Traditional 3270 Scenario: Bug Fix

"I need to apply a hot fix to an application in production but I want to use the same process that I use for my weekly updates so I get an audit trail and correct monitoring data. I really want to make sure it's installed correctly before making it live while the existing version is still being used. Also if the update makes things worse I want to rollback the change as quickly as possible"

Application version 1.0.0 has a bug

PROGRAM S

EXEC CICS LINK PROGRAM(E1)

PROGRAM E1

AVAILABLE

PROGRAM P

Application A 1.0.0

Region R

Platform M
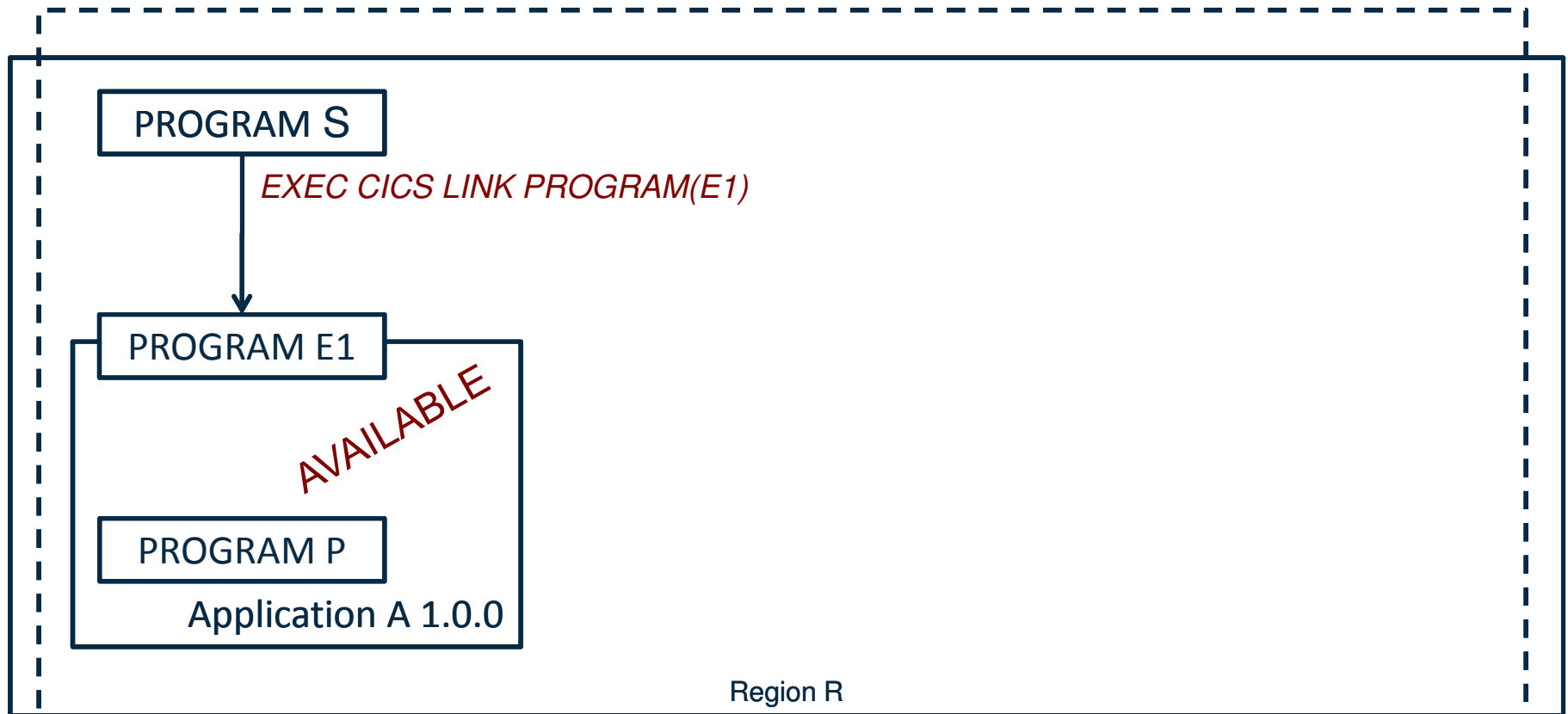
INSTALL and ENABLE version 1.0.1 but requests still go to version 1.0.0

PROGRAM S

EXEC CICS LINK PROGRAM(E1)

PROGRAM E1

AVAILABLE

PROGRAM P

Application A 1.0.0

PROGRAM E1

UNAVAILABLE

PROGRAM P'

Application A 1.0.1

Region R

Platform M
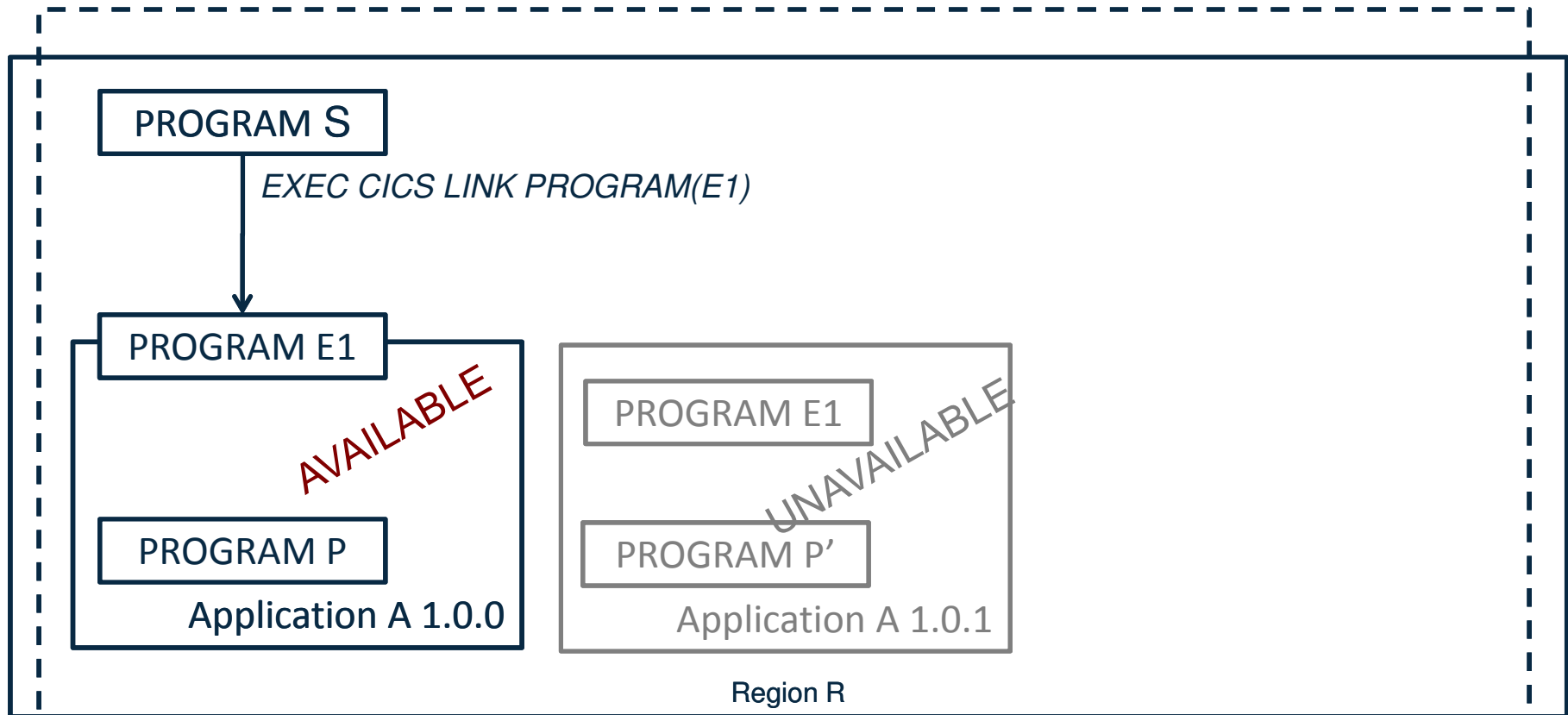
Make application version 1.0.1 AVAILABLE so it receives new requests

PROGRAM S

EXEC CICS LINK PROGRAM(E1)

PROGRAM E1

PROGRAM E1

AVAILABLE

PROGRAM P

Application A 1.0.0

PROGRAM P''

AVAILABLE

Application A 1.0.1

Region R

Platform M
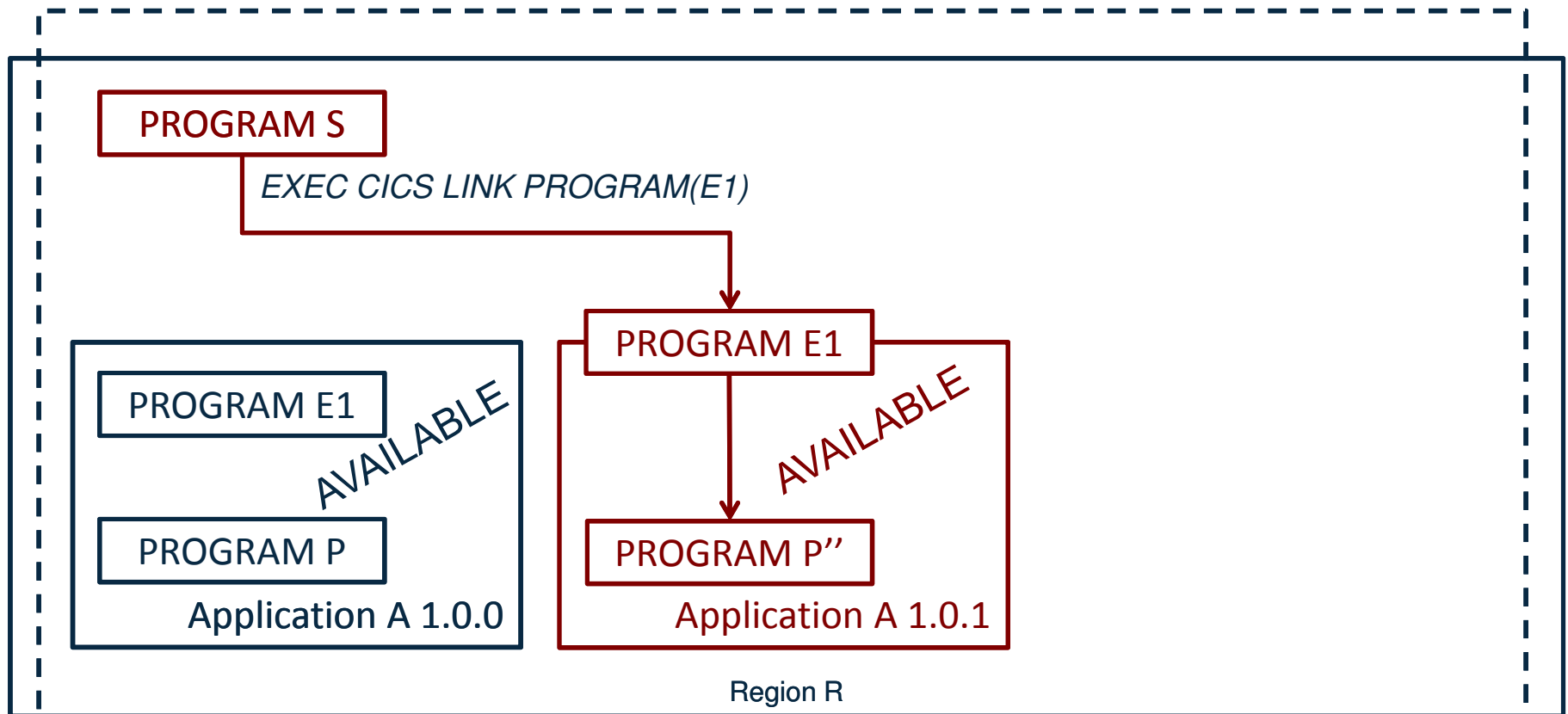
If there is a problem make version 1.0.1 **UNAVAILABLE** to rollback to version 1.0.0

PROGRAM S

EXEC CICS LINK PROGRAM(E1)

PROGRAM E1

AVAILABLE

PROGRAM P

Application A 1.0.0

PROGRAM E1

UNAVAILABLE

PROGRAM P'

Application A 1.0.1

Region R

Platform M
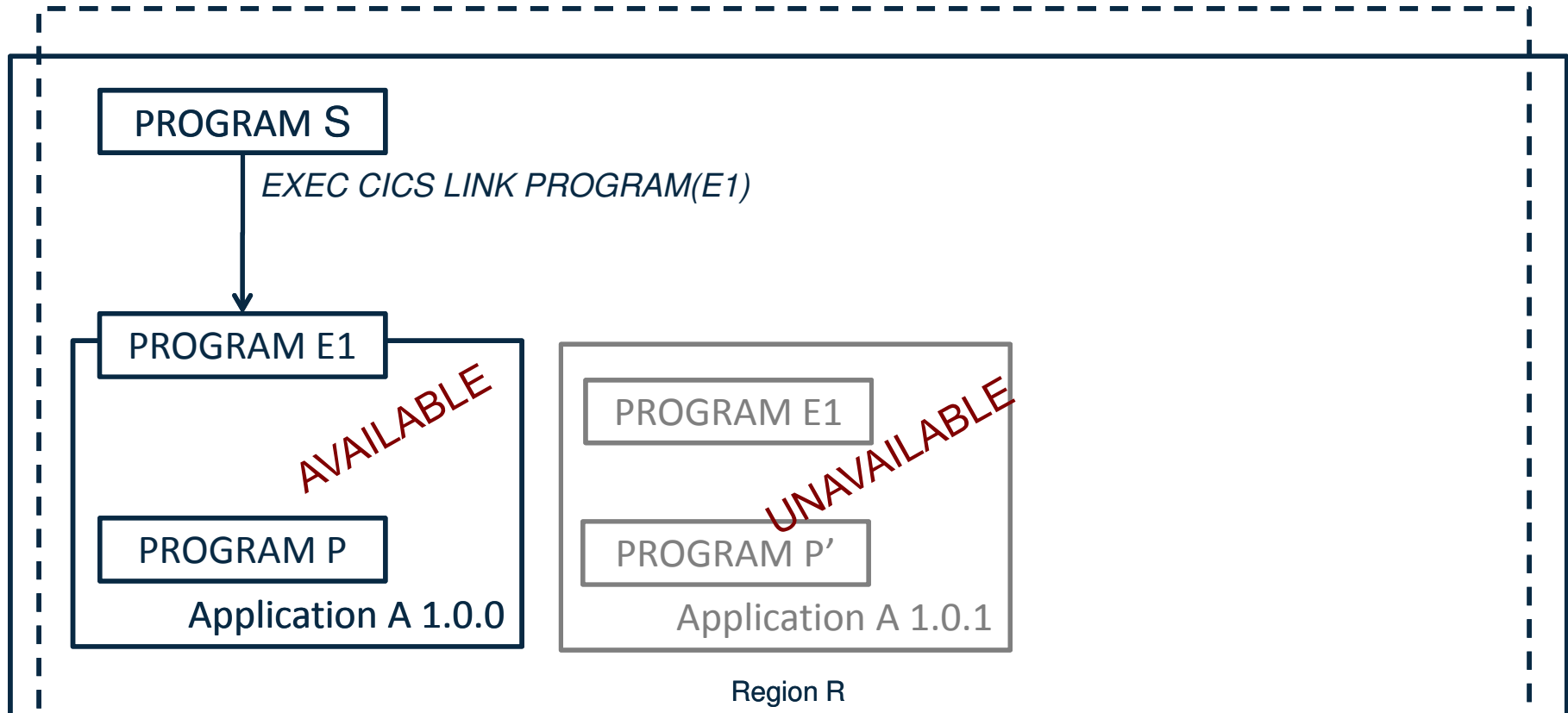
Demo

Provisioning application updates with
no loss of service using
CICS Transaction Server for z/OS V5.2
and CICS Explorer V5.2

http://ibmtvdemo.edgesuite.net/software/htp/cics/2014_06_05_2546_Cloud_application_update_video.mp4

MQ Scenario: Phase In

"When rolling out a new version of an application I want to initially give access to just 10% of my users. That way I can reduce the impact of any potential problems related to either the new features or to the platform because of performance. The requests arrive over MQ so I want to use origin data to route each one to the appropriate application version"

Most users get application version 1.1.0

PROGRAM R | USER=A

EXEC CICS INVOKE APPLICATION(A) OPERATION(queryBalance)
MAJORVERSION(1) MINORVERSION(1) EXACTMATCH

queryBalance

PROGRAM E1

PROGRAM P

Application A 1.0.0

queryBalance

PROGRAM E1

PROGRAM P'

Application A 1.1.0

queryBalance

PROGRAM E1

PROGRAM P''

Application A 1.2.0
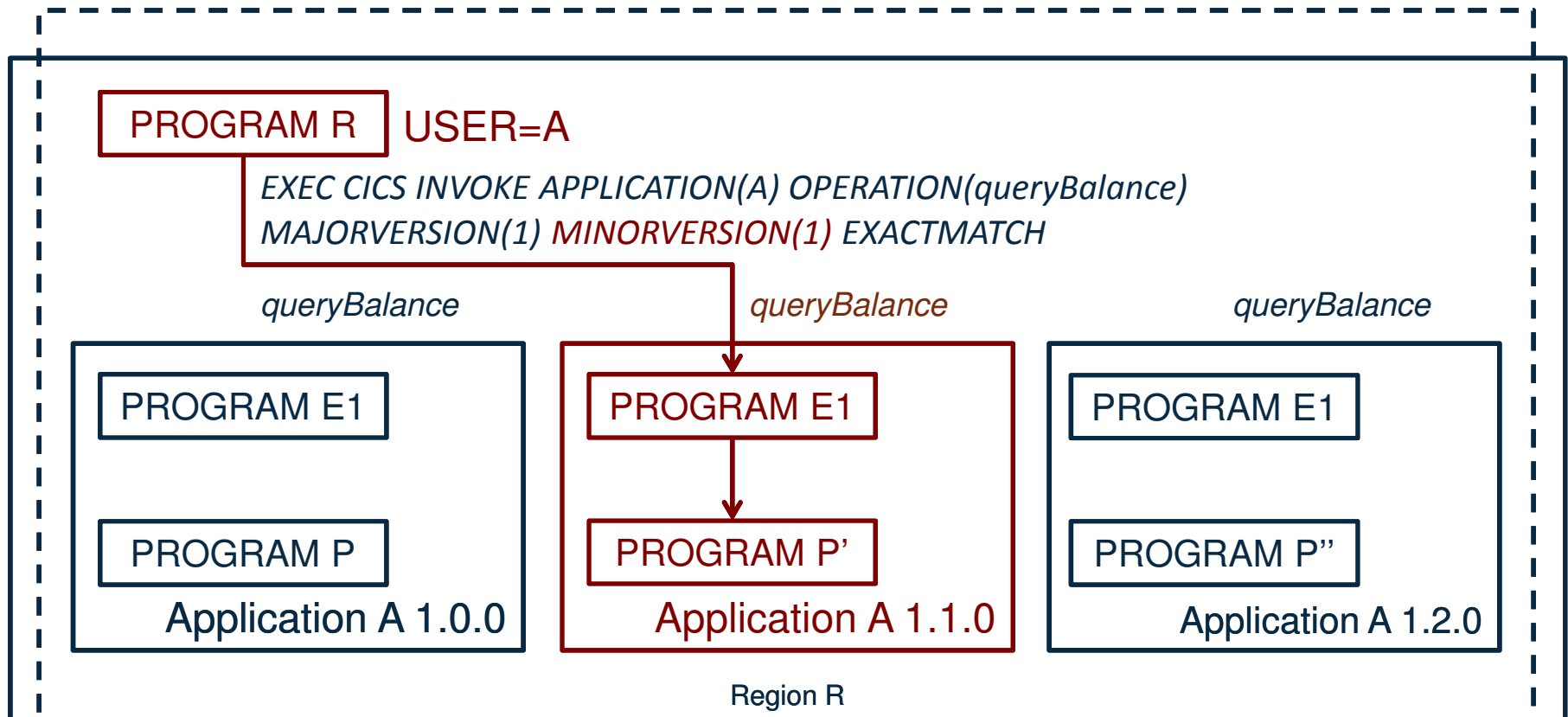
Region R

"Early access" users get the latest application version 1.2.0

PROGRAM R | USER=B

EXEC CICS INVOKE APPLICATION(A) OPERATION(queryBalance)
MAJORVERSION(1) MINORVERSION(2) EXACTMATCH

queryBalance   *queryBalance*   *queryBalance*

PROGRAM E1	PROGRAM E1	PROGRAM E1
PROGRAM P	PROGRAM P'	PROGRAM P''
Application A 1.0.0	Application A 1.1.0	Application A 1.2.0

Region R

Platform M

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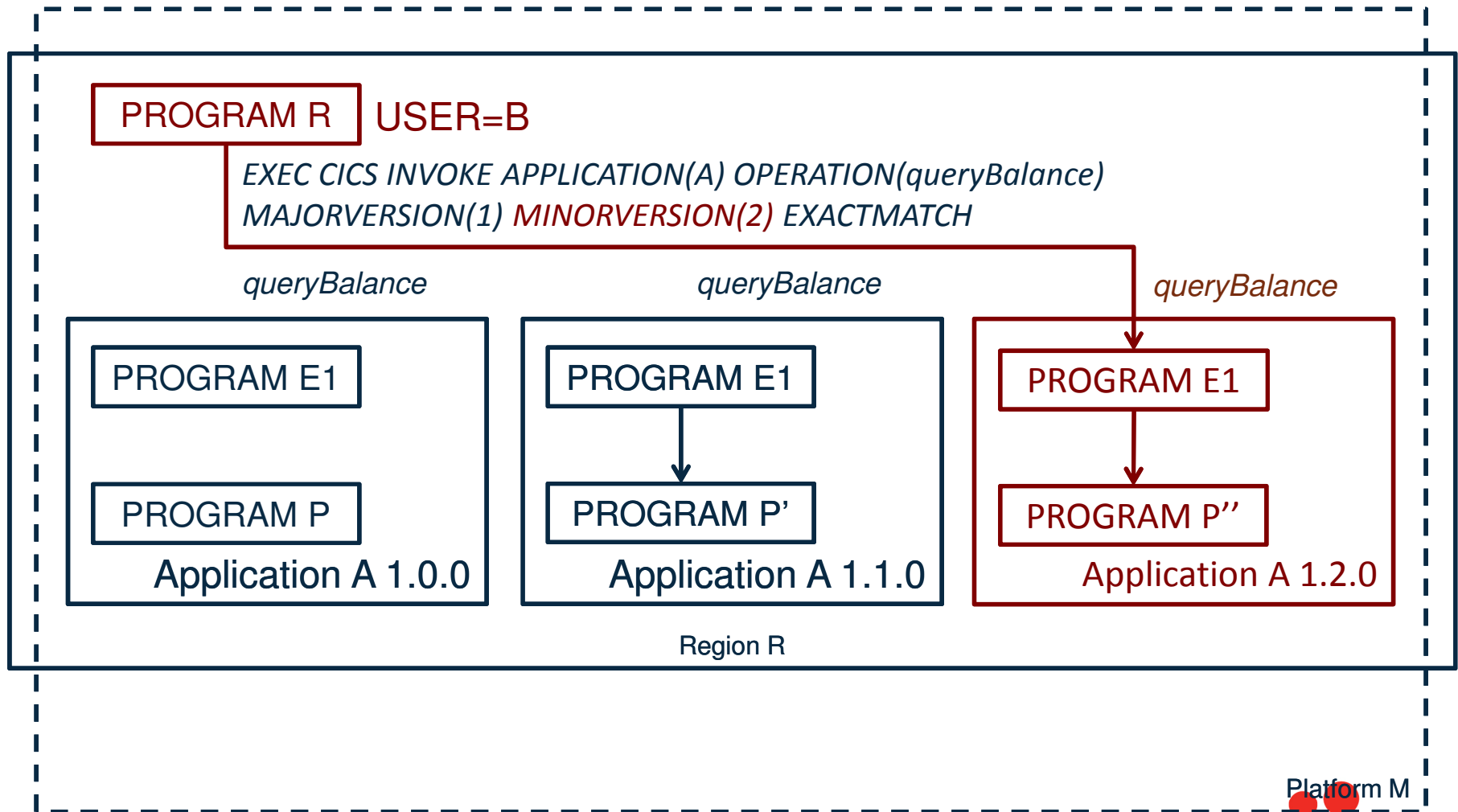
Server Consolidation Scenario

"I have two applications (one of which was developed by a company we acquired) that currently run on different sets of CICS regions. I'd like to take advantage of the recent scalability improvements especially being able to increase MAXTASK. However, I know that their PROGRAM name clashes which prevent these applications from being hosted together."
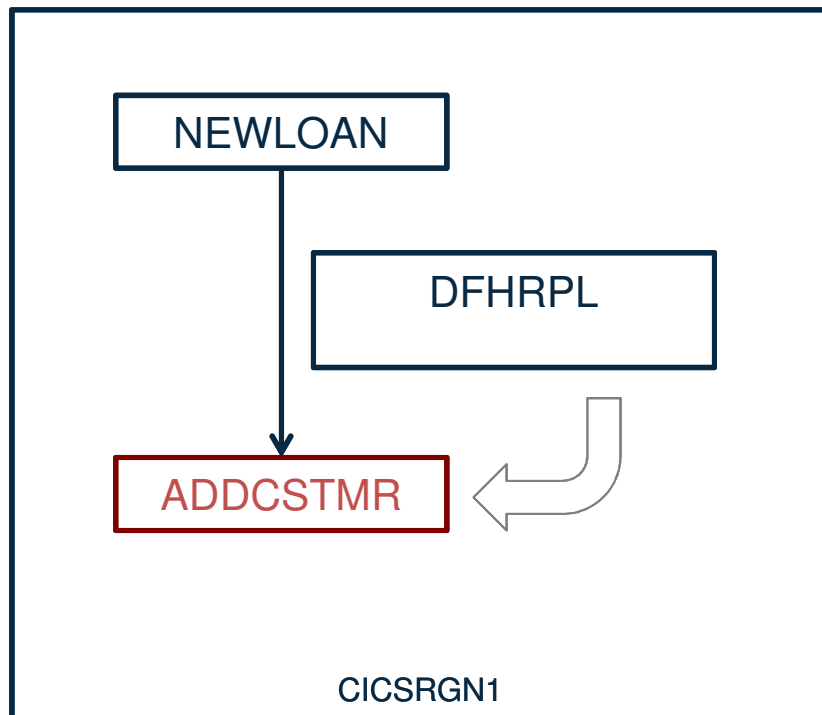
The Home Loan application has an ADDCSTMR program

Home Loan

NEWLOAN

DFHRPL

ADDCSTMR

CICSRGN1

Unfortunately the Fire Insurance application also has an ADDCSTMR program so must be kept separate

Home Loan

NEWLOAN

DFHRPL

ADDCSTMR

CICSRGN1

Fire Insurance

NEWPOLCY

DFHRPL

ADDCSTMR

CICSRGN2

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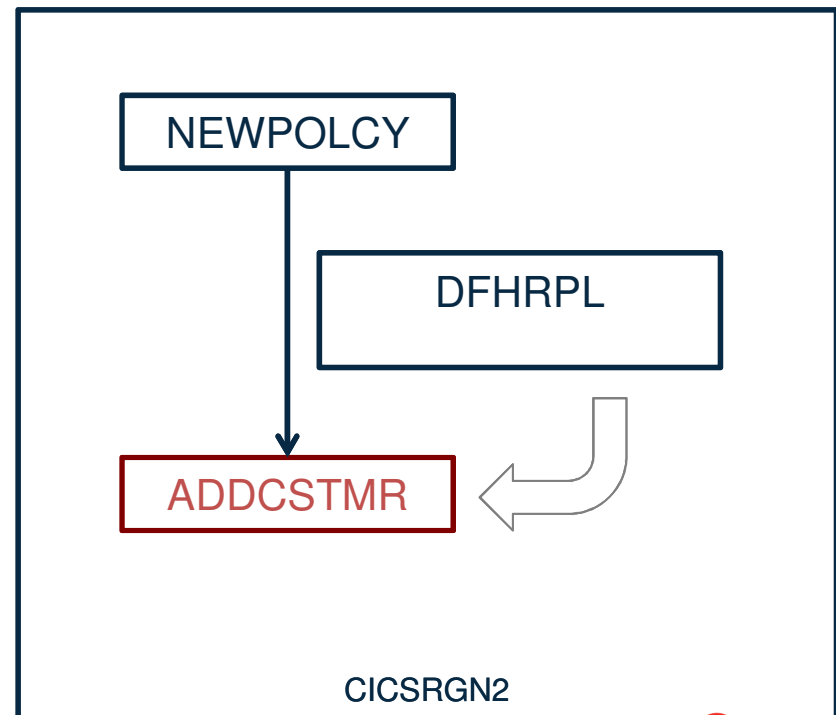
HomeLoan and FireInsurance both with ADDCSTMR installed into the same Region(s)
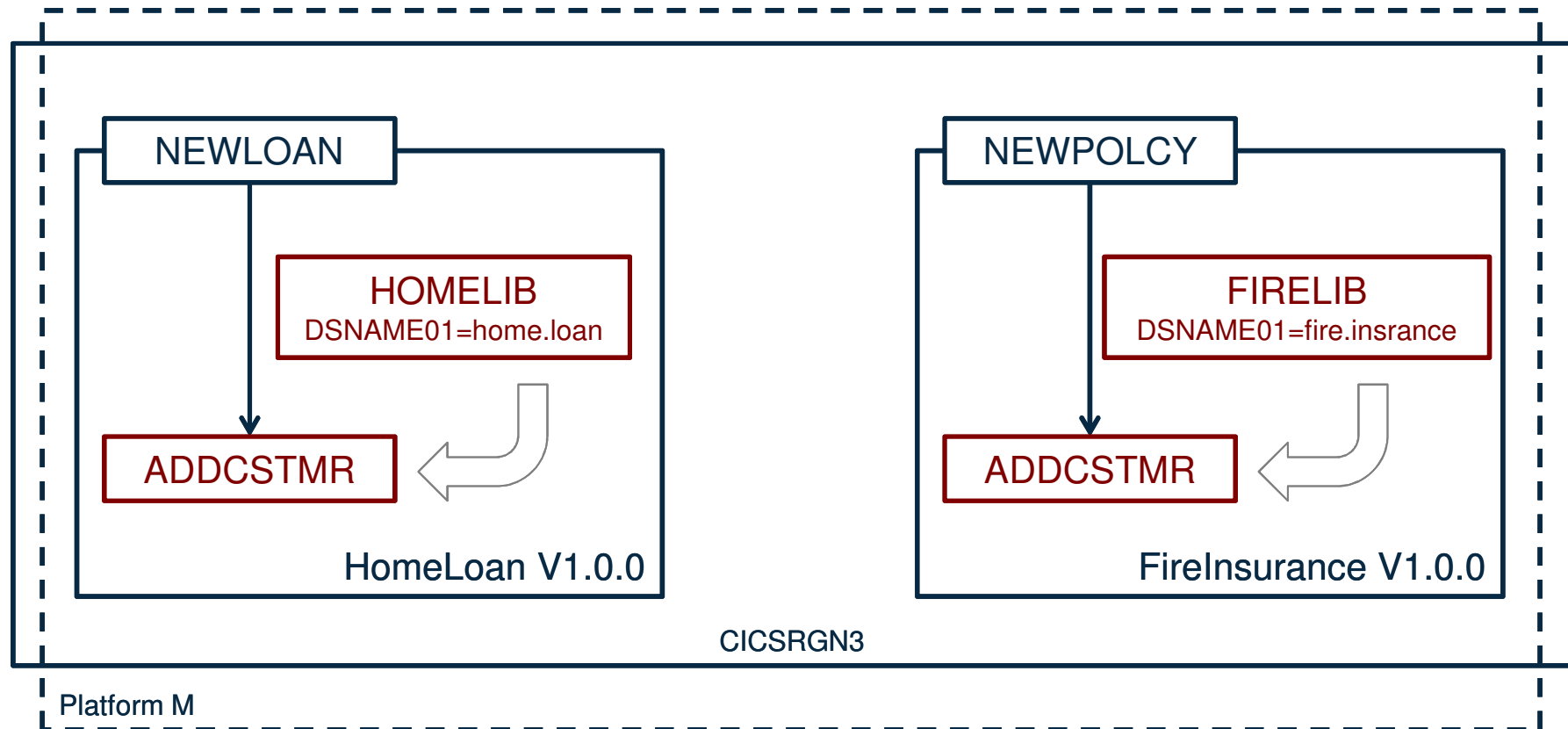
Application Modernization Scenario

"We have spent a lot of time using CICS Interdependency Analyzer (IA) to understand the call structure of one of our applications. This has enabled us to add more validation logic to avoid ABENDs when a copybook changes and someone hasn't recompiled all the right modules. But now we need to ensure no one bypasses these new checks."

Any PROGRAM in the Region can LINK to PROGRAM Q avoiding the checks in PROGRAM F

PROGRAM E

PROGRAM F

PROGRAM G

PROGRAM P

PROGRAM Q

Application A

Region R

Platform M

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PROGRAM Q is now private to Application B

PROGRAM E

PROGRAM F

PROGRAM G

PROGRAM P

PROGRAM Q

Application A

Application B

Region R
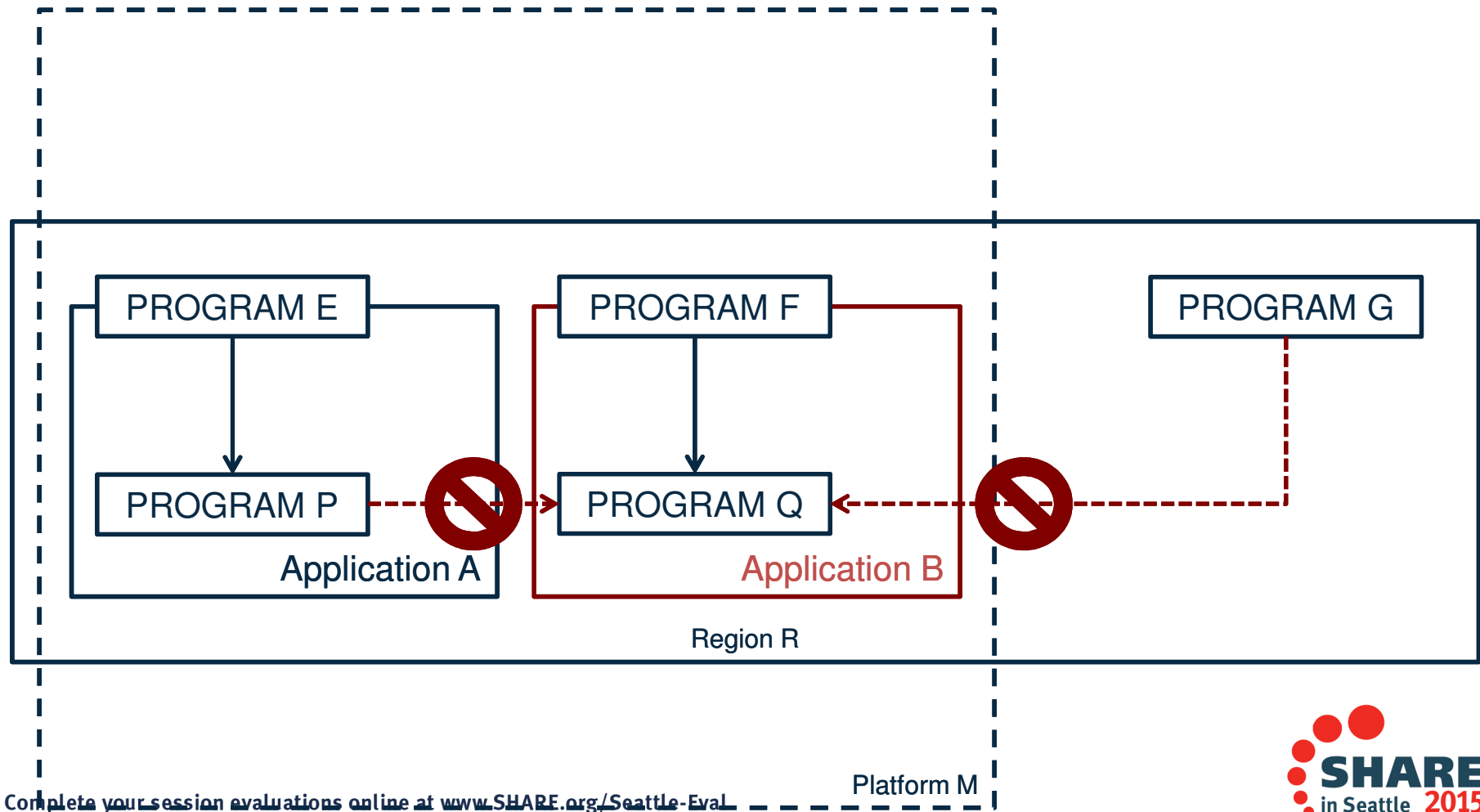
Platform M

Must LINK through entry point PROGRAM F entry point

PROGRAM E

PROGRAM P

Application A

PROGRAM F

PROGRAM Q

Application B

PROGRAM G

Region R

Platform M

HOW DOES IT WORK?

Application Multi-versioning

Entry Points
> PROGRAM, URIMAP, TRANSACTION (CICS TS V5.3 open beta)

Resources
> LIBRARY, PROGRAM, POLICY

Capability
> Provide end user access to two or more versions of an application hosted on the same platform by using the new private **PROGRAM** and **LIBRARY** resources
>
> Quickly switch back and forth between two different versions of an application using the **AVAILABLE | UNAVAILABLE** state
>
> Route requests from users to different versions of an application using the new **INVOKE APPLICATION API**

LIBRARY Resources not added to global search order

REGION

PROGRAM P

A 1.0.0

PROGRAM P

LIBRARY(L,{DSN100})

A 1.0.1

PROGRAM P'

LIBRARY(L',{DSN101,DSN100})
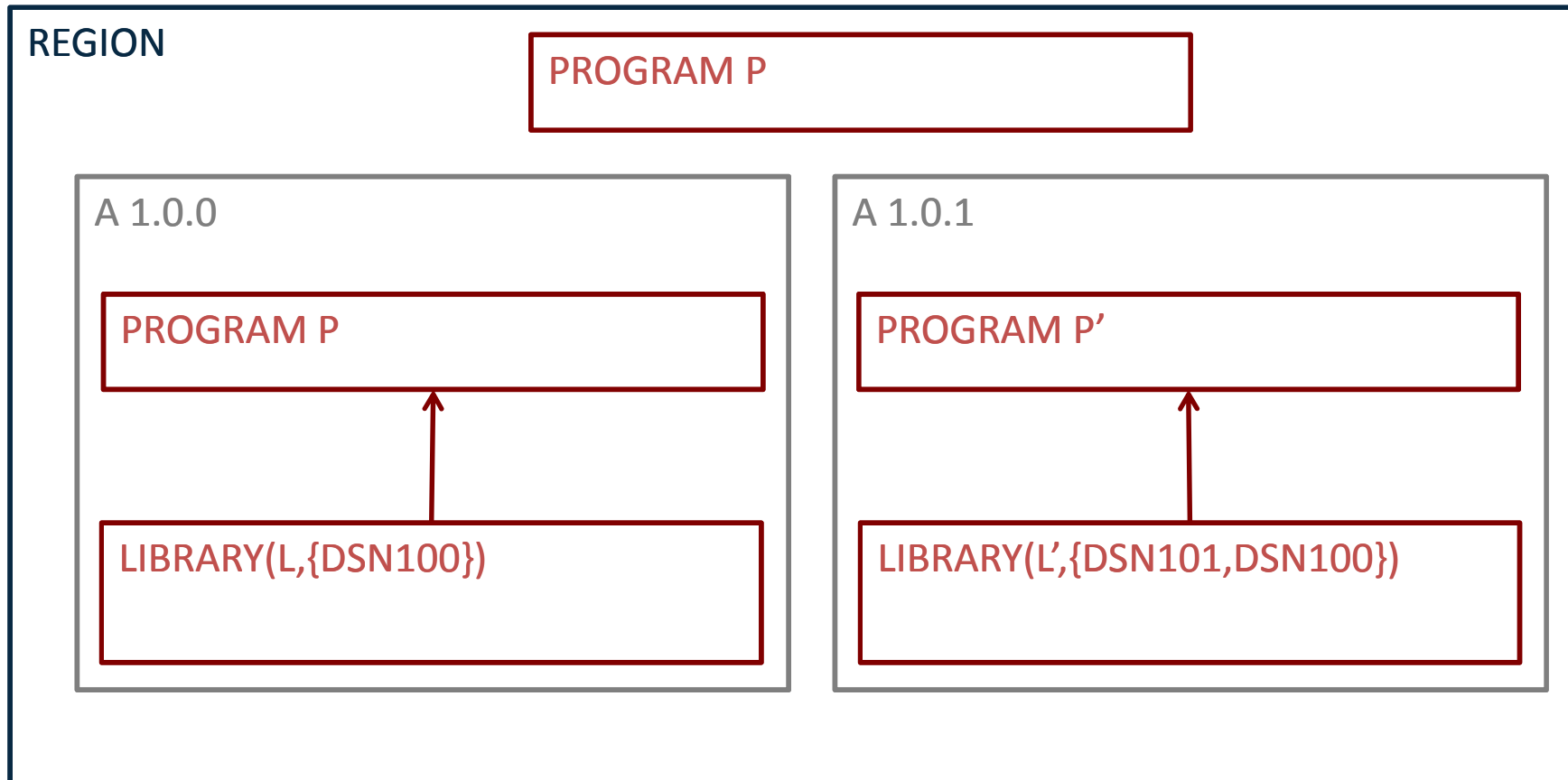
AVAILABLE | UNAVAILABLE application status

- New AVAILABLE | UNAVAILABLE state
  - CICS application
  - CICS bundle
  - URIMAP entry point
- UNAVAILABLE
  - "Close the door"
  - Existing tasks complete normally
  - No new requests
- AVAILABLE
  - "Open the door"
  - Measure resource usage
  - Enforce policy
  - Control access (for packaged resources)

EXEC CICS INVOKE APPLICATION

- EXEC CICS **LINK PROGRAM()**

- EXEC CICS **INVOKE APPLICATION()**
    - **OPERATION()**
    - OPERATION() **MAJORVERSION() MINORVERSION() MINIMUM**
    - OPERATION() MAJORVERSION() MINORVERSION() **EXACTMATCH PLATFORM()**

- JCICS **Application.invoke()**

CICS Cloud Explorer

Managing Multi-Versioned Applications

Application Lifecycle

New *Online* Application Editor

Private Resources
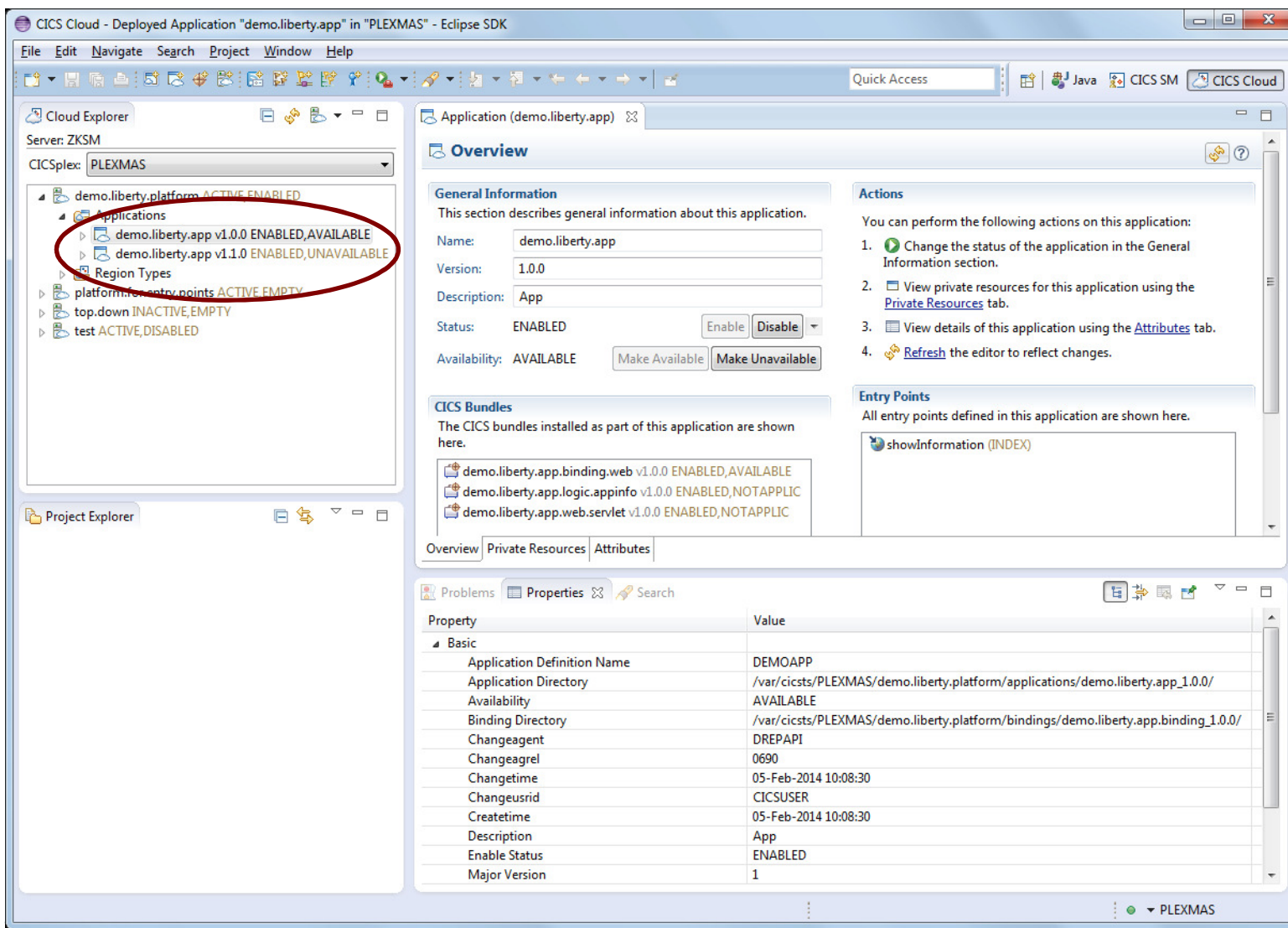
Complete your session evaluations

Application demo.liberty.app 1.0.0 vs. 1.1.0

Application demo.liberty.app 1.0.0 vs. 1.1.0: PROGRAM

Application demo.liberty.app 1.0.0 vs. 1.1.0: LIBRARY

Private Resources

☐ Programs 📚 LIBRARYs 📚 LIBRARY DS Names

Name: [____] ▶ ✖ ▼

CNX0211I Context: IYK3ZKSW. Resource: LIBRARY. 1 records collected at 24-Feb-2014 15:30:01

Region	Name	Search Position	Ranking	Critical Status	Enable Sta...	Numdsnames
IYK3ZKSW	APPMV	1	50	NONCRITICAL	ENABLED	1

☐ Programs 📚 LIBRARYs 📚 LIBRARY DS Names

Name: [____] ▶ ✖ ▼

CNX0211I Context: IYK3ZKSW. Resource: LIBDSN. 1 records collected at 24-Feb-2014 15:30:27

Region	Name	D..	DS Name	DS Name Search Position
IYK3ZKSW	APPMV	1	BENCOX.APP-MV.DEMO.LOAD	1001

Private Resources

☐ Programs 📚 LIBRARYs 📚 LIBRARY DS Names

Name: [____] ▶ ✖ ▼

CNX0211I Context: PLEXMAS. Resource: LIBRARY. 1 records collected at 24-Feb-2014 16:04:01

Region	Name	Search Position	Ranking	Critical Status	Enable Sta...	Numdsnames
IYK3ZKSW	APPMV	1	50	NONCRITICAL	ENABLED	1

☐ Programs 📚 LIBRARYs 📚 LIBRARY DS Names

Name: [____] ▶ ✖ ▼

CNX0211I Context: PLEXMAS. Resource: LIBDSN. 1 records collected at 24-Feb-2014 15:51:25

Region	Name	DS Number	DS Name	DS Name Search Position
IYK3ZKSW	APPMV	1	BENCOX.APP-MV.DEMO.LOAD2	1001

Summary

Use multi-versioning to deploy new applications, application features or bug fixes while minimizing any impact to existing users or requiring additional infrastructure

Implement the different scenarios using private PROGRAM and LIBRARY resources, the AVAILABLE | UNAVAILABLE application status, and INVOKE APPLICATION API

Manage multi-versioned applications in Explorer with the new online editor

More Information

- **IBM Redbooks publication (***"Cloud Enabling IBM CICS"***):**
  http://www.redbooks.ibm.com/abstracts/sg248114.html?Open

- **Blog (CICSdev):**
  https://www.ibm.com/developerworks/mydeveloperworks/blogs/cicsdev/tags/blog?lang=en
  - *What is CICS Application Multi-versioning?*
  - *How can I phase in the new version of a CICS Application?*
  - *Quick start CICS Explorer projects for "Cloud Enabling CICS"*

- **Demos:**
  http://www.ibm.com/software/htp/cics/tserver/v52/library/demos.html
  - *Provisioning application updates with no loss of service*
  - *Hosting two versions of a CICS application concurrently on the same platform*

- **Podcasts:**
  http://www.ibm.com/software/os/systemz/podcasts/websphereonz/
  - *CICS V5.2 - Multi-Versioning*

- **Scenarios:** https://www-01.ibm.com/support/knowledgecenter/#!/SSGMCP_5.1.0/com.ibm.cics.ts.scenarios.doc/topics/Scenarios.html
  - *Updating an application on a platform*
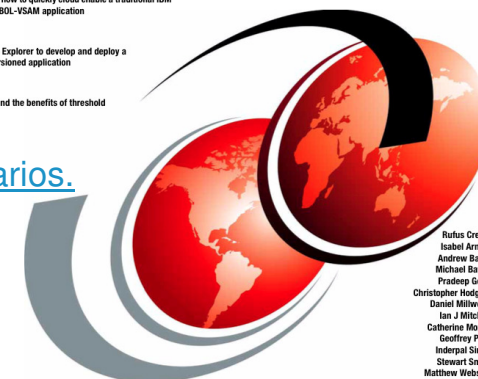 - *Hosting two versions of a CICS application concurrently on the same platform*

Cloud Enabling IBM CICS

Discover how to quickly cloud enable a traditional IBM 3270-COBOL-VSAM application

Use CICS Explorer to develop and deploy a multi-versioned application

Understand the benefits of threshold policy

Rufus Credle
Isabel Arnold
Andrew Bates
Michael Baylis
Pradeep Gohil
Christopher Hodgins
Daniel Millwood
Ian J Mitchell
Catherine Moxey
Geoffrey Pirie
Inderpal Singh
Stewart Smith
Matthew Webster

ibm.com/redbooks

Redbooks

CICS Transaction Server V5.3 open beta

- New Policy Rules
  - Name Counter Server
    - GET COUNTER|DCOUNTER
  - Temporary Storage
    - Support for Shared TS
  - WebSphere MQ
    - Number of MQ requests
  - IMS
    - Number of DBCTL calls
- New Entry Point
  - Transaction
    - Allows association of a policy with a TRANID

CICS Transaction Server V5.3 open beta…

- DevOps Enhancements

  - CICS Build Toolkit
    - Multi-platform tool with a command line interface to build CICS cloud applications and bundles

  - DFHDPLOY
    - Batch utility to deploy and undeploy CICS cloud applications and bundles
  - CICS plug-in for UrbanCode Deploy

    - Extends UrbanCode Deploy to deploy and undeploy CICS applications in coordination with other applications and database components in a single action

Questions?

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