

A decorative graphic in the top left corner consists of several overlapping circles of various colors (yellow, orange, red, purple, blue) that are divided into segments, resembling a stylized sun or a cluster of data points.

The Value of Creating a CICS Cloud

Andrew Bates, IBM CICS TS Product Manager

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Let us talk about creating a CICS cloud

- What is a CICS cloud?
- The key components of a CICS cloud architecture
 - Applications, Platforms and Policies
- Applying the cloud to CICS
 - On-demand self-service, Broad network access, Resource pooling, Rapid elasticity, Measured service
- Questions and Comments



What is a CICS Cloud NOT?

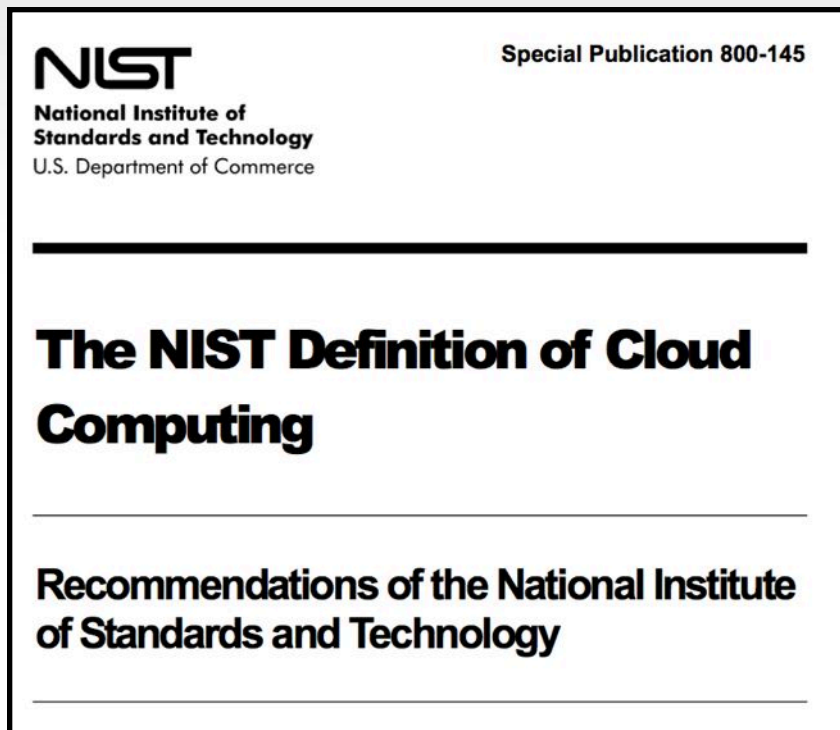
- Marketing Hype
- Public Cloud
- ‘Our Own Thing’
- Finished!

What is a CICS Cloud?

- CICS implementation of cloud principles
 - ‘Pre-defined **application** architectures, and required **platform** services, that are deployed and managed by the system according to a set of **policies**.’
IBM PureSystems - Product Family overview homepage, Apr 2014
- Enabling creation of private CICS clouds
 - ‘The cloud infrastructure is provisioned for exclusive use by a **single organization** comprising **multiple consumers** (e.g., business units)’
NIST Special Publication 800-145, Sept 2011
- Bringing Cloud benefits to CICS
 - CICS TS V5 delivers a **pattern based, policy managed, private CICS cloud** environment, **improving the agility** of CICS application deployments whilst **reducing the risk** of implementation errors.



The Essential Characteristics of Cloud Computing



- On-demand self-service
- Broad network access
- Resource pooling
- Rapid elasticity
- Measured service

search 'NIST Cloud'
<http://www.nist.gov/itl/cloud/>

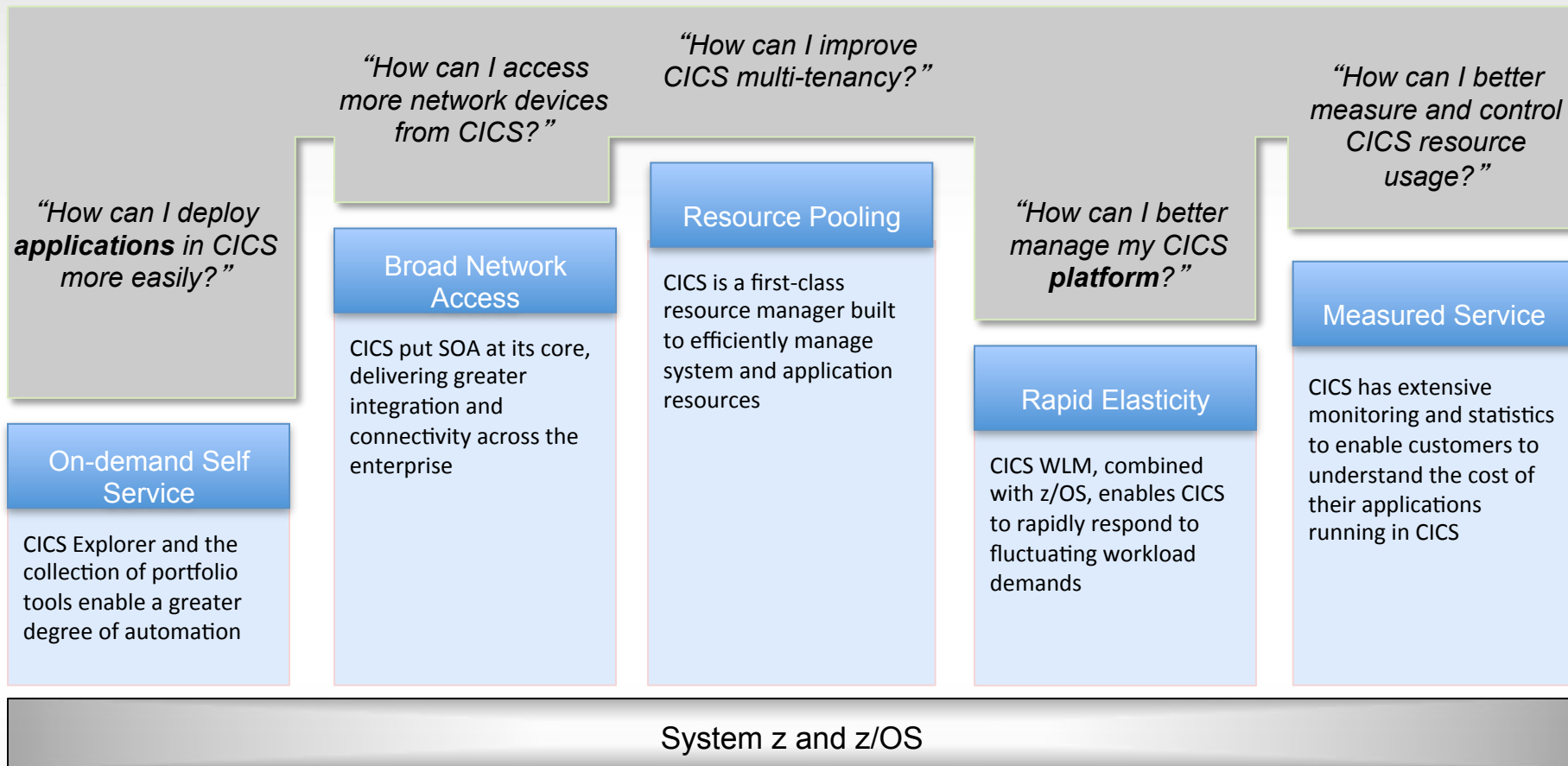
▶ NIST references

References from this NIST publication will appear in call-outs in this format.



Applying the Characteristics of Cloud to CICS

How can we apply the 5 essential cloud characteristics apply to CICS?

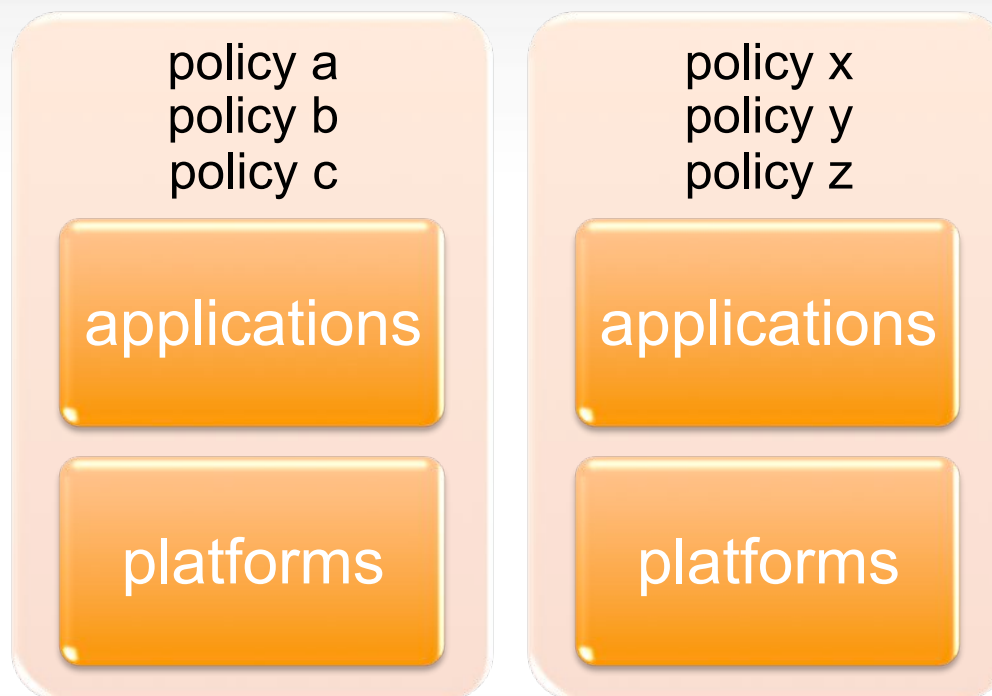


(Hint : Adding more CICS regions not always the best answer!)



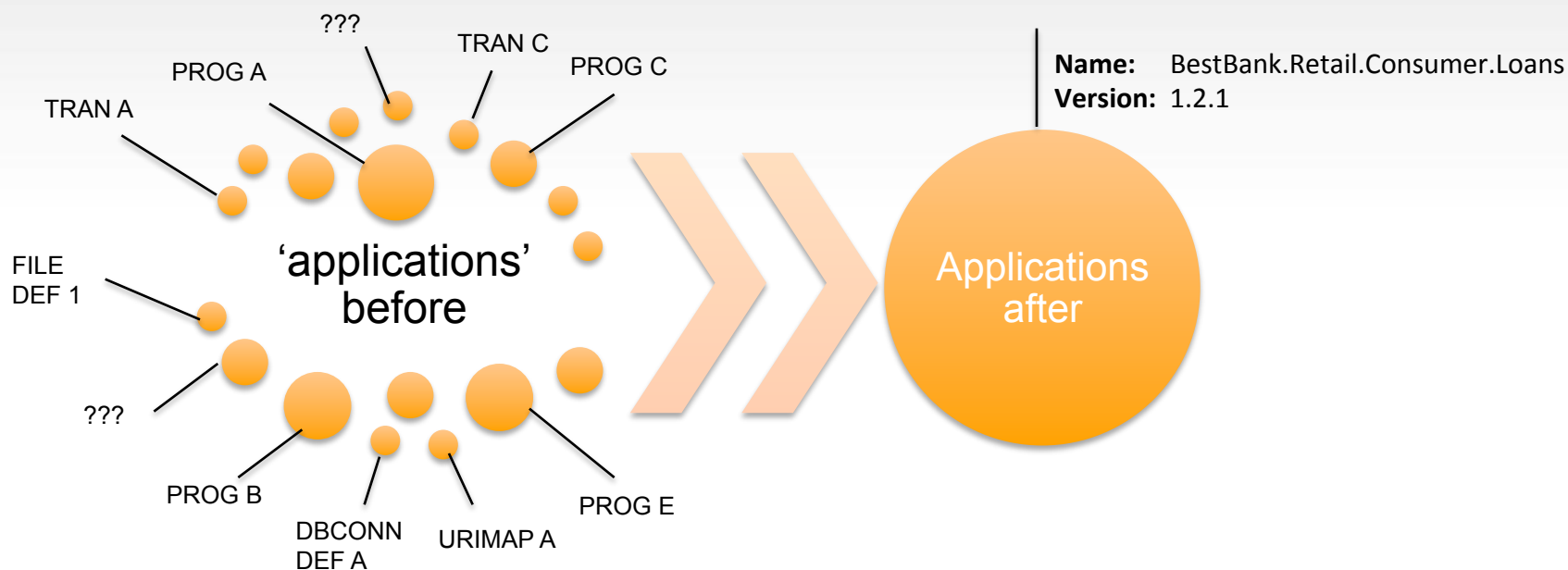
The 3 key concepts of a CICS cloud

CICS TS V5 introduced three completely new first-class artifacts : **Applications, Platforms & Policies.**



A CICS Cloud is made up of pre-defined **application** architectures and required **platform** services, that are managed according to a set of **policies**.

The New CICS Application Lifecycle



You can now **package a CICS application** into an application bundle to deploy, manage, and monitor it throughout the application lifecycle **as a single entity**.



Measured Service

Application

Name

- BestBank.Retail.Consumer.Loans

Version

- 1.2.1

Resources

- LIBRARY, PROGRAM, TRANSACTION,
URIMAP
- (EVENTBINDING, OSGIBUNDLE, ...)

Dependencies

- DB2CONNECTION, JVMSERVER,
TCPIPService, ...

Entry points

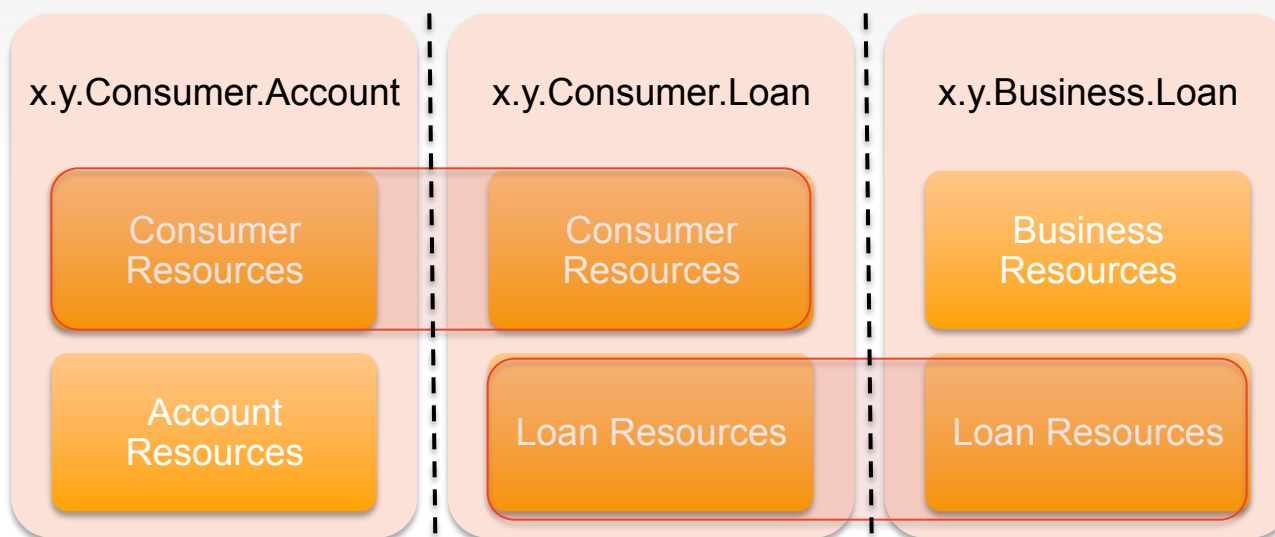
- operation: browse, update, ...
- resource: PROGRAM

- CICS provides support for monitoring and measuring the resource usage of applications.
- You can scope the monitoring and measuring at the application level or for particular application operation.
- You can monitor and measure application resource usage across CICS regions and multiple tasks.
- You can utilize shared CICS resources (e.g. a program) and attribute usage of that shared resource to the calling application.

You can now **package a CICS application** into an application bundle to deploy, manage, and monitor it throughout the application lifecycle **as a single entity**.

Measured Service

Each application can monitor and measure its own usage of resources, even if those resources are shared with other applications.

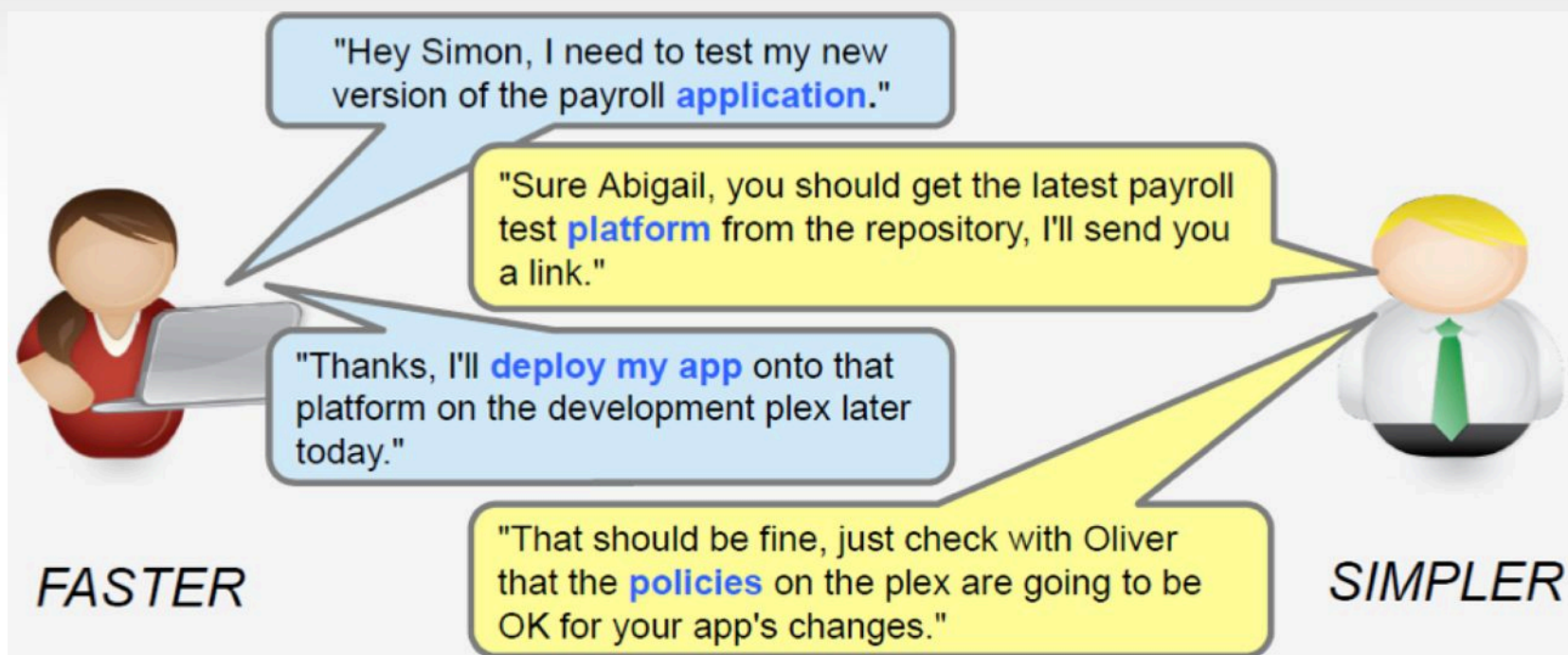


▶ Measured service

Resource usage can be **monitored**, controlled, **and reported**, providing transparency for both the provider and consumer of the utilized service.

On-demand self service

Because CICS applications are self-contained and self-describing, they can be moved through the lifecycle more quickly and reliably, with less human interaction.

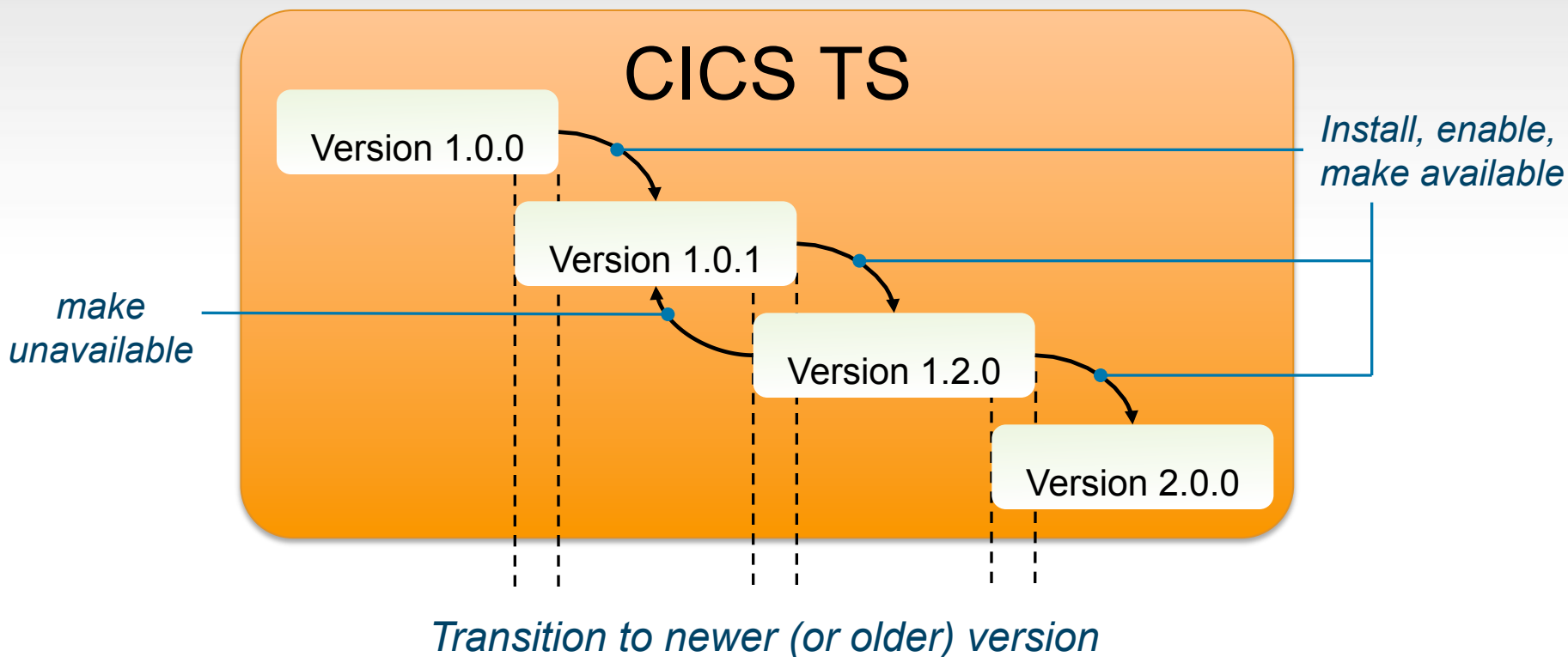


▶ On-demand self-service

A consumer can unilaterally provision computing capabilities... as needed automatically without requiring human interaction with each service provider.



On-demand self service upgrades



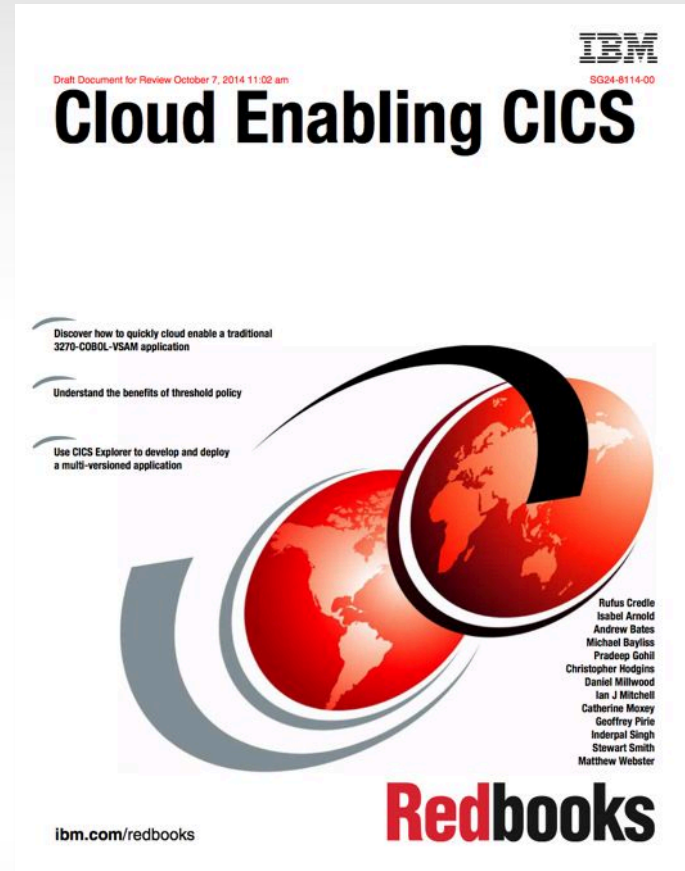
Multi version applications make it **simple to enable and disable** new versions of a CICS application, **enabling faster, more reliable, and lower risk upgrades.**



This section is from a currently unpublished Redbook.

Matthew Webster is one of the authors.

Planned availability is December 2014





Chapter 6. Package an application for multiversion deployment

In this example scenario, your company has mandated a stricter control of all clients personal data. The inquire customer operation in the GeneralInsuranceCustomer application has the ability to retrieve customer sensitive data to the operator. The operator needs to obtain the address details for the customer but the business considers the date of birth field as personal sensitive data that should not be displayed.



GeneralInsuranceCustomer application

```
SSC1      General Insurance Customer Menu

1. Cust Inquiry      Cust Number      0000000001
2. Cust Add          Cust Name :First  Andrew
                   :Last      Pandu
4. Cust Update       DOB              1950-07-11 (yyyy-mm-dd)
                   House Name
                   House Number    34
                   Postcode        PI10100
                   Phone: Home     01962 811234
                   Phone: Mob     07799 123456
                   Email Addr     A.Pandy@beebhouse.com

Select Option  1
```

Steps to deploy the new version

1. Fix bug and compile into new dataset
USERHLQ.CB12.APPLSERV.#1.#100.#0
2. Update dataset name in LIBRARY
3. Update application version to 1.100.0
4. Export, install & enable the new version
5. Validate application version 1.0.2 is still operational
6. Make application version 1.100.0 available and run



1. Fix bug and compile into new dataset USERHLQ.CB12.APPLSERV.#1.#100.#0

```
*-----*
* Process incoming commarea *
*-----*
* check commarea length
  MOVE WS-CUSTOMER-LEN          TO WS-REQUIRED-CA-LEN
  ADD WS-CA-HEADERTRAILER-LEN TO WS-REQUIRED-CA-LEN
  IF EIBCALEN IS LESS THAN WS-REQUIRED-CA-LEN
    MOVE '98' TO CA-RETURN-CODE
    EXEC CICS RETURN END-EXEC
  END-IF

  MOVE CA-CUSTOMER-NUM TO EM-CUSNUM

  PERFORM GET-CUSTOMER-INFO.

  MOVE '****_**_**' TO CA-DOB.
```

2. Update dataset name in LIBRARY

GENAAPSV

Attributes

type here to filter on Name and CICS Name

Name	CICS Name	Value
Basic		
Critical	CRITICAL	
Data Set Name 01	DSNAME01	CICSSEM.CB12.APPLSERV.#1.#100.#0
Data Set Name 02	DSNAME02	CICSSEM.CB12.APPLSERV.#1.#0.#2
Data Set Name 03	DSNAME03	
Data Set Name 04	DSNAME04	
Data Set Name 05	DSNAME05	
Data Set Name 06	DSNAME06	
Data Set Name 07	DSNAME07	
Data Set Name 08	DSNAME08	
Data Set Name 09	DSNAME09	
Data Set Name 10	DSNAME10	
Data Set Name 11	DSNAME11	
Data Set Name 12	DSNAME12	
Data Set Name 13	DSNAME13	
Data Set Name 14	DSNAME14	
Data Set Name 15	DSNAME15	
Data Set Name 16	DSNAME16	
Description	DESCRIPTION	Development load libraries for ApplicationServices
Ranking	RANKING	50
Status	STATUS	
Userdata 1	USERDATA1	
Userdata 2	USERDATA2	
Userdata 3	USERDATA3	

Attributes

3. Update application version to 1.100.0

The screenshot shows the 'GeneralInsuranceCustomer' application configuration page in the IBM Business Partner Center. The 'Overview' section is active, displaying 'General Information' and 'Actions'.

General Information
This section describes general information about this application.

Name: GeneralInsuranceCustomer
Version: 1.100.0
Description: General insurance customer application

CICS Bundles
Specify the CICS bundles that will be installed as part of this application.

- GeneralInsuranceCustomerData (1.0.0)
- GeneralInsuranceCustomerPresentation (1.0.0)
- GeneralInsuranceCustomerServices (1.0.1)

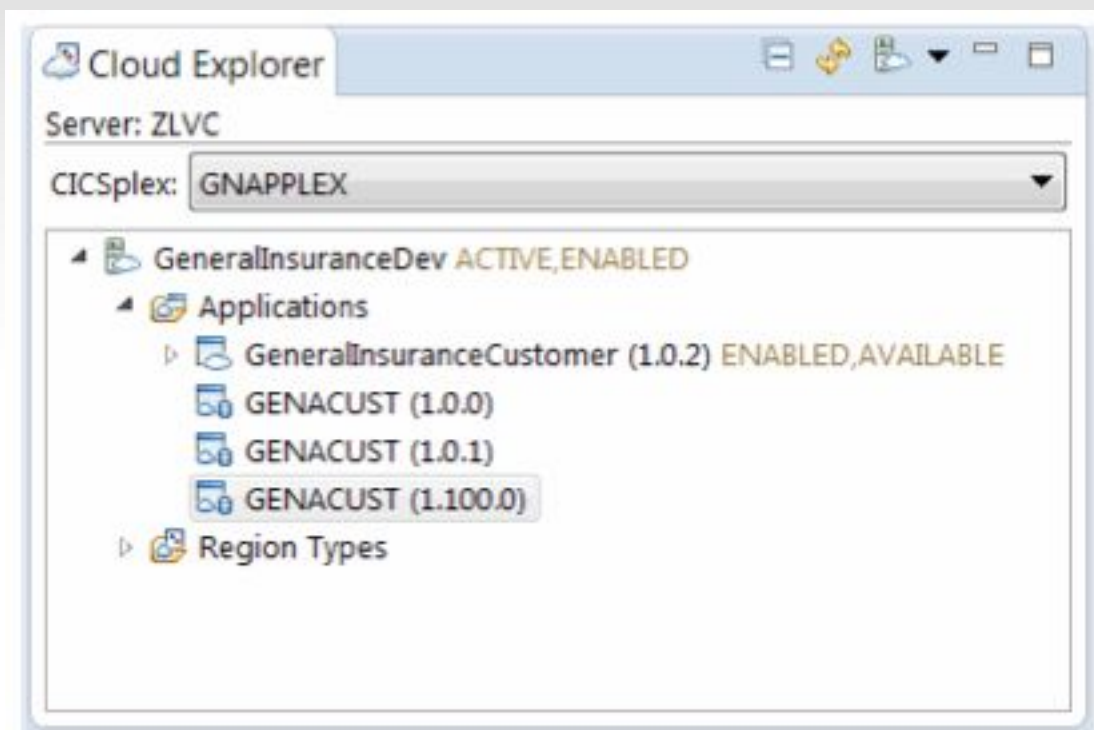
Actions
You can perform the following actions on this application:

- Create a CICS bundle to provide application dependencies, resources, and entry points.
- Add CICS bundles to the application using this editor.
- Create an application binding to bind the application to a particular platform.
- Export the application, which includes the application binding and CICS bundles, to the platform home directory in zFS.

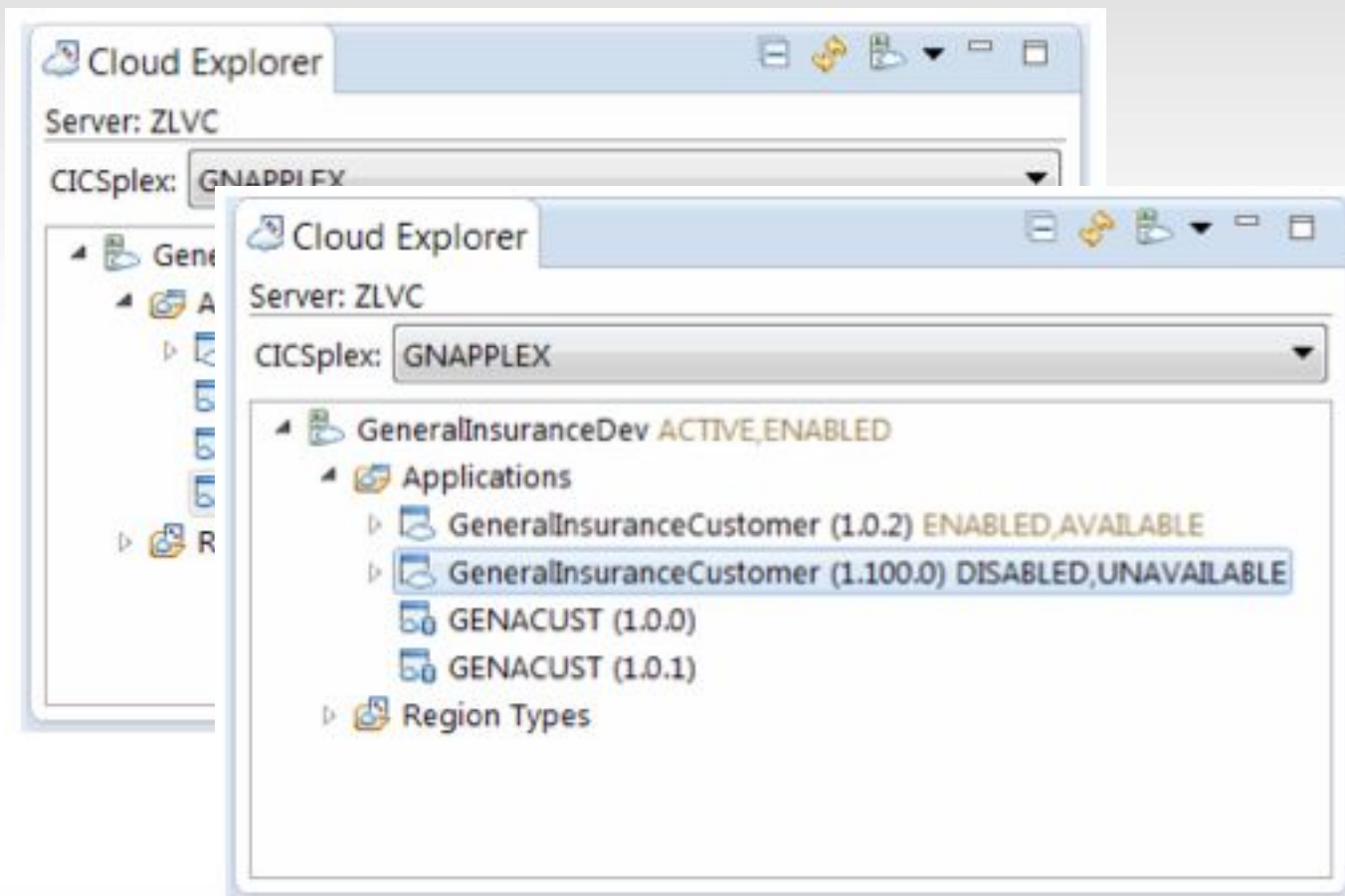
Entry Points
All entry points defined by the referenced CICS bundles are shown here.

- addCustomer (LGACUS01)
- inquireCustomer (LGICUS01)

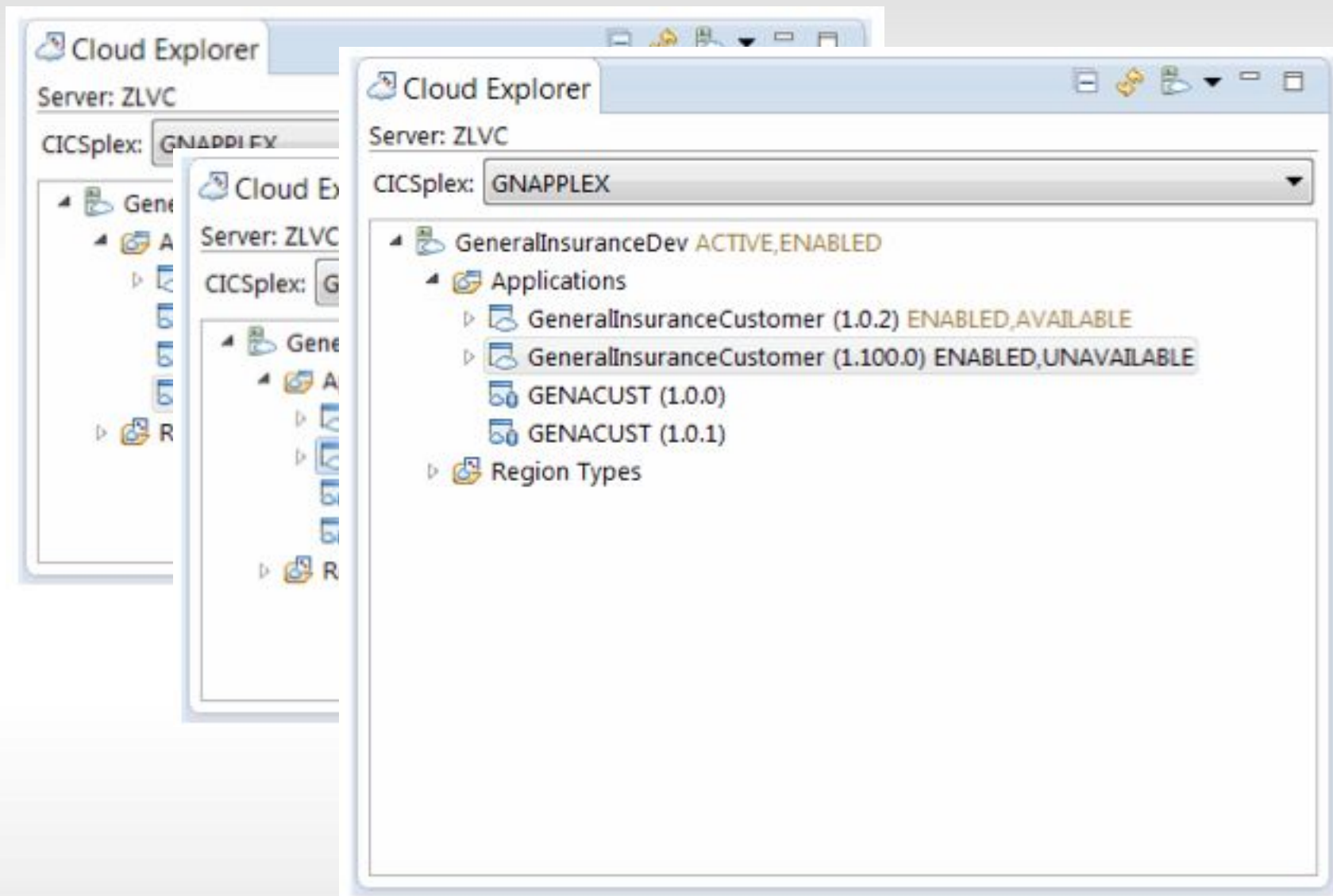
4. Export, install & enable the new version



4. Export, install & enable the new version



4. Export, install & enable the new version



The screenshot displays the Cloud Explorer interface for a server named ZLVC. The CICSplex is identified as GNAPPLEX. The main pane shows a tree view of applications under the 'GeneralInsuranceDev' environment, which is marked as 'ACTIVE, ENABLED'. The 'Applications' folder is expanded, showing the following items:

- GeneralInsuranceCustomer (1.0.2) ENABLED, AVAILABLE
- GeneralInsuranceCustomer (1.100.0) ENABLED, UNAVAILABLE
- GENACUST (1.0.0)
- GENACUST (1.0.1)
- Region Types

The 'GeneralInsuranceCustomer (1.100.0) ENABLED, UNAVAILABLE' entry is highlighted with a light blue background, indicating it is the target of the current operation.

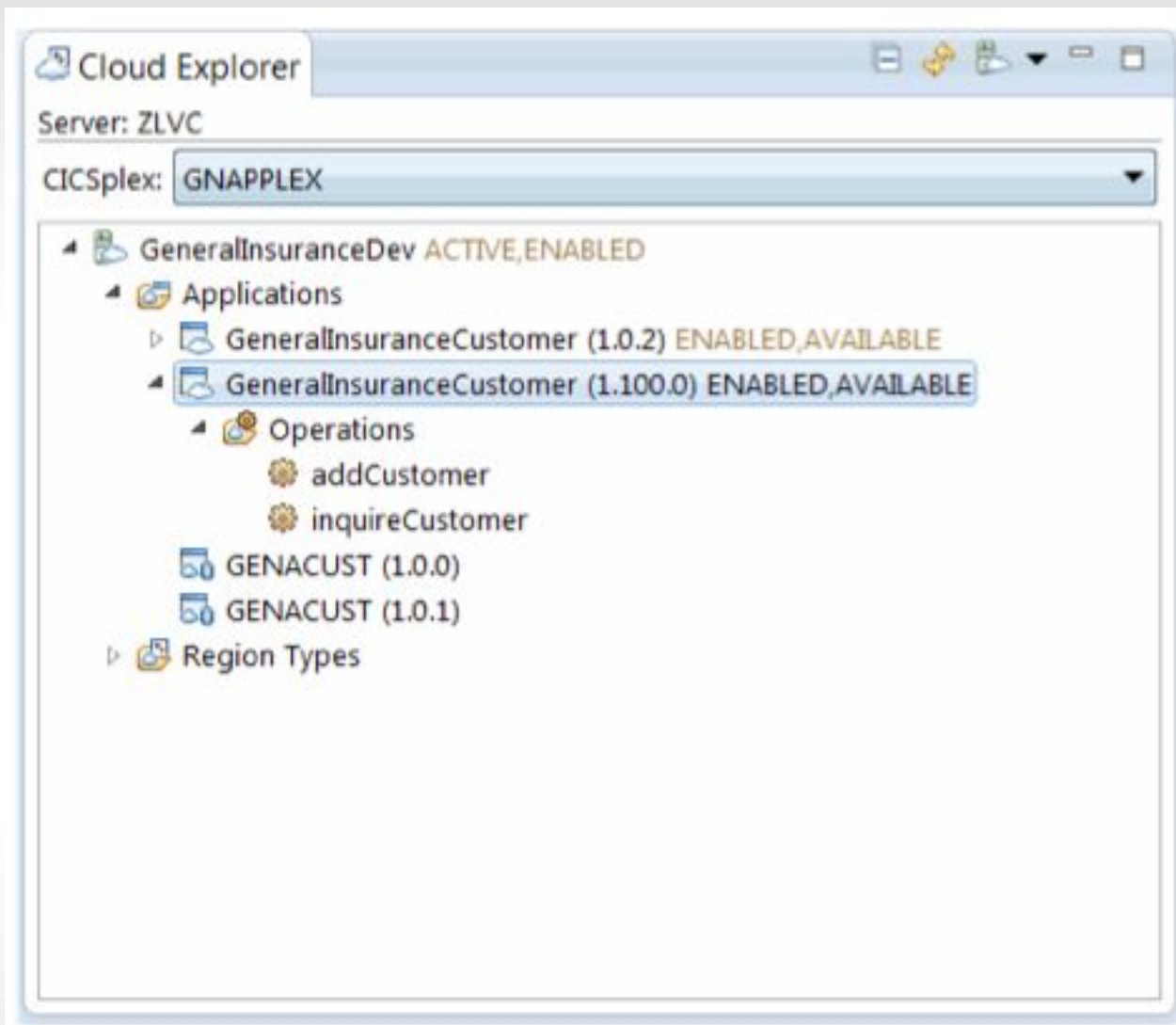
5. Validate application version 1.0.2 is still operational

```
SSC1      General Insurance Customer Menu

1. Cust Inquiry      Cust Number      0000000001
2. Cust Add          Cust Name :First  Andrew
                    :Last           Pandu
4. Cust Update       DOB             1950-07-11 (yyyy-mm-dd)
                    House Name
                    House Number    34
                    Postcode        PI10100
                    Phone: Home     01962 811234
                    Phone: Mob     07799 123456
                    Email Addr      A.Pandy@beebhouse.com

Select Option  1
```

6. Make application version 1.100.0 available and run



GeneralInsuranceCustomer application (with DOB hidden)

```
SSC1      General Insurance Customer Menu

1. Cust Inquiry      Cust Number      0000000001
2. Cust Add          Cust Name :First  Andrew
                    :Last      Pandy
4. Cust Update       DOB              ****-**-** (yyyy-mm-dd)
                    House Name
                    House Number  34
                    Postcode      PI10100
                    Phone: Home    01962 811234
                    Phone: Mob     07799 123456
                    Email Addr     A.Pandy@beebhouse.com

Select Option  1
```



Planned availability for this
IBM Redbook is
December 2014

IBM
SG24-8114-00

Draft Document for Review October 7, 2014 11:02 am

Cloud Enabling CICS

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

Understand the benefits of threshold policy

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

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

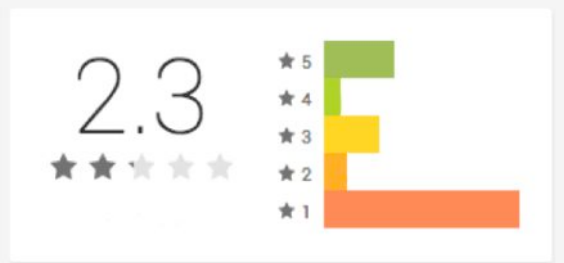
ibm.com/redbooks

Redbooks

On-demand self service

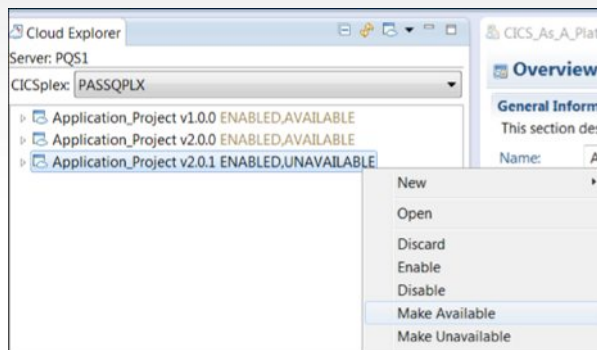
If you find a bug in a new version of an application, production fixes can now be updated extremely rapidly.

Reviews



Step 1

After fixing the bug in the code, repackage it with a new micro version number



Step 2

Once installed, switching to a new version of the application is simply a case of making it “available”



Step 3

CICS takes care of moving clients to the new version of the application across all regions within a platform

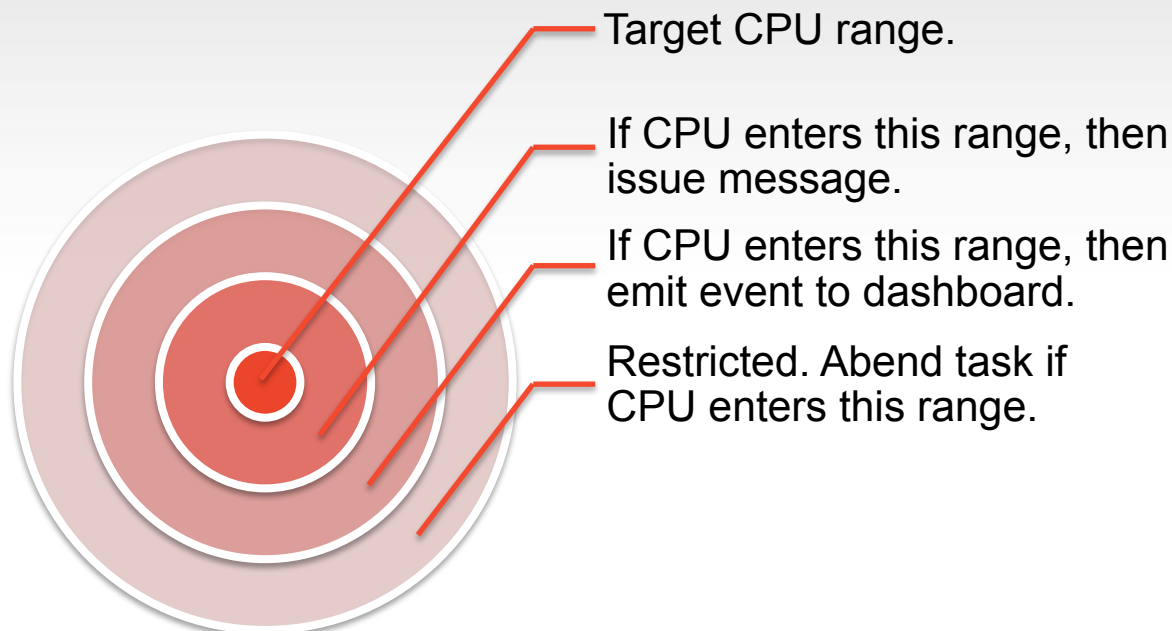
▶ On-demand self-service

A **consumer can unilaterally provision computing capabilities**... as needed automatically **without requiring human interaction with each service provider.**

Policing Costs and Service Levels

Policy Types:

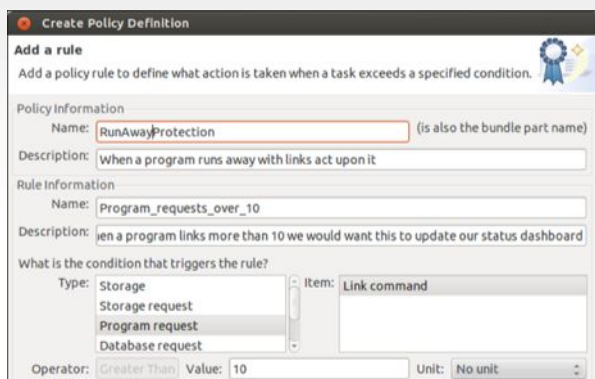
- CPU time
- Storage requests & bytes
- SQL requests
- LINK requests
- FILE requests
- Elapsed time
- TDQ requests & bytes
- TSQ requests & bytes
- START requests
- SYNCPOINT requests



You can now **define a policy to trigger an action** when an application consumes more resources than it is entitled to, helping to **manage critical resources and better control application costs.**

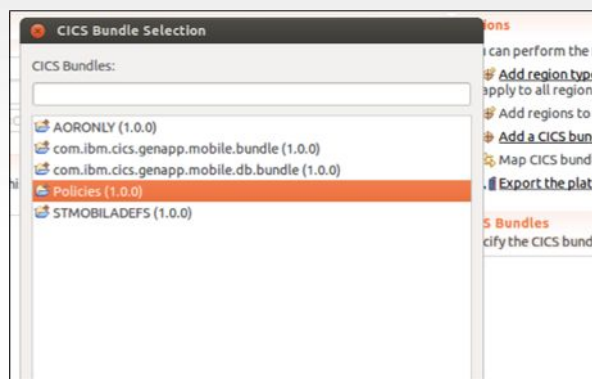
Measured Service via Policies

You can now define a policy to trigger an event when an application consumes too much total elapsed CPU time, warning of additional costs



Step 1

Define the policy thresholds and trigger action that CICS should take



Step 2

Associate the policy with the appropriate platform or application and deploy



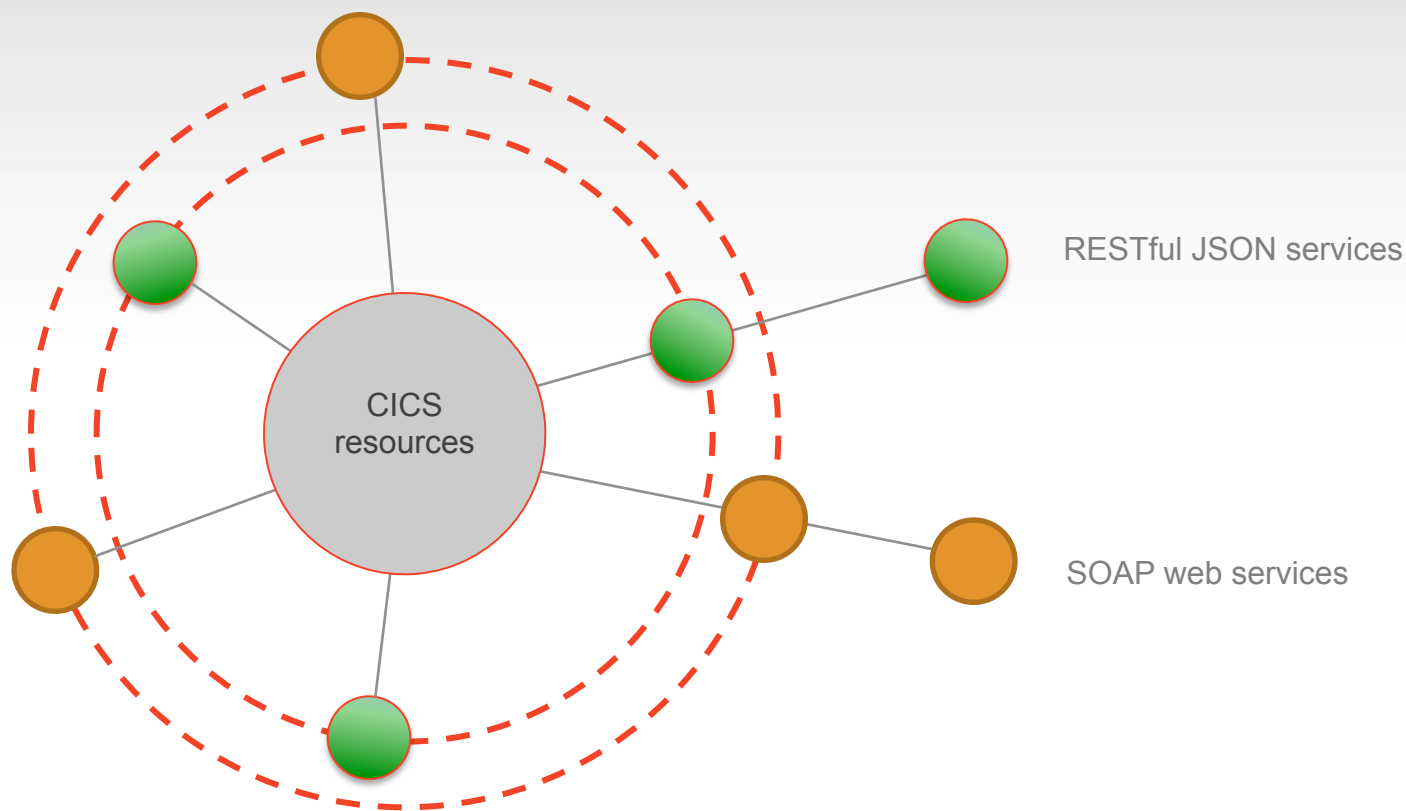
Step 3

When the threshold is breached, CICS triggers an event, updating an operations dashboard

▶ 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)

Speaking the Language of Mobile



You can now **extend your SOA to include RESTful JSON services**, enabling CICS to **communicate with Mobile servers** in the language those servers will use to communicate with Mobile devices.

Broad Network Access

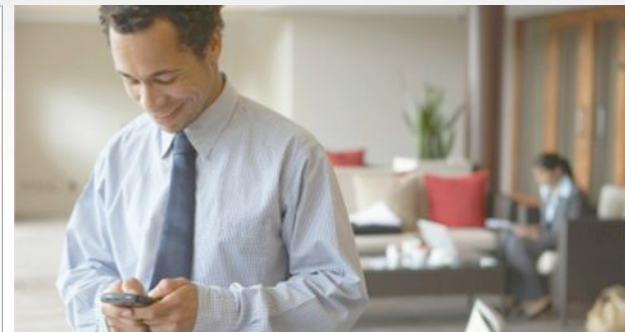
You can now use standard CICS SOA enablement tools and technologies to provide Mobile ready interfaces for Mobile application consumption.

```

./Andrew/mobileapp/ca_request.json
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "description": "Request schema for the STPN001 JSON interface",
  "type": "object",
  "properties": {
    "STPN001operation": {
      "type": "object",
      "small_record_for_wbbservice": {
        "type": "object",
        "properties": {
          "st_ip comm": {
            "type": "object",
            "properties": {
              "cid": {
                "type": "string"
              }
            }
          }
        }
      }
    }
  }
}
  
```

```

function getCustomerDetails(custNum) {
  var pathURL = "GENAPP/getCustomerDetails";
  var request=
  {
    "LGICUS01operation":{
      "ca" : {
        "ca_request_id" : "01ICUS",
        "ca_return_code" : "00",
        "ca_customer_num" : custNum,
        "ca_num_policies" : ""
      }
    }
  };
}
  
```



Step 1

DFHLS2JS to generate the JSON artifacts for the target CICS service.

Step 2

Mobile developer uses JSON schema to build a Worklight adapter.

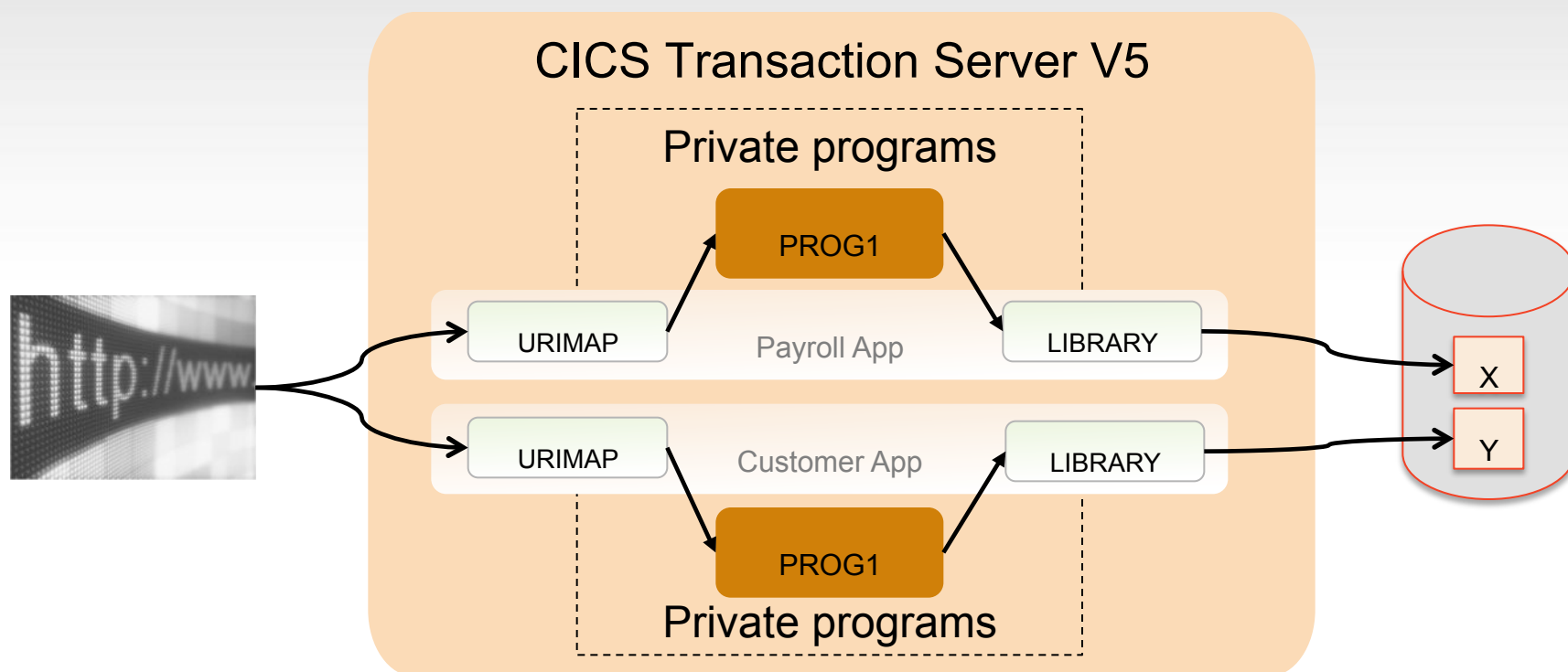
Step 3

Frontend mobile developer calls the Worklight adapter which calls the service hosted in CICS.

▶ Broad Network Access

Capabilities are available over the network and accessed through **standard mechanisms** that promote use by heterogeneous thin or thick client platforms (e.g., **mobile phones, tablets, laptops, and workstations**).

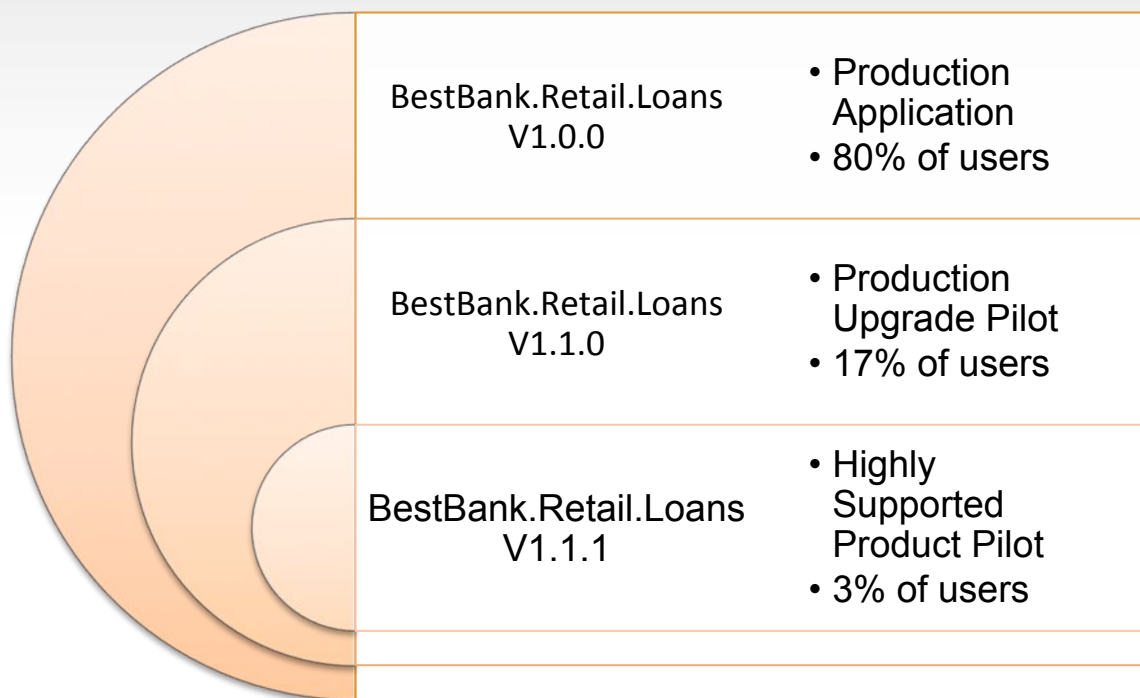
Private Programs



Application packaging helps you **consolidate onto fewer regions** by providing private program definitions

Resource Pooling Example

Multiple tenants, running different versions of an application can now be served from the same CICS regions



▶ Resource Pooling

The provider's computing resources are pooled to **serve multiple consumers using a multi-tenant model**, with different physical and **virtual resources dynamically assigned and reassigned** according to consumer demand.

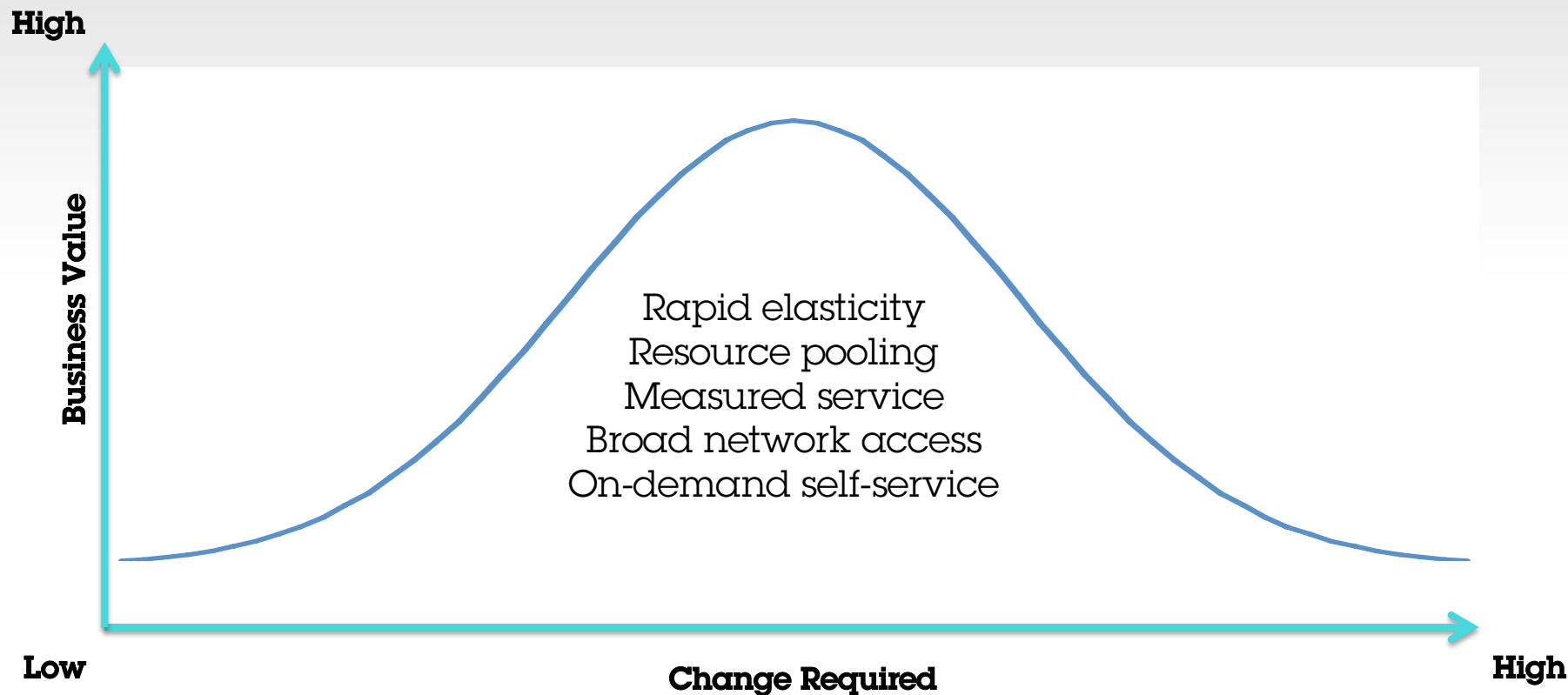


In summary

- A CICS Cloud...
 - is a pattern based, policy managed, private CICS cloud environment
 - can improve the agility of CICS application deployments whilst reducing the risk of implementation errors
- The 3 key components of a CICS cloud architecture are
 - Applications, Platforms and Policies
- Applying cloud principles to CICS
 - CICS **applications** and required CICS **platform** services are deployed and managed by CICS according to a set of **policies**.
 - IBM is enhancing CICS to better implement the the 'Essential Characteristics of Cloud Computing' as defined by NIST.



The Business Value CICS Cloud adoption



Small changes to **existing CICS applications** and processes can deliver **large value from the CICS Cloud** capabilities.



More on CICS Cloud at SHARE in Seattle

**Experiences,
People and
Ideas Converge**
to Power Business Outcomes

Celebrating 60 Years of SHARE

SHARE
in Seattle **2015**

March 1-6
Sheraton Seattle
Seattle, WA

Plus numerous other CICS topics as part of the **CICS project**, including **CICS TS V5 update, Liberty, mobile, performance, DevOps, Explorer, WLM, best practices** and much, much more.



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Questions or Comments?