IBM Education Assistance for z/OS V2R3

IBM Cloud Provisioning and Management for z/OS
z/OSMF Cloud Provisioning

Agenda

- Trademarks
- Session Objectives
- Overview
- Installation
- Usage & Invocation
- Interactions & Dependencies
- Migration & Coexistence Considerations
- Validation During ESP
- Session Summary
- Appendix

Trademarks

- See url http://www.ibm.com/legal/copytrade.shtml for a list of trademarks.
- Additional Trademarks:
  - None.

Session Objectives

- This session will describe how you can use the power of IBM Cloud Provisioning and Management for z/OS to provision z/OS based software services.
- This session will describe the components of z/OSMF that provide the Cloud Provisioning and Management function.
- This session will show the general flow of setting up and provisioning an IBM middleware service.

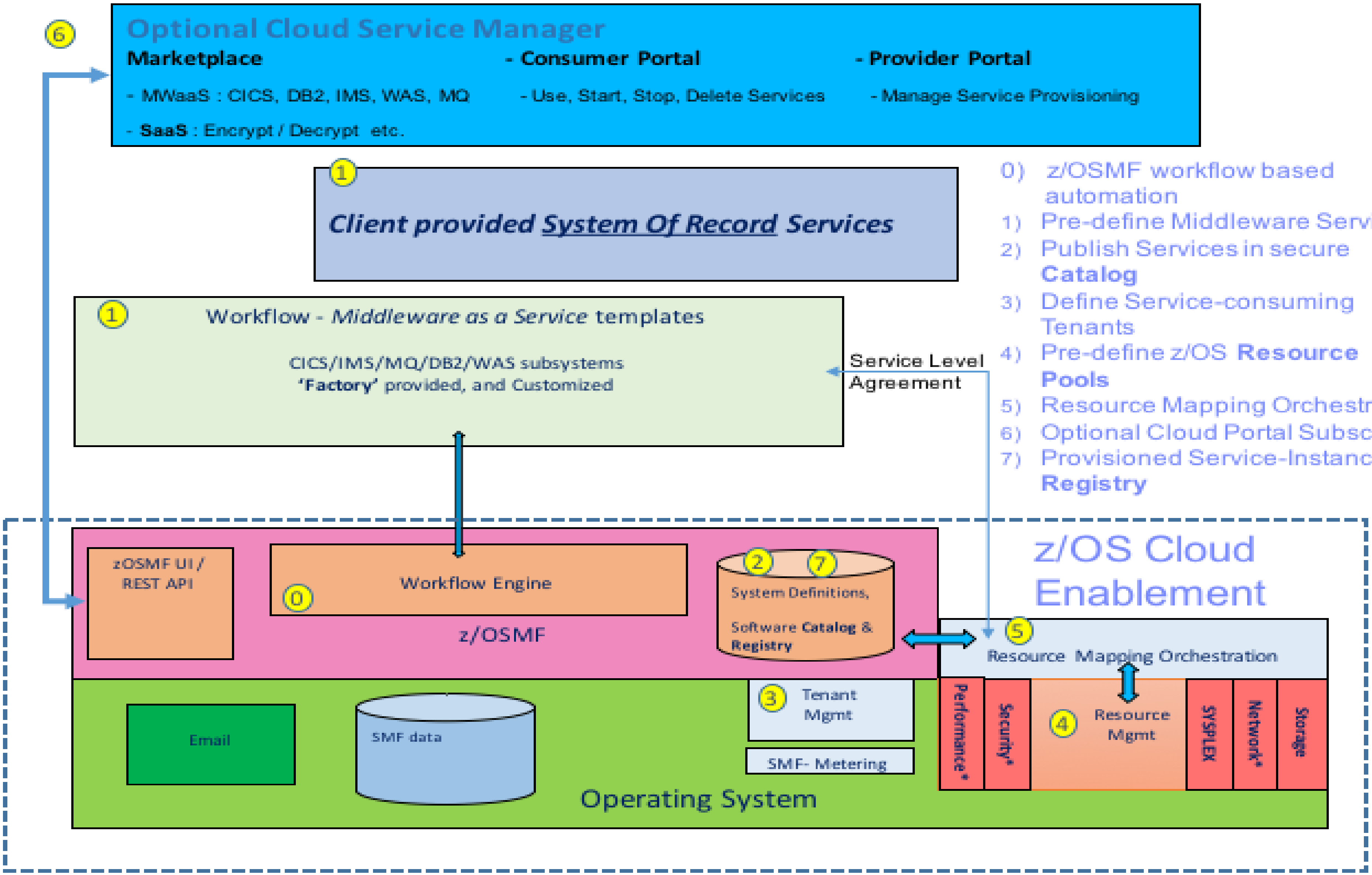
Overview

- Problem Statement / Need Addressed
  - Normally on z/OS it takes days or months to provision instances of IBM software (Middleware)
    - Complex and error prone manual processes for provisioning
- Solution
  - Cloud provisioning on z/OS provides ability to provision multiple workloads from multiple tenants in a single z/OS instance with automated and repeatable processes
    - Resource Orchestration: tenants(who), services(what), resource pools(where).
    - Software configuration catalog contains a repository of services (templates).
    - Software instance registry contains provisioned services (instances).
    - Factory provided workflows for CICS, DB2, MQ, IMS, WebSphere Liberty, WebSphere Traditional, User Management services
    - Workflow Editor to simplify and promote workflow authoring

Overview

- Benefit / Value
  - ***Enable z/OS clients to become Service Providers***
    - Infrastructure that enables automated ‘**consumer-driven’** provisioning, and z/OS Service-Provider management of z/OS Middleware as a Service (MWaaS)
  - Allow rapid ***self-service*** provisioning of software services.
    - Pre-defined templates bundle steps to create the software instances.
    - Provisioning is completely automated.
    - Provisioning instances of software now takes minutes.
    - Developers will be able to provision and manage development environment on demand with appropriate isolation.
  - ***High level of resource sharing and fully automated provisioning*** lowers z/OS Software Provider costs

Overview: High Level Architecture


6
Optional Cloud Service Manager
Marketplace
- Consumer Portal
- Provider Portal
- MWaaS : CICS, DB2, IMS, WAS, MQ
- Use, Start, Stop, Delete Services
- Manage Service Provisioning
- SaaS : Encrypt / Decrypt etc.
1
Client provided System Of Record Services
1
Workflow - Middleware as a Service templates
CICS/IMS/MQ/DB2/WAS subsystems
'Factory' provided, and Customized
Service Level Agreement
zOSMF UI / REST API
0
Workflow Engine
z/OSMF
2
7
System Definitions,
Software Catalog & Registry
z/OS Cloud Enablement
5
Resource Mapping Orchestration
Performance*
Security*
4
Resource Mgmt
SYSPLEX
Network*
Storage
Email
SMF data
3
Tenant Mgmt
SMF- Metering
Operating System

0) z/OSMF workflow based automation
1) Pre-define Middleware Services
2) Publish Services in secure **Catalog**
3) Define Service-consuming Tenants
4) Pre-define z/OS **Resource Pools**
5) Resource Mapping Orchestration
6) Optional Cloud Portal Subscribe
7) Provisioned Service-Instance **Registry**

Overview: Glossary Of Terms - Roles

- Landlord
  - A user who defines the domain, domain administrators, and the associated systems, for the cloud provisioning and management.
  - Defined by permitting user to *IZUDFLT.ZOSMF.RESOURCE_MANAGEMENT.IYU* SAF resource
- Domain Administrator
  - A user who manages a domain. The domain administrator is responsible for defining software services, tenants, and resource pools for the domain, and managing the relationship across tenants, services, and resource pools.
- Security Administrator
  - A user (or functional user) with "Special" privileges. Security administrator id is used to automatically manage (create, update, delete) the SAF profiles and groups used for authorizing access to various provisioning components and their resources

Overview: Glossary Of Terms - Roles

- Approver
  - A user who is responsible for validating and approving the templates
  - Business level, service level and technical level approvers
- Network Administrator
  - User who manages network configuration for z/OS. Network administrator sets up network pool for template using z/OSMF “Configuration Assistant” tasks.
- Workload Manager Administrator
  - User who manages workload manager service definition for z/OS. Workload manager administrator sets up WLM pool for template using z/OSMF “Workload Management” tasks.
- Consumer
  - A user who has access to the software services and provision a software services instance, using a software services template, and can manage the lifecycle of a software services instance.

Overview: Glossary of Terms - Resources

- Domain - Defines the management scope for tenants, services, and resource pools.
  - has a single security administrator and one or more domain administrators
  - has zero or more network administrators and/or workload administrators (optional)
  - has zero or more approvers (optional)
  - has one or more tenants
    - a single template can be associated with multiple tenants in that domain
  - has one or more templates
- Template - Represents a z/OS middleware or a z/OS middleware resource service.
  - each template is associated with only one domain
  - each template contains:
    - definition to provision a software service
    - definition of the actions that can be performed on that provisioned service
    - optional administrator and consumer documentation
  - all the templates are contained in a Software Services Catalog

Overview: Glossary Of Terms - Resources

- Tenant - Defines the resource sharing scope, for example, a line of business or a class of users.
  - has one or more users (aka consumers) or groups of users
  - has one or more resource pool associated with the service in a domain
- Resource Pool - Identifies z/OS resources that are required by a z/OS software service. A resource pool defines the scope of shared z/OS resources within a cloud domain that has multiple tenants.
  - each template association with a tenant creates a resource pool
  - contains entitlement policy which dictates how many instances can be provisioned by the consumers of the tenant
- Instance - Represents software that has been provisioned, typically through the use of templates
  - created when a software service is provisioned
  - used to monitor the provisioned service defined by the template and perform pre defined actions on the provisioned service
  - all instances are contained in the Registry

Overview : Multi-Tenant Hierarchy

Intranet Domain

Business Partner Domain

Overview : z/OS Cloud Security

- ‘Automatic’ provisioning of *Cloud* security constructs at multi-tenant administration time and during MWaaS definition time
  - **izu.provisioing.security.config.rexx** in <user-dir>/workflow contains various RACF commands that will be automatically executed

Secure Infrastructure

- Middleware specific security setup done using ‘legacy’ SAF rule updates during service instance provisioning
  - Middleware workflow includes steps to configure security as per product documentation

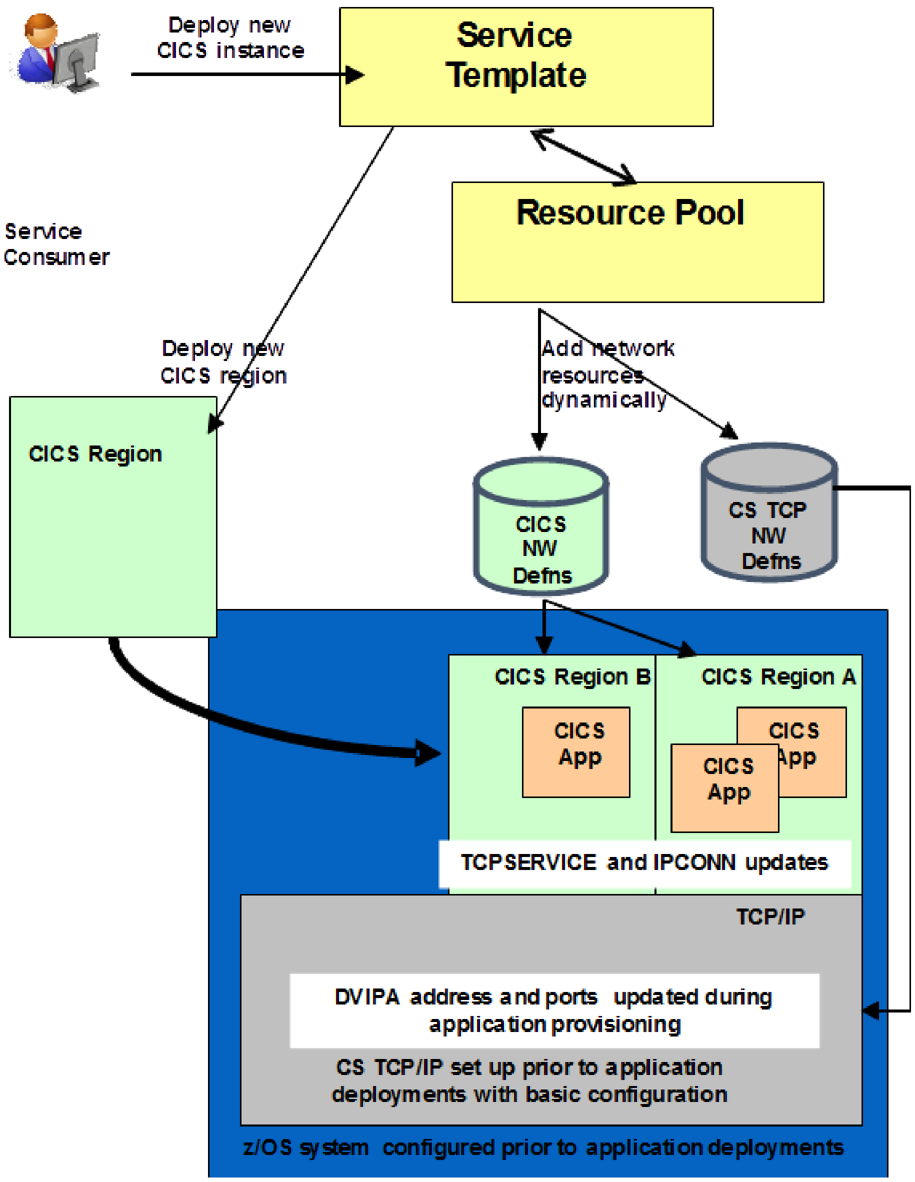
Overview : Network Resource Pool

- z/OS Communications Server provides a Cloud Network Resource manager that automates the rapid provisioning of networking resources
  - While preserving administrative controls, such as IP address and port provisioning guidelines (standards)
  - With limits on the number of IP addresses and ports that new services can consume (quotas)
  - Network administrator per-configures pool of IP, Ports or SNA APPL Ids based on template resource requirement

- REST APIs are provided to dynamically obtain and configure network resources (e.g. IP, Port or SNA APPL ID)from the pool with out any manual intervention

- Delivered as an extension to the z/OS Communications Server Configuration Assistant as part of z/OSMF

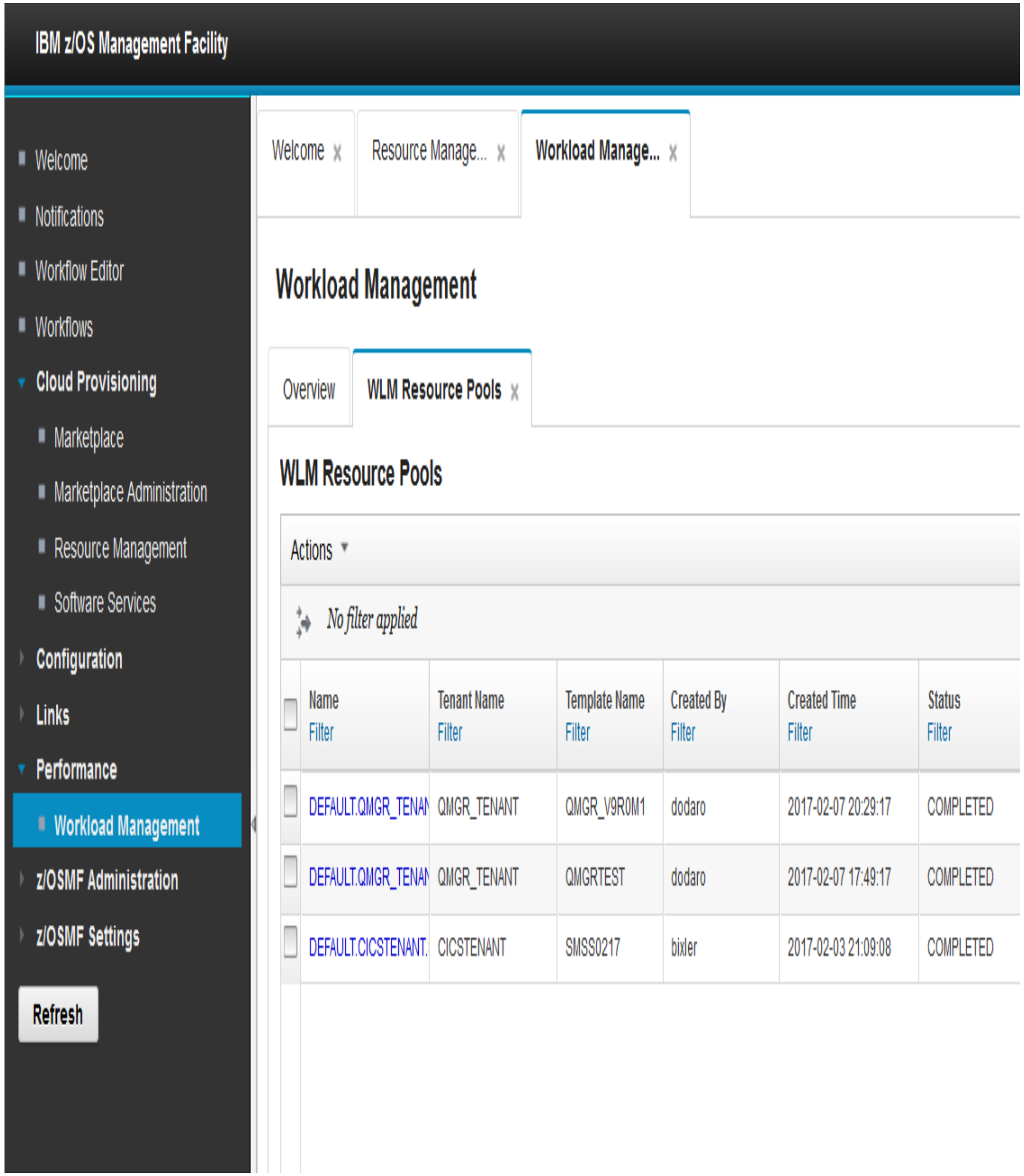
CICS deployment example



Deploy new CICS instance
Service Template
Resource Pool
Service Consumer
Deploy new CICS region
Add network resources dynamically
CICS Region
CICS NW Defns
CS TCP NW Defns
CICS Region B
CICS Region A
CICS App
CICS App
CICS App
TCPSERVICE and IPCONN updates
TCP/IP
DVIPA address and ports updated during application provisioning
CS TCP/IP set up prior to application deployments with basic configuration
z/OS system configured prior to application deployments

Overview : WLM Resource Pool

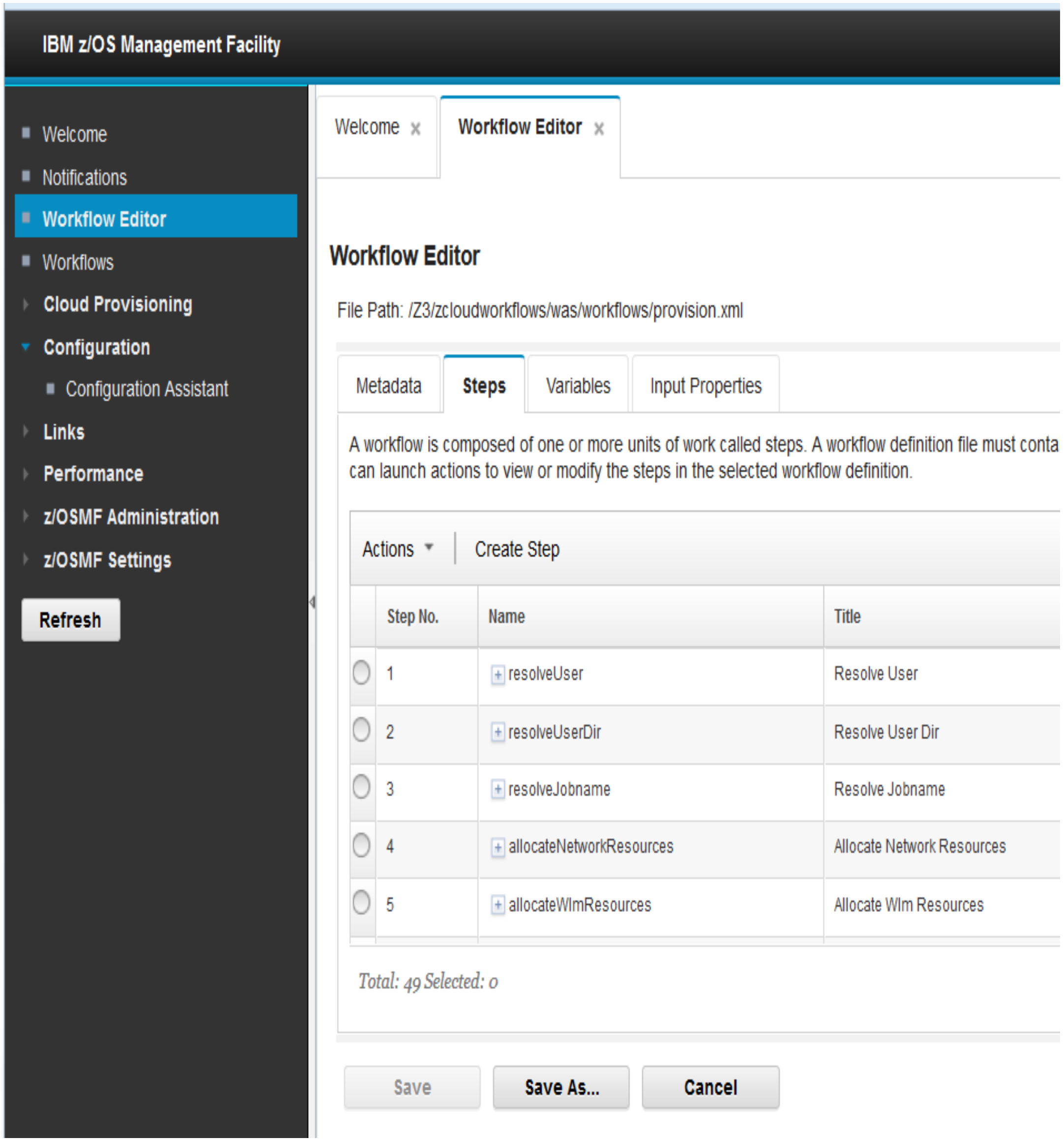
- As part of automated service provisioning, service instance must be assigned appropriate WLM service class and report class based on SLA expectation requested by tenant
  - Today's process requires requesting updates from a WLM administrator - process can take hours/days/weeks
- With z/OS Cloud support, WLM provides mechanism to pre define pool with report class and service class definition.
  - WLM Administrator builds this pool and maps SLA requested by tenant to appropriate WLM service class
- REST APIs are provided to dynamically generate classification rule with appropriate report class and service class at service instance creation time



□	Name Filter	Tenant Name Filter	Template Name Filter	Created By Filter	Created Time Filter	Status Filter
□	DEFAULT.QMGR_TENAN	QMGR_TENANT	QMGR_V9R0M1	dodaro	2017-02-07 20:29:17	COMPLETED
□	DEFAULT.QMGR_TENAN	QMGR_TENANT	QMGRTEST	dodaro	2017-02-07 17:49:17	COMPLETED
□	DEFAULT.CICSTENANT.	CICSTENANT	SMSS0217	bixler	2017-02-03 21:09:08	COMPLETED

Workflow Editor

- Browser based interface to create or modify workflow
- No XML knowledge required to build workflow
- Intuitive user interface guides user through various tasks to create workflow
- Online help and validation as part of workflow construction
- Ability to build partial workflow and complete it later.



Workflow Editor

File Path: /Z3/zcloudworkflows/was/workflows/provision.xml

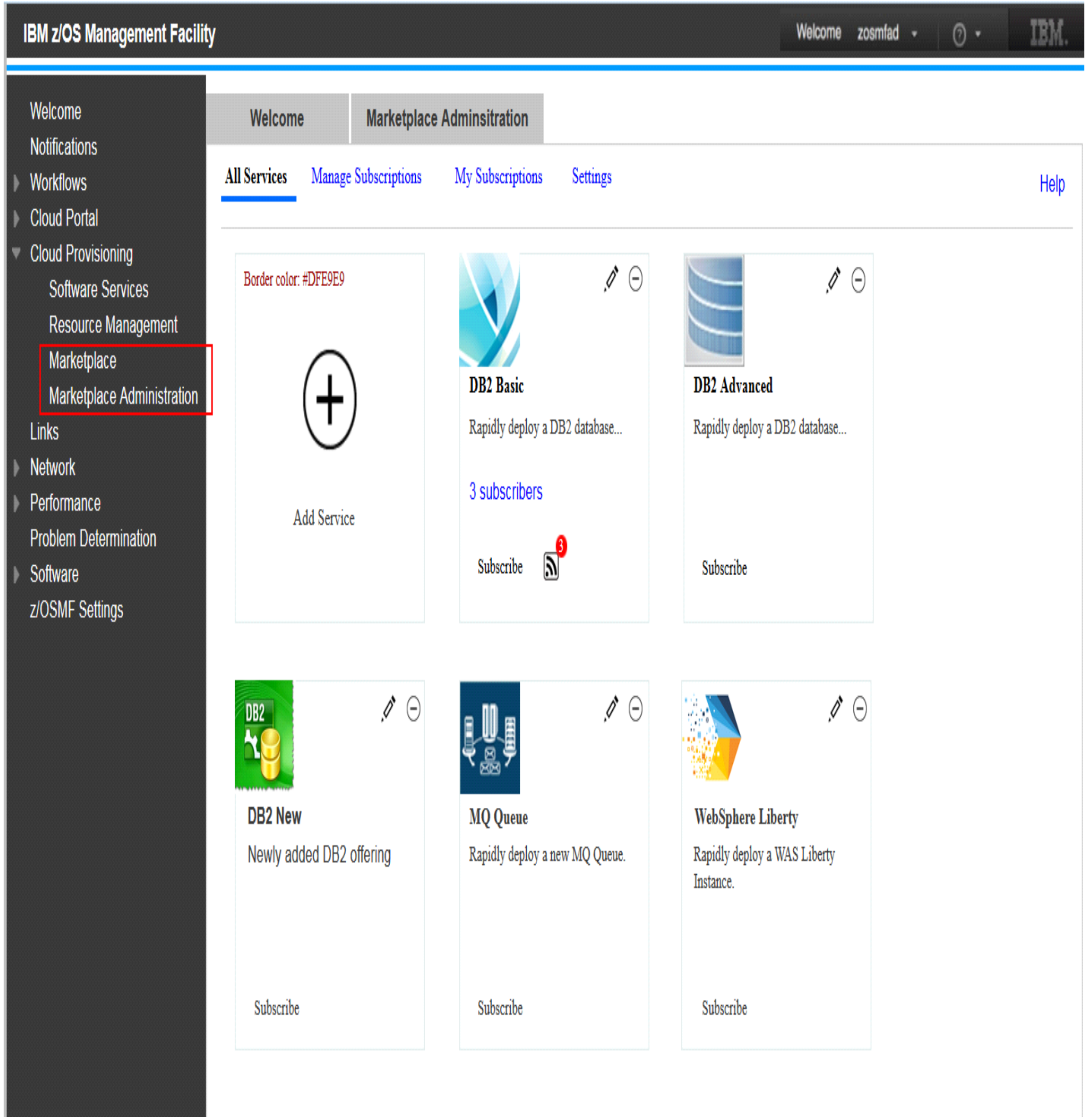
A workflow is composed of one or more units of work called steps. A workflow definition file must conta
can launch actions to view or modify the steps in the selected workflow definition.

	Step No.	Name	Title
○	1	+ resolveUser	Resolve User
○	2	+ resolveUserDir	Resolve User Dir
○	3	+ resolveJobname	Resolve Jobname
○	4	+ allocateNetworkResources	Allocate Network Resources
○	5	+ allocateWlmResources	Allocate Wlm Resources

Total: 49 Selected: 0

Overview : z/OS Cloud Portal

- Sample portal to support building market place for services published in z/OSMF software catalog
- Provides consumer portal for consumer centric view of provisioned services
- Interacts with z/OSMF software catalog and instance registry via REST APIs provided by z/OSMF



DB2 Basic: Rapidly deploy a DB2 database...

DB2 Advanced: Rapidly deploy a DB2 database...

DB2 New: Newly added DB2 offering

MQ Queue: Rapidly deploy a new MQ Queue.

WebSphere Liberty: Rapidly deploy a WAS Liberty Instance.

Installation

- IBM Cloud Provisioning and Management is shipped as z/OSMF Provisioning plugin (izuprovisioning.ear) and installed with z/OSMF.
  - Rolled back to z/OS V2R2 and z/OSMF V2R1 via PTF
- RACF customers must apply APAR OA50130 to make the ZMFCLOUD resource class available.
  - This class must be RACLISTed.
- The IZUSEC job in SAMPLIB updated with
  - Security setup for default domain and default tenant.
  - Security setup for landlord and various administrator roles.
  - IZUCASEC setup for configuration assistant.
  - IZUWMSEC for workload management.
- New IZUPRMxx parameter: CLOUD_SAF_PREFIX('IYU')
  - Used as root for group names, resource identifiers and in resource profile names.

Initialization

- Initialization Assists
  - Creates the default domain and default tenant if they don't exist
  - Creates the IYUCLOUD group with the local system entry added to the group.
  - Copies dynamic security controls REXX exec **izu.provisioing.security.config.rexx** from <code-root> to <user-dir>/workflow and sets owner/permissions so only IZUSECAD members can modify it. (owner IZUSVR:IZUSECAD and permissions 570)
- Post-Install Configuration
  - Security setup for the initial Cloud Provisioning environment must be performed. See SAMPLIB(IZUSEC)
  - ACF2 and TopSecret shops must customize the dynamic security controls REXX exec for their environments. RACF support is shipped.

Usage & Invocation: Domain Admin Flow

Landlord defines domain

domain admin defines and updates template

approvers review and approve the template

domain admin defines tenant(s) in the domain

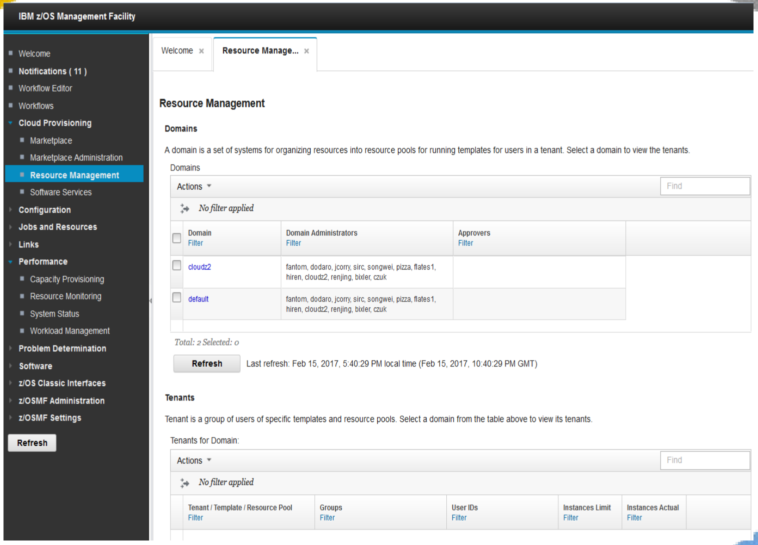
domain admin associates template with tenant which creates a new resource pool

resource admins build the resource pool definition

domain admin test runs the template

domain admin publishes template which makes it visible to tenant consumers

service update is required so domain admin creates a new template version



Resource Management

Domains

A domain is a set of systems for organizing resources into resource pools for running templates for users in a tenant. Select a domain to view the tenants.

Domains

Actions ▾ Find

No filter applied

□	Domain Filter	Domain Administrators Filter	Approvers Filter
□	cloudz2	fantom, dodaro, jcorry, sirc, songwei, pizza, flates1, hiren, cloudz2, renjing, bixler, czuk	
□	default	fantom, dodaro, jcorry, sirc, songwei, pizza, flates1, hiren, cloudz2, renjing, bixler, czuk	

Total: 2 Selected: 0

Refresh Last refresh: Feb 15, 2017, 5:40:29 PM local time (Feb 15, 2017, 10:40:29 PM GMT)

Tenants

Tenant is a group of users of specific templates and resource pools. Select a domain from the table above to view its tenants.

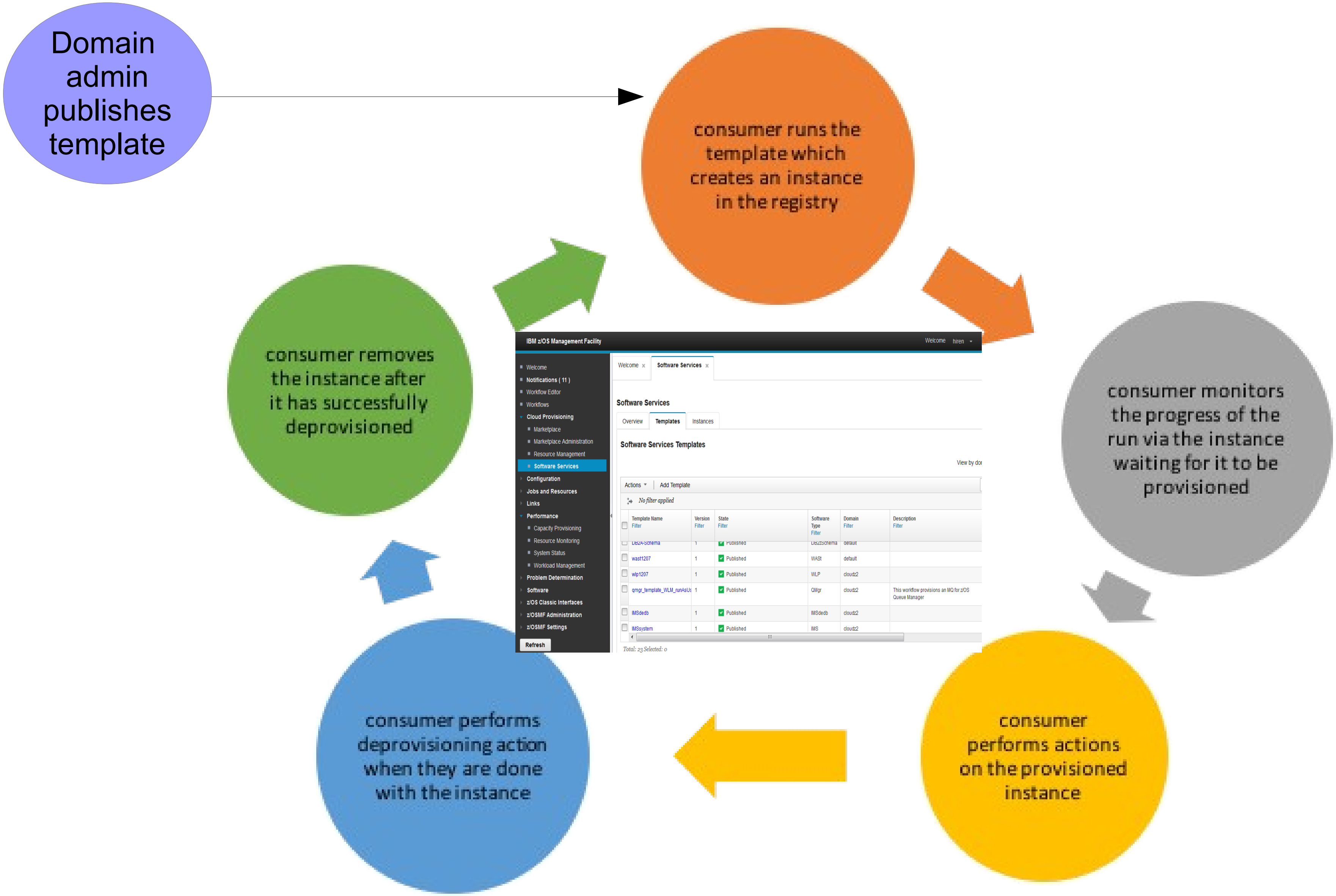
Tenants for Domain:

Actions ▾ Find

No filter applied

Tenant / Template / Resource Pool Filter	Groups Filter	User IDs Filter	Instances Limit Filter	Instances Actual Filter

Usage & Invocation: Consumer Flow



Domain admin publishes template

consumer runs the template which creates an instance in the registry

consumer monitors the progress of the run via the instance waiting for it to be provisioned

consumer performs actions on the provisioned instance

consumer performs deprovisioning action when they are done with the instance

consumer removes the instance after it has successfully deprovisioned

Software Services

Software Services Templates

No filter applied

□	Template Name Filter	Version Filter	State Filter	Software Type Filter	Domain Filter	Description Filter
□	DB2A-Schema	1	✓ Published	DB2zSchema	default	
□	wast1207	1	✓ Published	WASt	default	
□	wlp1207	1	✓ Published	WLP	cloudz2	
□	qmgr_template_WLM_runAsUs	1	✓ Published	QMgr	cloudz2	This workflow provisions an MQ for z/OS Queue Manager
□	IMSdedb	1	✓ Published	IMSdedb	cloudz2	
□	IMSsystem	1	✓ Published	IMS	cloudz2	

Total: 23 Selected: 0

Usage & Invocation: Further Information

- See the appendix for screen shots covering the usage and flow of the Cloud Provisioning browser based user interface.
- See the appendix for the large list of Restful APIs that are available for the configuration and display of Cloud Provisioning information.

Interactions & Dependencies

Software Dependencies

  - None.

- Hardware Dependencies
  - None.
- Exploiters
  - The following are delivering templates for provisioning software services
    - CICS, MQ, IMS, DB2, WAS Liberty, WAS Traditional
    - http://www-03.ibm.com/systems/z/os/zos/features/zosmf/cloud/

z/OS V2.3 Enhancements

- Ability to provision Middleware service instance on any z/OS system in the Sysplex
- Ability to manually define security constructs for cloud resources when automatic security definition is not permitted
- Ability to suspend/resume service provisioning
- Audit records when identity switch takes place to perform privileged operation
- “Action” Editor to build/modify actions that can be performed on provisioned service instance.
- Rollback to z/OS V2.2 via APAR PI77388

Session Summary

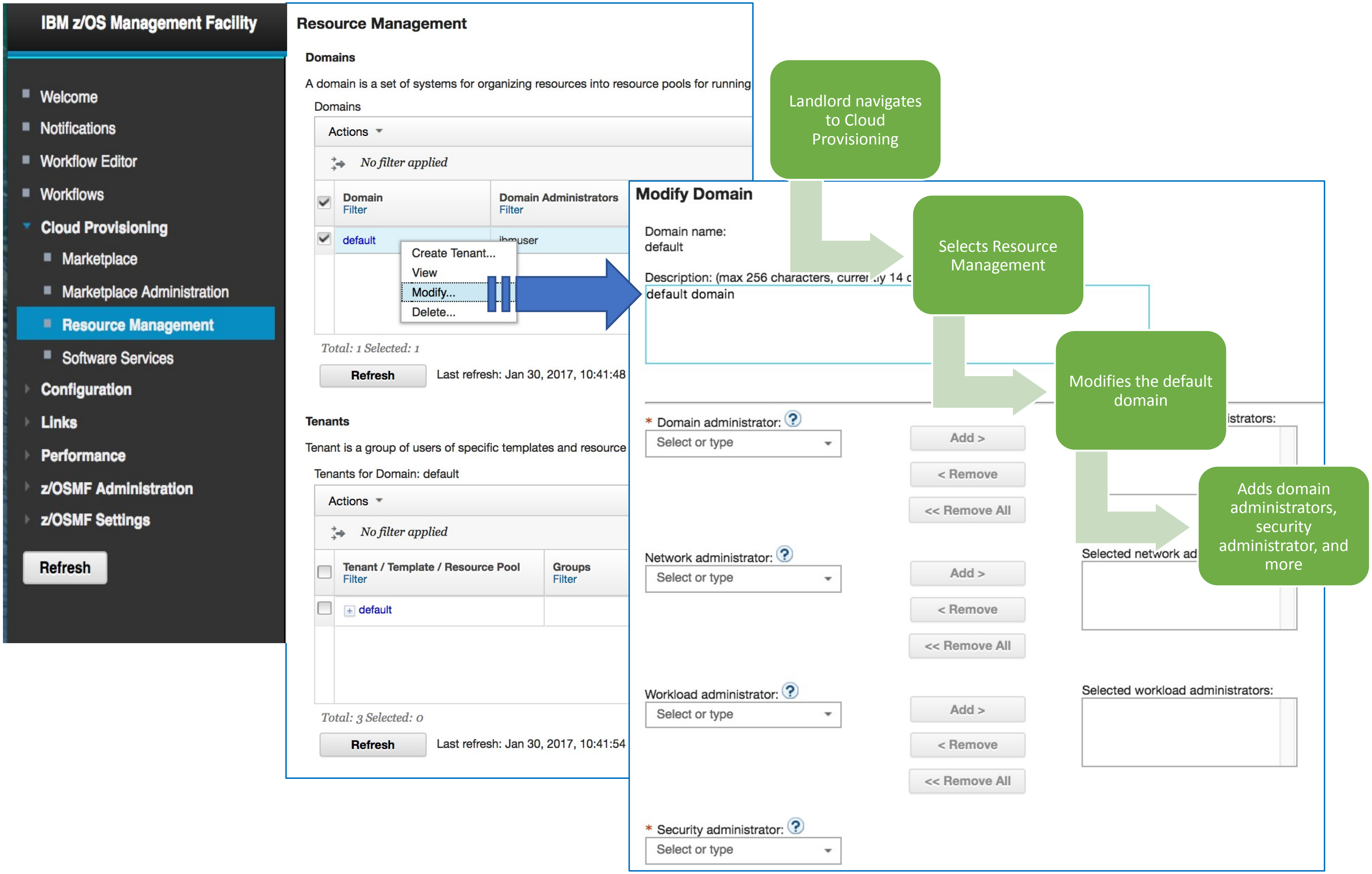
- Cloud Provisioning provides simplification and improves configuration and deployment of z/OS software components, allowing improvements in the agility, efficiency and economics of their IT infrastructure.
  - Rapid provision environment s for workload deployment which releases the resources to a shared pool when complete.
  - Enable direct access of z/OS computing resources by end users through a self-service portal.
  - Create service catalogs with customizable services that enable multi-tenancy and rapid elasticity.
  - Invoke these new functions through a web browser-based user interface.
  - Invoke these new functions through programmable REST interfaces.

Appendix: More Information

- These are the V2R2 books:
  - SC27-8419-04 IBM z/OS Management Facility Configuration Guide https://www.ibm.com/support/knowledgecenter/SSLTBW_2.2.0/com.ibm.zos.v2r2.izua300/toc.htm
  - SC27-8420-04 IBM z/OS Management Facility Programming Guide https://www.ibm.com/support/knowledgecenter/SSLTBW_2.2.0/com.ibm.zos.v2r2.izua700/toc.htm
  - IBM z/OS Management Facility Online Help http://www-03.ibm.com/systems/z/os/zos/features/zosmf/
- Already available in for z/OS V2R2:
  - APAR PI70526 and co-reqs and APAR PI73643
- Also available on z/OSMF V2R1:
  - APAR PI71068 and co-reqs

Appendix: User Interface: 1 of 12

Setup the Domain



Resource Management

Domains

A domain is a set of systems for organizing resources into resource pools for running

Domains

Domain	Domain Administrators
default	ibmuser

Total: 1 Selected: 1

Last refresh: Jan 30, 2017, 10:41:48

Tenants

Tenant is a group of users of specific templates and resource

Tenants for Domain: default

Tenant / Template / Resource Pool	Groups
default	

Total: 3 Selected: 0

Last refresh: Jan 30, 2017, 10:41:54

Modify Domain

Domain name:
default

Description: (max 256 characters, currently 14 c
default domain

* Domain administrator: Select or type

Network administrator: Select or type

Selected network ad

Workload administrator: Select or type

Selected workload administrators:

* Security administrator: Select or type

Landlord navigates to Cloud Provisioning

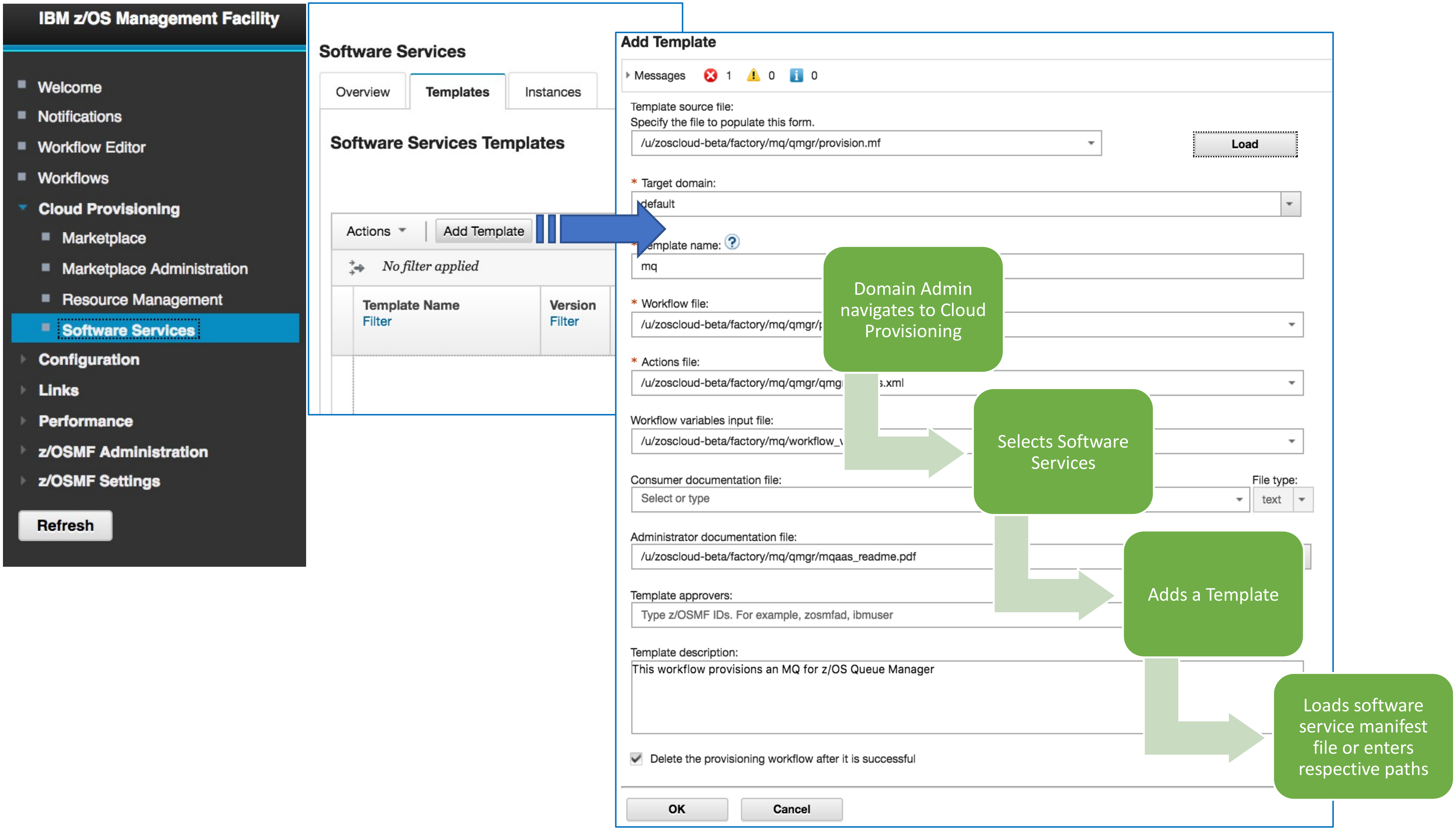
Selects Resource Management

Modifies the default domain

Adds domain administrators, security administrator, and more

Appendix: User Interface: 2 of 12

Create Template



Add Template

Messages ❌ 1 ⚠ 0 ℹ 0

Template source file:
Specify the file to populate this form.
/u/zoscloud-beta/factory/mq/qmgr/provision.mf

* Target domain:
default

* emplate name: ?
mq

* Workflow file:
/u/zoscloud-beta/factory/mq/qmgr/

* Actions file:
/u/zoscloud-beta/factory/mq/qmgr/qmg s.xml

Workflow variables input file:
/u/zoscloud-beta/factory/mq/workflow_v

Consumer documentation file:
Select or type

File type:
text

Administrator documentation file:
/u/zoscloud-beta/factory/mq/qmgr/mqaas_readme.pdf

Template approvers:
Type z/OSMF IDs. For example, zosmfad, ibmuser

Template description:
This workflow provisions an MQ for z/OS Queue Manager

☑ Delete the provisioning workflow after it is successful

Domain Admin navigates to Cloud Provisioning

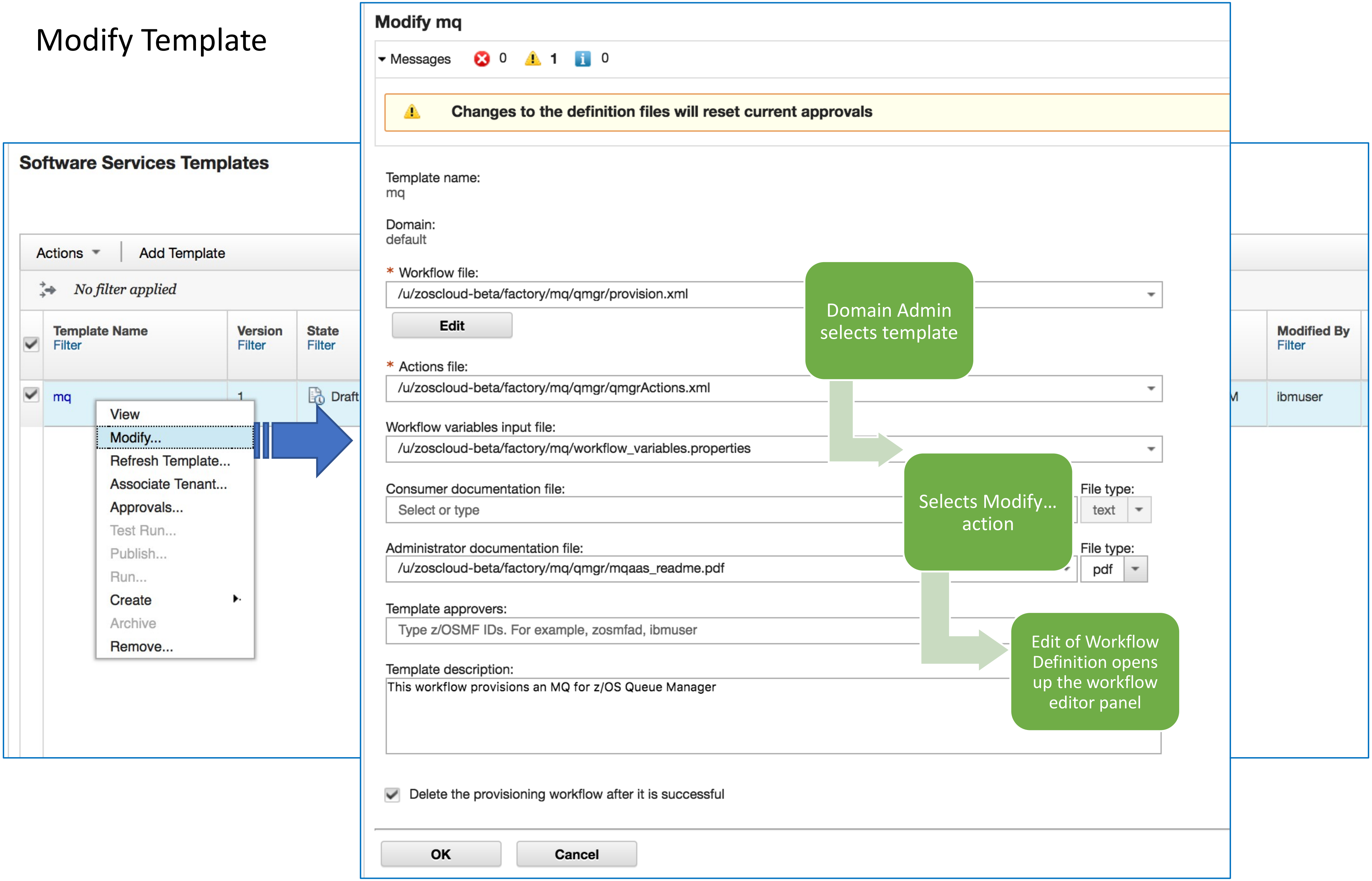
Selects Software Services

Adds a Template

Loads software service manifest file or enters respective paths

Appendix: User Interface: 3 of 12

Modify Template



	Template Name	Version	State	Modified By
☑	mq	1	Draft	ibmuser

Modify mq

Messages ✖ 0 ⚠ 1 ℹ 0

⚠ **Changes to the definition files will reset current approvals**

Template name:
mq

Domain:
default

* Workflow file:
/u/zoscloud-beta/factory/mq/qmgr/provision.xml

* Actions file:
/u/zoscloud-beta/factory/mq/qmgr/qmgrActions.xml

Workflow variables input file:
/u/zoscloud-beta/factory/mq/workflow_variables.properties

Consumer documentation file:
Select or type
File type: text

Administrator documentation file:
/u/zoscloud-beta/factory/mq/qmgr/mqaas_readme.pdf
File type: pdf

Template approvers:
Type z/OSMF IDs. For example, zosmfad, ibmuser

Template description:
This workflow provisions an MQ for z/OS Queue Manager

☑ Delete the provisioning workflow after it is successful

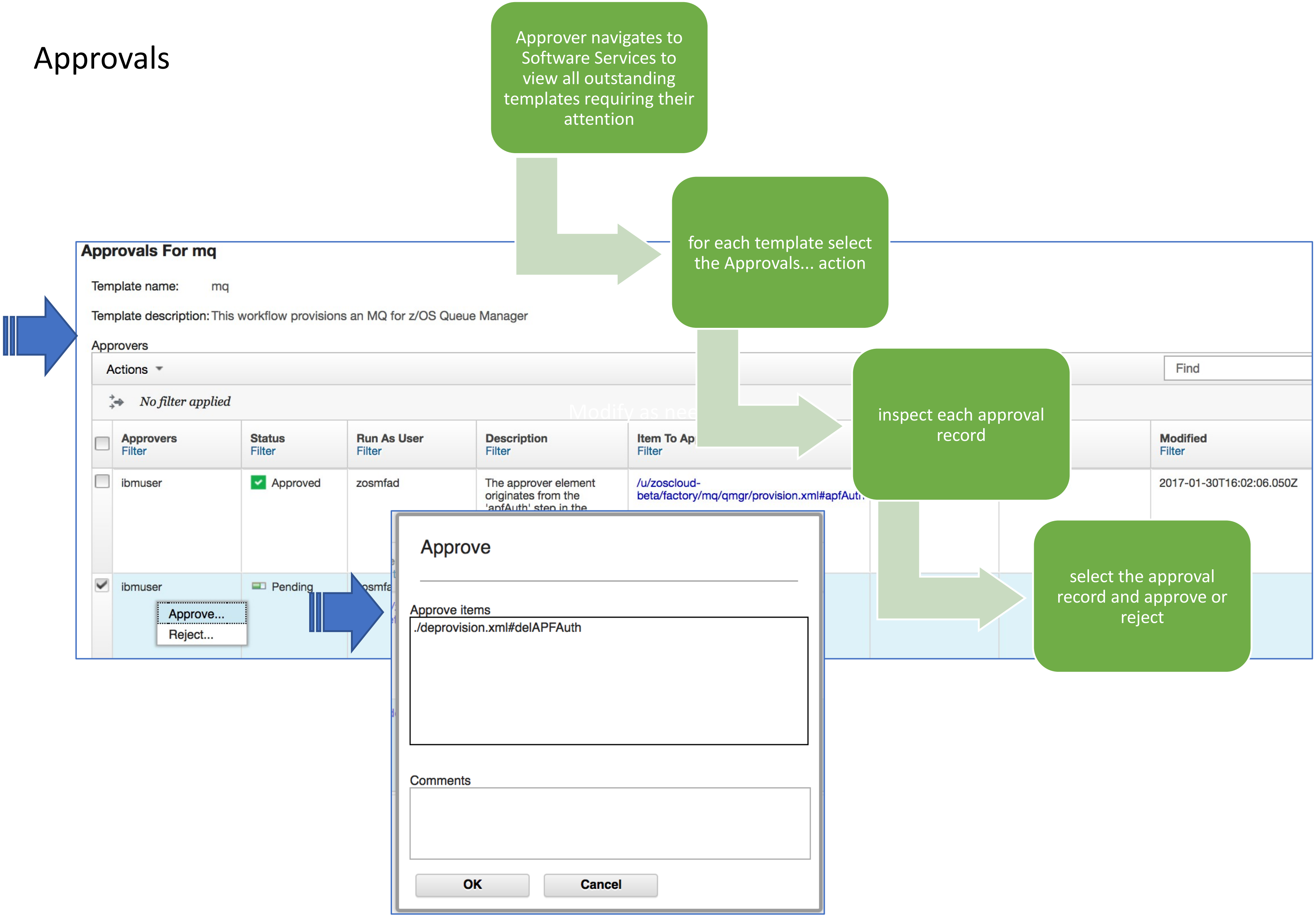
Domain Admin selects template

Selects Modify... action

Edit of Workflow Definition opens up the workflow editor panel

Appendix: User Interface: 5 of 12

Approvals



Approver navigates to Software Services to view all outstanding templates requiring their attention

for each template select the Approvals... action

inspect each approval record

select the approval record and approve or reject

Approvals For mq

Template name: mq

Template description: This workflow provisions an MQ for z/OS Queue Manager

Approvers

☐	Approvers Filter	Status Filter	Run As User Filter	Description Filter	Item To Ap Filter	Modified Filter
☐	ibmuser	✓ Approved	zosmfad	The approver element originates from the 'apfAuth' step in the	/u/zoscloud-beta/factory/mq/qmgr/provision.xml#apfAut	2017-01-30T16:02:06.050Z
☑	ibmuser	Pending	osmfa			

Approve

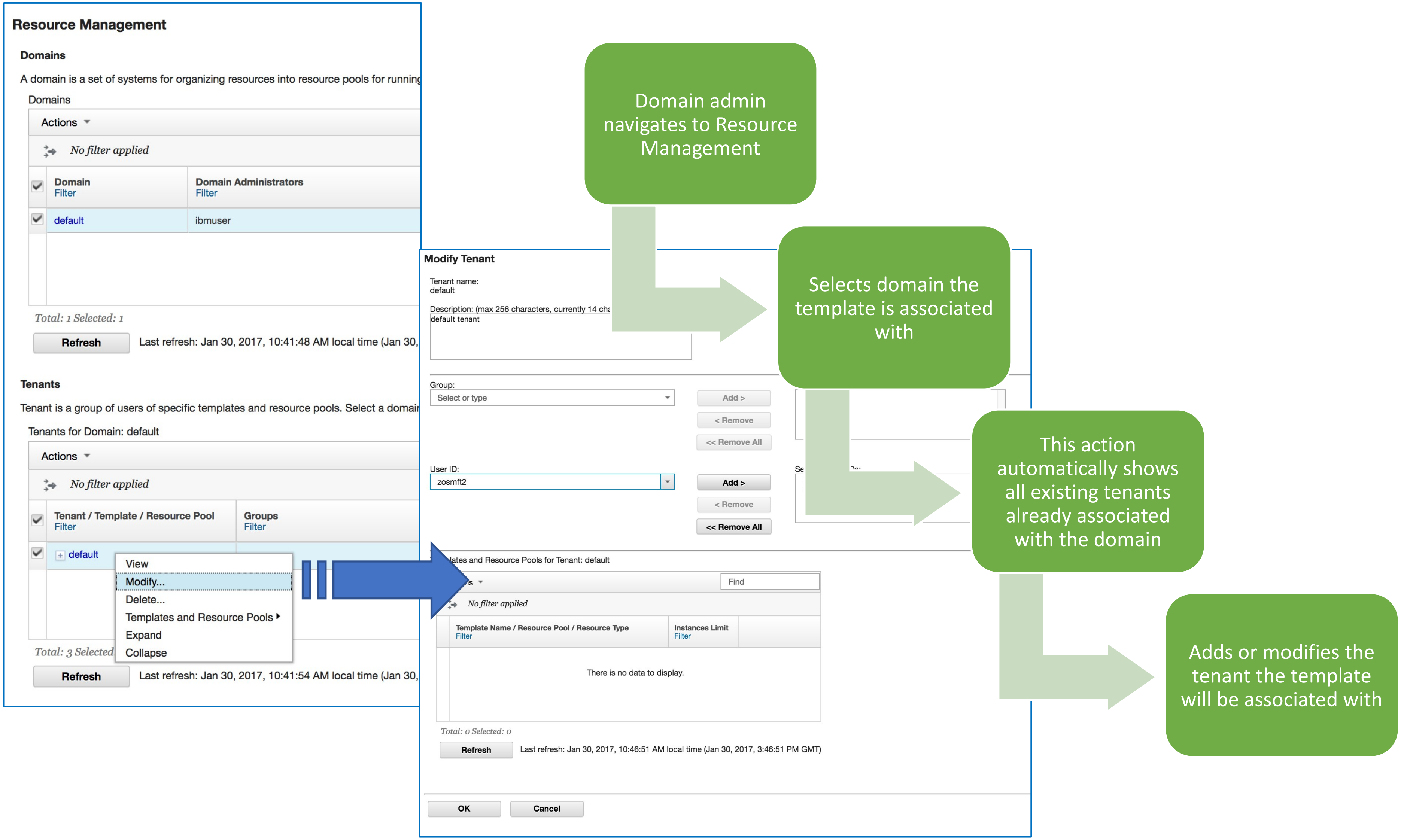
Approve items

./deprovision.xml#delAPFAuth

Comments

Appendix: User Interface: 6 of 12

Create/Update tenant



Resource Management

Domains

A domain is a set of systems for organizing resources into resource pools for running

Domains

☑	Domain Filter	Domain Administrators Filter
☑	default	ibmuser

Total: 1 Selected: 1

Last refresh: Jan 30, 2017, 10:41:48 AM local time (Jan 30,

Tenants

Tenant is a group of users of specific templates and resource pools. Select a domai

Tenants for Domain: default

☑	Tenant / Template / Resource Pool Filter	Groups Filter
☑	default	

Total: 3 Selected

Last refresh: Jan 30, 2017, 10:41:54 AM local time (Jan 30,

Modify Tenant

Tenant name:
default

Description: (max 256 characters, currently 14 cha
default tenant

Group: Select or type

User ID: zosmft2

lates and Resource Pools for Tenant: default

Template Name / Resource Pool / Resource Type Filter	Instances Limit Filter
There is no data to display.	

Total: 0 Selected: 0

Last refresh: Jan 30, 2017, 10:46:51 AM local time (Jan 30, 2017, 3:46:51 PM GMT)

Domain admin navigates to Resource Management

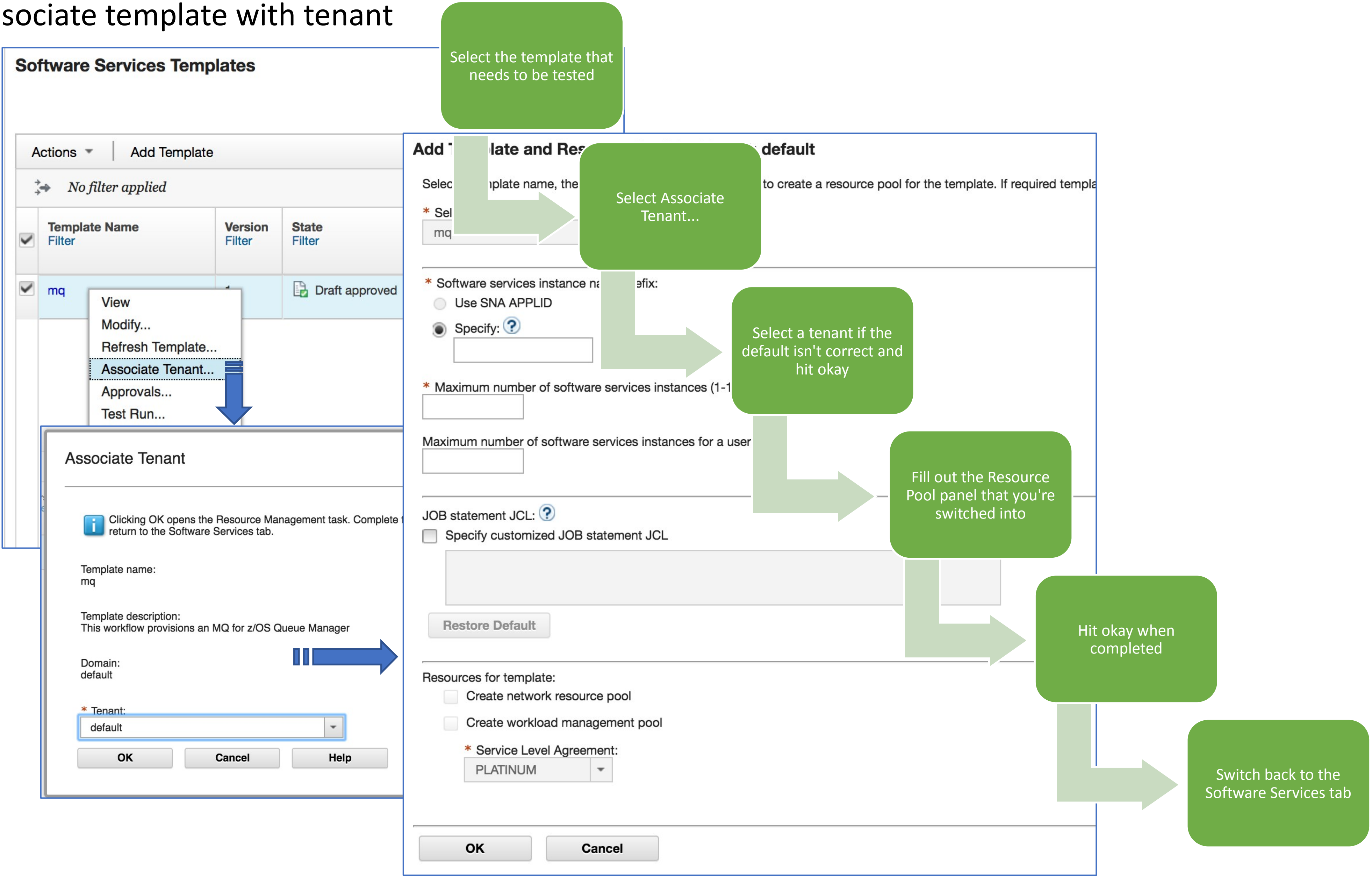
Selects domain the template is associated with

This action automatically shows all existing tenants already associated with the domain

Adds or modifies the tenant the template will be associated with

Appendix: User Interface: 7 of 12

Associate template with tenant



Select the template that needs to be tested

Select Associate Tenant...

Select a tenant if the default isn't correct and hit okay

Fill out the Resource Pool panel that you're switched into

Hit okay when completed

Switch back to the Software Services tab

Software Services Templates

☑	Template Name Filter	Version Filter	State Filter
☑	mq	1	Draft approved

Associate Tenant

Clicking OK opens the Resource Management task. Complete t return to the Software Services tab.

Template name:
mq

Template description:
This workflow provisions an MQ for z/OS Queue Manager

Domain:
default

* Tenant:
default

Add T late and Res default

Selec plate name, the to create a resource pool for the template. If required templa

* Sel
mq

* Software services instance na efix:
○ Use SNA APPLID
● Specify:

* Maximum number of software services instances (1-1

Maximum number of software services instances for a user

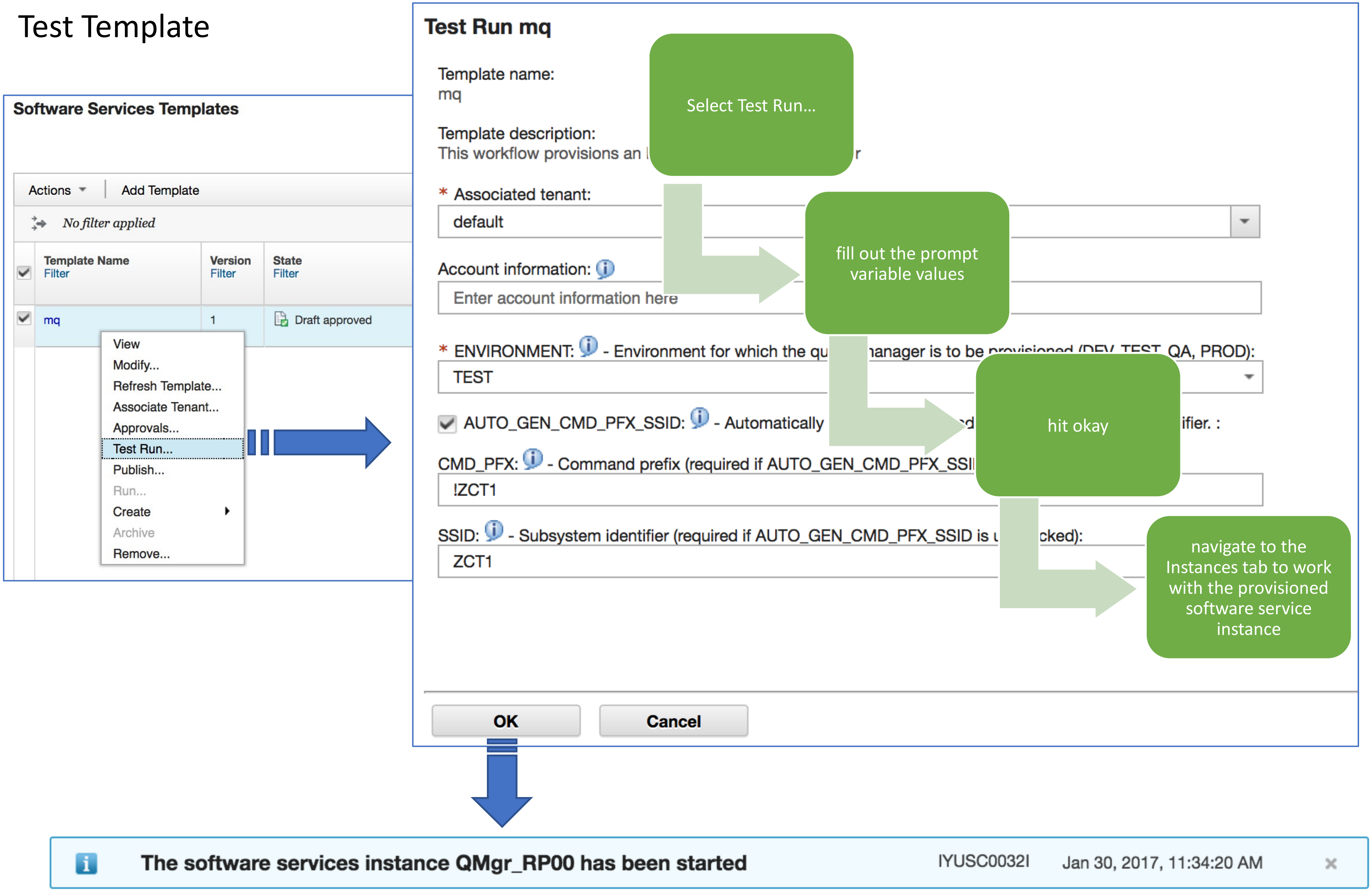
JOB statement JCL:
□ Specify customized JOB statement JCL

Resources for template:
□ Create network resource pool
□ Create workload management pool

* Service Level Agreement:
PLATINUM

Appendix: User Interface: 8 of 12

Test Template



Software Services Templates

	Template Name Filter	Version Filter	State Filter
☑	mq	1	Draft approved

Test Run mq

Template name:
mq

Template description:
This workflow provisions an [illegible] r

* Associated tenant:
default

Account information:
Enter account information here

* ENVIRONMENT: - Environment for which the qu[illegible]anager is to be provisioned (DEV, TEST, QA, PROD):
TEST

☑ AUTO_GEN_CMD_PFX_SSID: - Automatically [illegible]d [illegible]ifier. :

CMD_PFX: - Command prefix (required if AUTO_GEN_CMD_PFX_SSI[illegible]
!ZCT1

SSID: - Subsystem identifier (required if AUTO_GEN_CMD_PFX_SSID is u[illegible]cked):
ZCT1

Select Test Run...

fill out the prompt variable values

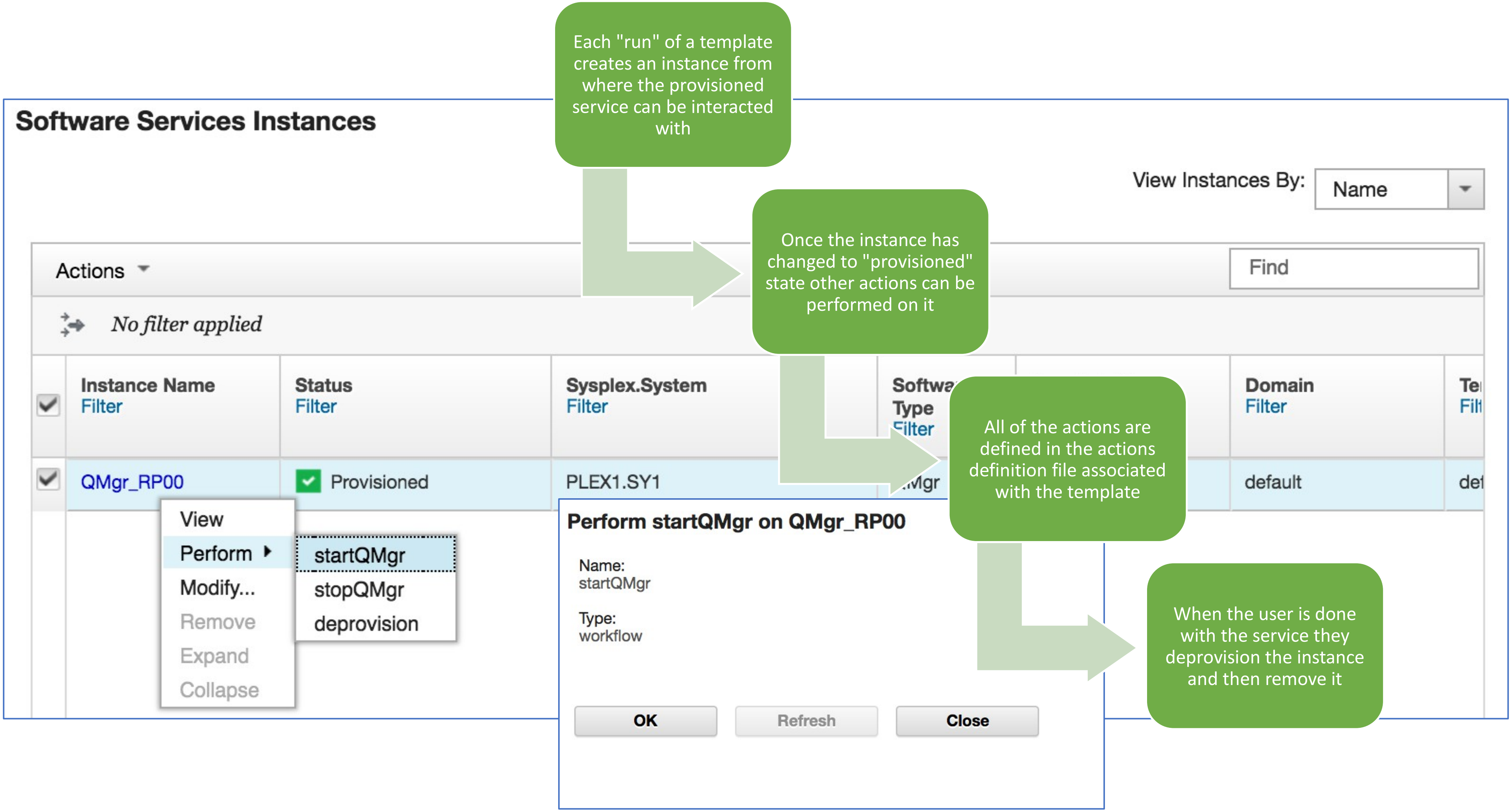
hit okay

navigate to the Instances tab to work with the provisioned software service instance

The software services instance QMgr_RP00 has been started IYUSC0032I Jan 30, 2017, 11:34:20 AM

Appendix: User Interface: 9 of 12

Instances



Software Services Instances

View Instances By: Name

	Instance Name Filter	Status Filter	Sysplex.System Filter	Softwa Type Filter	Domain Filter	Te Filt
☑	QMgr_RP00	✓ Provisioned	PLEX1.SY1	.Mgr	default	def

Perform startQMgr on QMgr_RP00

Name:
startQMgr

Type:
workflow

Each "run" of a template creates an instance from where the provisioned service can be interacted with

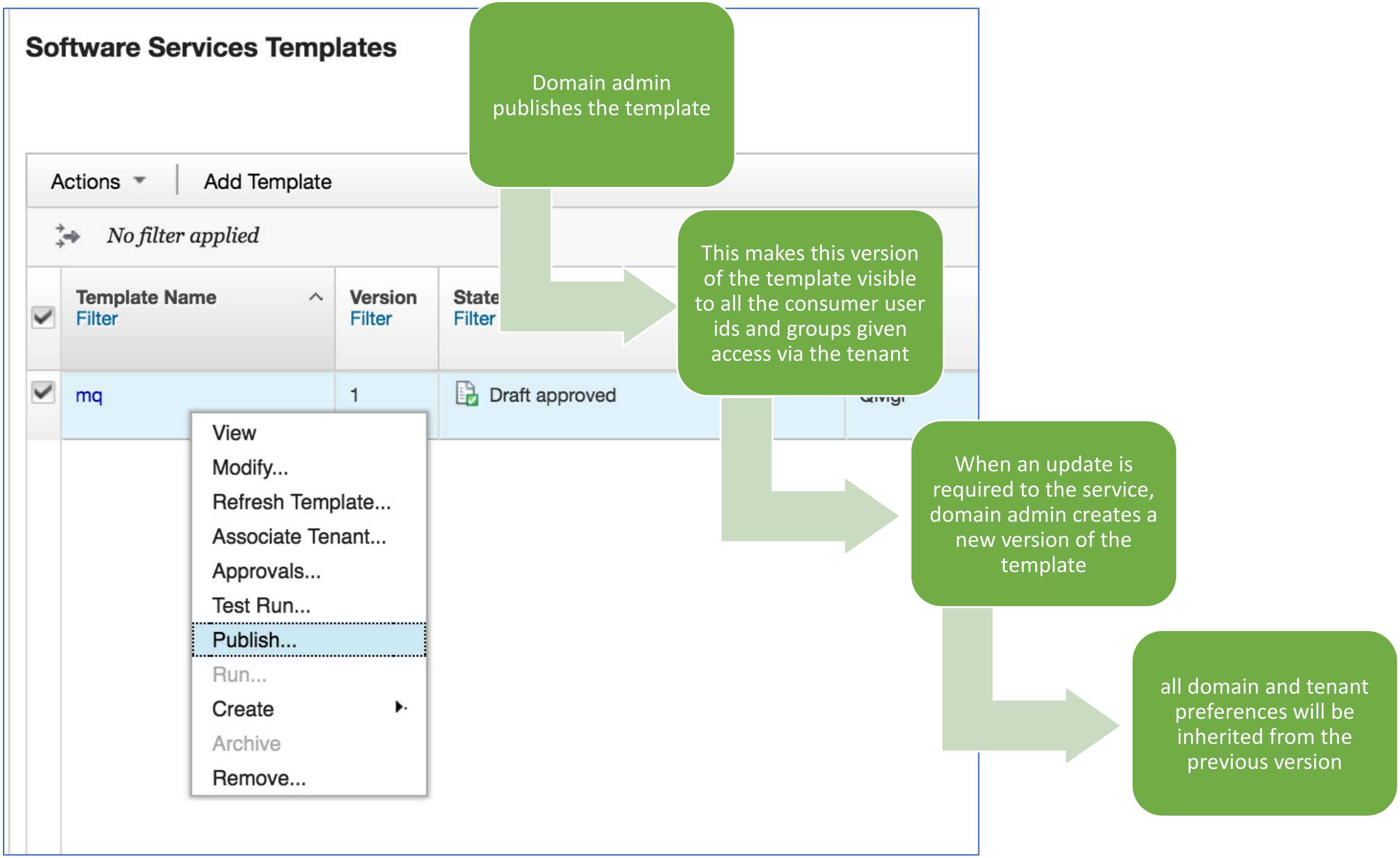
Once the instance has changed to "provisioned" state other actions can be performed on it

All of the actions are defined in the actions definition file associated with the template

When the user is done with the service they deprovision the instance and then remove it

Appendix: User Interface: 10 of 12

Make available to consumers



Software Services Templates

☑	Template Name Filter	Version Filter	State Filter
☑	mq	1	Draft approved

Domain admin publishes the template

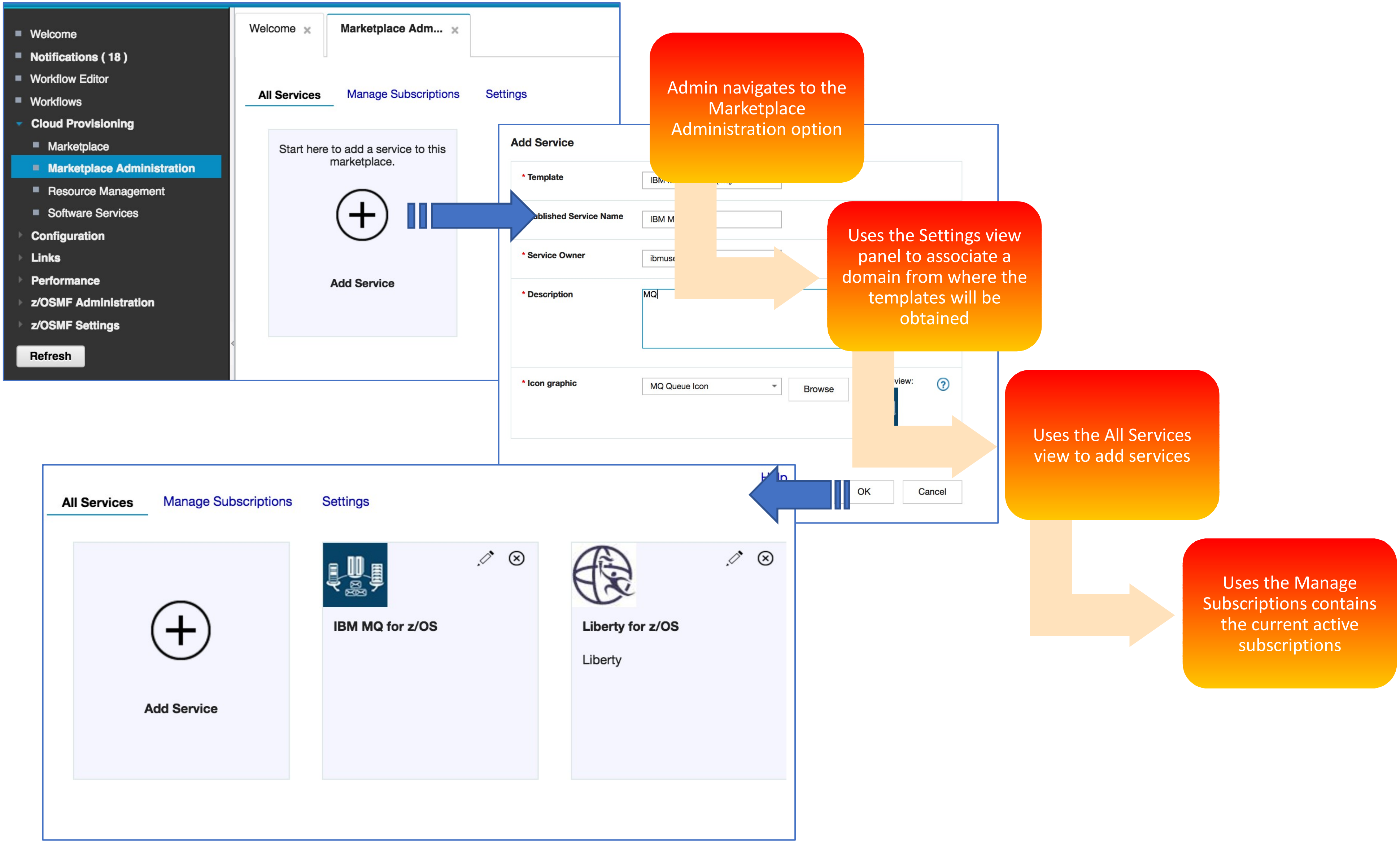
This makes this version of the template visible to all the consumer user ids and groups given access via the tenant

When an update is required to the service, domain admin creates a new version of the template

all domain and tenant preferences will be inherited from the previous version

Appendix: User Interface: 11 of 12

Adding services to the marketplace



Admin navigates to the Marketplace Administration option

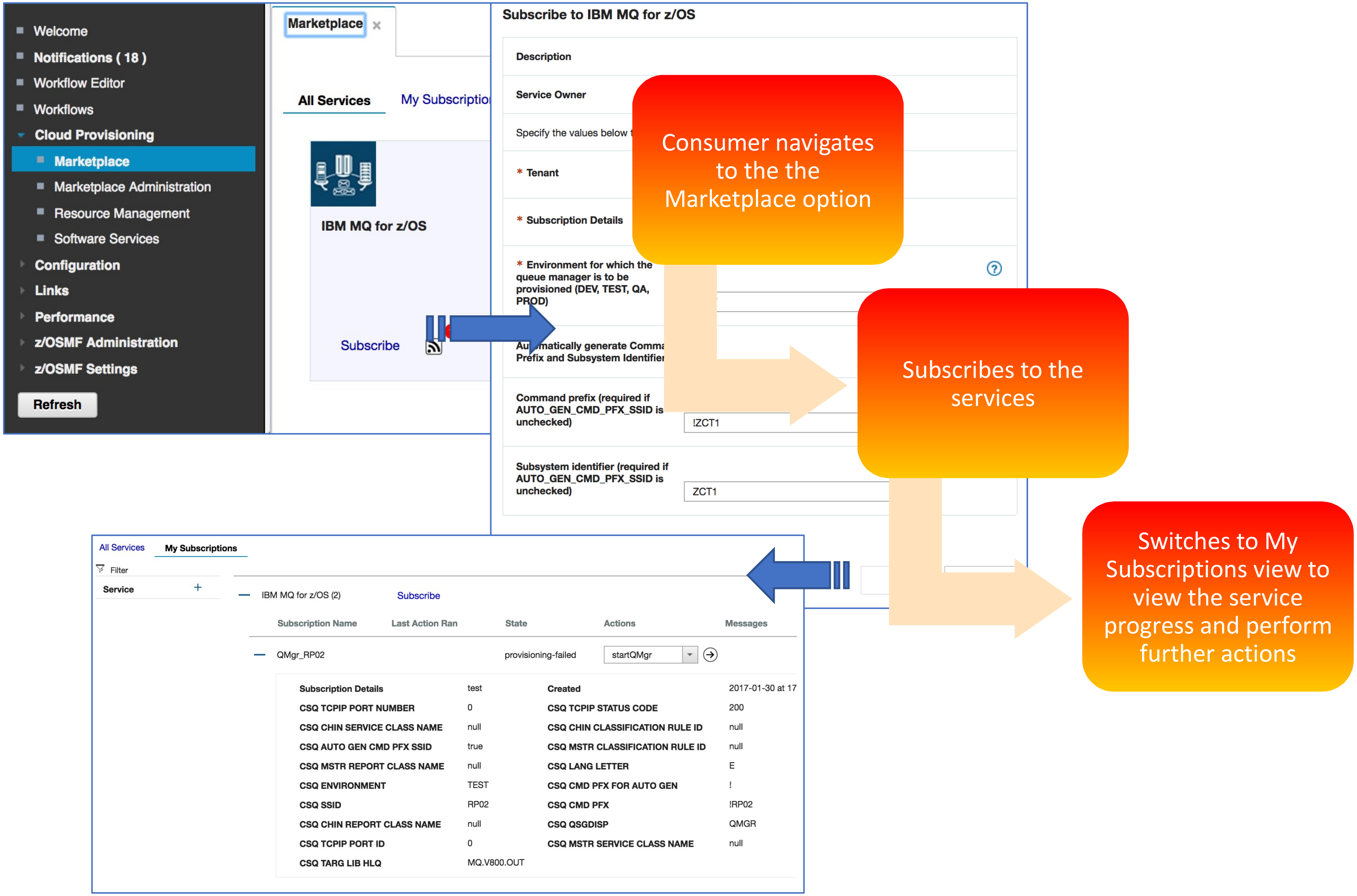
Uses the Settings view panel to associate a domain from where the templates will be obtained

Uses the All Services view to add services

Uses the Manage Subscriptions contains the current active subscriptions

Appendix: User Interface: 12 of 12

Subscribing to marketplace services



Subscribe to IBM MQ for z/OS

Description

Service Owner

Specify the values below t

* Tenant

* Subscription Details

* Environment for which the queue manager is to be provisioned (DEV, TEST, QA, PROD)

Au matically generate Comma Prefix and Subsystem Identifie

Command prefix (required if AUTO_GEN_CMD_PFX_SSID is unchecked): !ZCT1

Subsystem identifier (required if AUTO_GEN_CMD_PFX_SSID is unchecked): ZCT1

Consumer navigates to the the Marketplace option

Subscribes to the services

Switches to My Subscriptions view to view the service progress and perform further actions

Subscription Name	Last Action Ran	State	Actions	Messages
QMgr_RP02		provisioning-failed	startQMgr	

Subscription Details	test	Created	2017-01-30 at 17
CSQ TCPIP PORT NUMBER	0	CSQ TCPIP STATUS CODE	200
CSQ CHIN SERVICE CLASS NAME	null	CSQ CHIN CLASSIFICATION RULE ID	null
CSQ AUTO GEN CMD PFX SSID	true	CSQ MSTR CLASSIFICATION RULE ID	null
CSQ MSTR REPORT CLASS NAME	null	CSQ LANG LETTER	E
CSQ ENVIRONMENT	TEST	CSQ CMD PFX FOR AUTO GEN	!
CSQ SSID	RP02	CSQ CMD PFX	!RP02
CSQ CHIN REPORT CLASS NAME	null	CSQ QSGDISP	QMGR
CSQ TCPIP PORT ID	0	CSQ MSTR SERVICE CLASS NAME	null
CSQ TARG LIB HLQ	MQ.V800.OUT		

Appendix: REST APIs: 1 of 7

- Resource Management:
  - Domain APIs:
    - Get Domain: *GET:* `/zosmf/resource-mgmt/rest/{version}/domains/{domain-id}`
    - List Domains: *GET:* `/zosmf/resource-mgmt/rest/{version}/domains/`
  - Tenant APIs:
    - Get Tenant: *GET:* `/zosmf/resource-mgmt/rest/{version}/tenants/{tenant-id}`
    - List Domain Tenants: *GET:* `/zosmf/resource-mgmt/rest/{version}/domains/{domain-id}/tenants`
  - Resource Deployment Pool APIs:
    - Get RDP: *GET:* *`/zosmf/resource-mgmt/rest/{version}/tenants/{tenant-id}/rdp/{rdp-id}`*
    - List RDPs: *GET:* *`/zosmf/resource-mgmt/rest/{version}/tenants/{tenant-id}/rdp/`*

Appendix: REST APIs: 2 of 7

- Software Services Catalog:
  - Provider Action APIs:
    - Create: *POST:* `/zosmf/provisioning/rest/1.0/scc/`
    - Copy – create based on: *POST:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/actions/create_based_on`
    - Copy – create new version: *POST:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/actions/create_new_version`
    - Modify: *PUT:* `/zosmf/provisioning/rest/1.0/scc/{object-id}`
    - Modify – add approval: *POST:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/approvals`
    - Modify – delete approval: *DELETE:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/approvals/{approval-object-id}`
    - Delete: *DELETE:* `/zosmf/provisioning/rest/1.0/scc/{object-id}`
    - View – single entry: *GET:* `/zosmf/provisioning/rest/1.0/scc/{object-id}`
    - List – all entries: *GET:* `/zosmf/provisioning/rest/1.0/scc/?<query parms>`

Appendix: REST APIs: 3 of 7

- Software Services Catalog Continued:
  - Provider Action APIs Continued:
    - Refresh: *POST:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/actions/refresh`
    - Publish: *POST:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/actions/publish`
    - Archive: *POST:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/actions/archive`
    - View – prompt variables only: *GET:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/prompt_variables`
    - View – specific approval for the entry: *GET:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/approvals/{approval-object-id}`
    - List – all approvals for the entry: *GET:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/approvals`
    - Test – test run the entry: *POST:* `/zosmf/provisioning/rest/1.0/scc/actions/test`

Appendix: REST APIs: 4 of 7

- Software Services Continued:
  - Provider Action APIs Continued:
    - Get source file information: *GET:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/sources`
    - Get consumer documentation: *GET:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/documentation/consumer`
    - Get admin documentation: *GET:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/documentation/admin`
  - Approver APIs
    - Approve: *POST:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/approvals/{approval-object-id}/actions/approve`
    - Reject: *POST:* `/zosmf/provisioning/rest/1.0/scc/{object-id}/approvals/{approval-object-id}/actions/reject`
    - View – single entry: *GET:* `/zosmf/provisioning/rest/1.0/scc/{object-id}`
    - List – all entries: *GET:* `/zosmf/provisioning/rest/1.0/scc/?<query parms>`

Appendix: REST APIs: 5 of 7

- Software Services Catalog Continued:
  - Consumer APIs:
    - View – single entry: *GET:* `/zosmf/provisioning/rest/1.0/psc/{object-name}`
    - List – all entries: *GET:* `/zosmf/provisioning/rest/1.0/psc/?<query parms>`
    - Run: *POST:* `/zosmf/provisioning/rest/1.0/psc/{object-name}/actions/run`
    - View – prompt variables only: *GET:* `/zosmf/provisioning/rest/1.0/psc/{object-name}/prompt-variables`
    - View – consumer documentation: *GET:* `/zosmf/provisioning/rest/1.0/psc/{object-name}/documentation/consumer`
- Software Services Registry:
  - Create registry instance: *POST:* `/zosmf/provisioning/rest/1.0/scr/`
  - Delete registry instance: *DELETE:* `/zosmf/provisioning/rest/1.0/scr/{object-id}`

Appendix: REST APIs: 6 of 7

- Software Services Registry Continued:
  - Update registry instance: *PUT:* `/zosmf/provisioning/rest/1.0/scr/{object-id}`
  - Get contents of registry instance: *GET:* `/zosmf/provisioning/rest/1.0/scr/{object-id}`
  - Get variables of registry instance: *GET:* `/zosmf/provisioning/rest/1.0/scr/{object-id}/variables`
  - Get variables in key-value format of registry instance: *GET:* `/zosmf/provisioning/rest/1.0/scr/{object-id}/key-value-variables`
  - Update variables in registry instance: *PUT:* `/zosmf/provisioning/rest/1.0/scr/{object-id}/variables`
  - Update access to registry instance: *PUT:* `/zosmf/provisioning/rest/1.0/scr/{object-id}/access`
  - List registry instances: *GET:* `/zosmf/provisioning/rest/1.0/scr/`
  - Perform action on registry instance: *POST:* `/zosmf/provisioning/rest/1.0/scr/{object-id}/actions/{action-list}`

Appendix: REST APIs: 7 of 7

- Software Services Registry Continued:
  - Delete performed action response from registry instance: *DELETE:* `/zosmf/provisioning/rest/1.0/scr/{object-id}}/actions/{action-id}`
  - Get performed action response from registry instance: *GET:* `/zosmf/provisioning/rest/1.0/scr/{object-id}}/actions/{action-id}`
  - List performed action responses from registry instance: *GET:* `/zosmf/provisioning/rest/1.0/scr/{object-id}}/actions`
- System Variables:
  - Create: *POST:* `/zosmf/variables/rest/1.0/systems/<sysplex-name>.<system-name>`
  - Get - all: *GET:* `/zosmf/variables/rest/1.0/systems/<sysplex-name>.<system-name>`
  - Import: *POST:* `/zosmf/variables/rest/1.0/system/<sysplex-name>.<system-name>/actions/import`
  - Export: *POST:* `/zosmf/variables/rest/1.0/system/<sysplex-name>.<system-name>/actions/export`
  - Delete: *DELETE:* `/zosmf/variables/rest/1.0/systems/<sysplex-name>.<system-name>`