



UCS Director: Tenant Onboarding

Cisco ACI & VMware vSphere

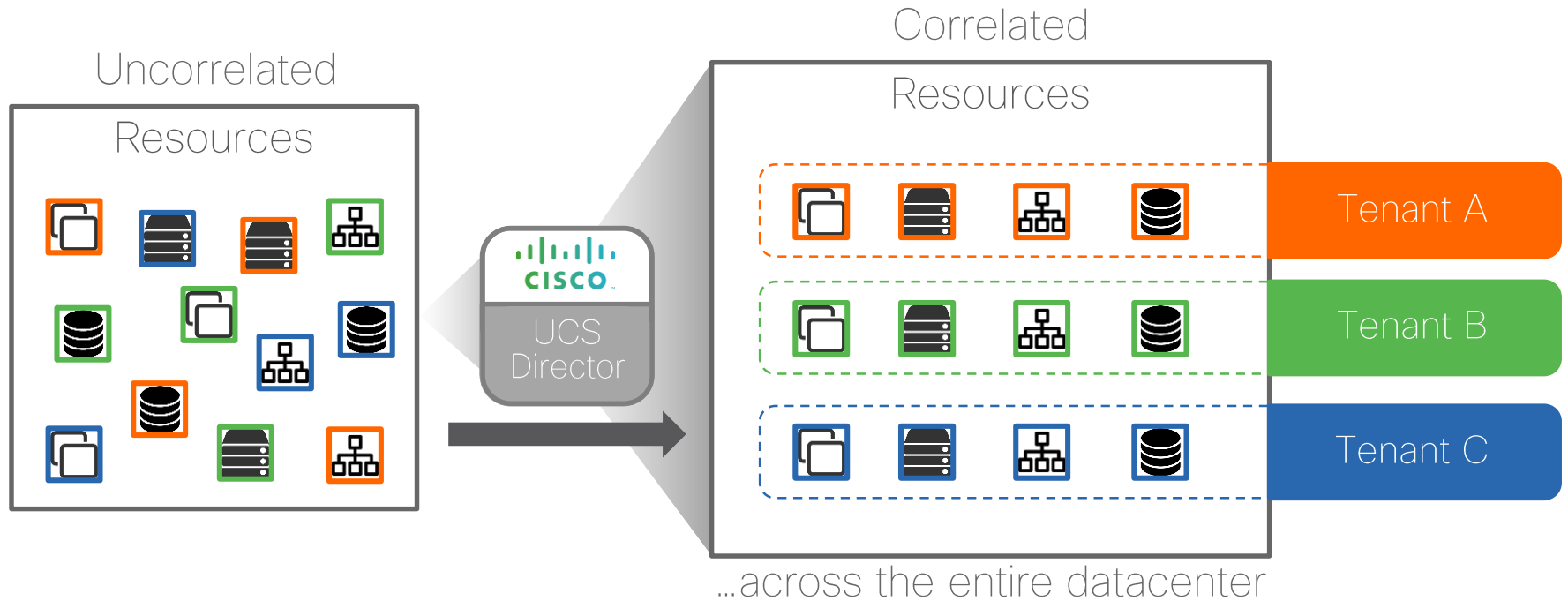
Dec. 2016





The following presentation covers tenant onboarding in UCS Director with ACI and a VMware-based VMM Domain

Tenant Onboarding: Quick Overview

A **UCS Director Tenant** is a correlation of resources across the managed infrastructure and the users that have access to consume those resources

Tenant: A Correlation of Resources



-  Virtual Server Resources
-  Physical Server Resources
-  Network Resources
-  Storage Resources

A UCS Director Tenant is not to be confused with an ACI Tenant. The two are not the same and not mutually exclusive

**An ACI Tenant is treated as a resource that can be mapped into a UCS Director Tenant

Tenant Onboarding is the act of creating a UCS Director tenant and allocating the required resources to the tenant for consumption

Why is Tenant Onboarding Necessary?

- UCS Director tenant must exist as a prerequisite for users to provision application containers with ACI
- System-admin assigns appropriate resources to tenant during tenant onboarding process
- Tenant users (end-users) can then consume those resources to provision application containers
- Element of “RBAC” in that the users in a tenant can only consume the specific resources which have been allocated to the tenant in which they belong

Tenant Onboarding: “Day 0” Procedure

The following section details the steps that must be performed in UCS Director prior to onboarding your first tenant

Tenant Onboarding: “Day 0” Configuration

Overview

- Add Virtual Account to UCS Director
- Add APIC Account to UCS Director
- Add Other Accounts to UCS Director (optional)
- Create Resource Group
- Create Service Offing
 - Add Virtual Compute Service Class
 - Add Virtual Network Service Class
 - Add Virtual Storage Service Class
- Create Tenant Profile
- Create Tenant Onboarding Workflow
 - Add “Create UCSD Tenant” Task
 - Add “Add Group” Task
 - Add “Tenant Resource Allocation” Task
 - Add “Tenant Container Association” Task

Important Notes!!! (as of UCSD 6.0)

- UCS Director tenant name and APIC tenant name must be the same
 - Therefore if you are leveraging an existing APIC tenant, the name provided for the new UCS Director tenant must match the existing APIC tenant name
- UCS Director tenant name and User Group name mapped to the tenant must be the same

Add Virtual Account to UCS Director

- Add the VMware vCenter which is configured as a VMM Domain in the ACI fabric as a “Virtual Account” in UCS Director
- **Location:** Administration → Virtual Accounts → Virtual Accounts tab

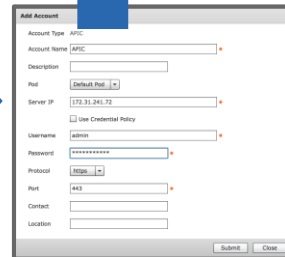
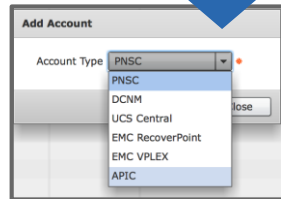
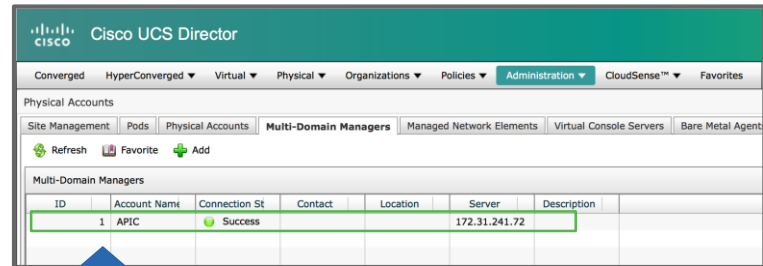
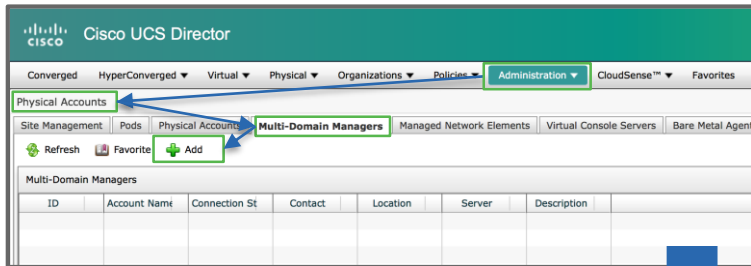
The process is shown in four steps:

- Navigation:** The user navigates to **Administration** > **Virtual Accounts** > **Add**.
- Cloud Type Selection:** In the **Add Cloud** dialog, the **Cloud Type** dropdown is set to **VMware**.
- Form Completion:** The **Add Cloud** form is filled out with the following details:
 - Cloud Type: VMware
 - Cloud Name: vCenter
 - Server Address: 172.31.241.71
 - Server Username: root
 - Server Password: [Redacted]
 - Server Access Port: 443
 - Server Access URL: /
 - VMware Datacenter: [Redacted]
 - VMware Cluster: [Redacted]
 - VMware Data: [Redacted]
 - User ID: [Redacted]
 - Description: [Redacted]
 - Contact Email: [Redacted]
 - Location: [Redacted]
- Table View:** The **Virtual Accounts** table is updated with the following entry:

Cloud Name	Account Type	Connection St	Pod	Contact	Location	Server	Status	Description
vCenter	VMware	Success	Default Pod			172.31.241.71	OK	

Add APIC Account to UCS Director

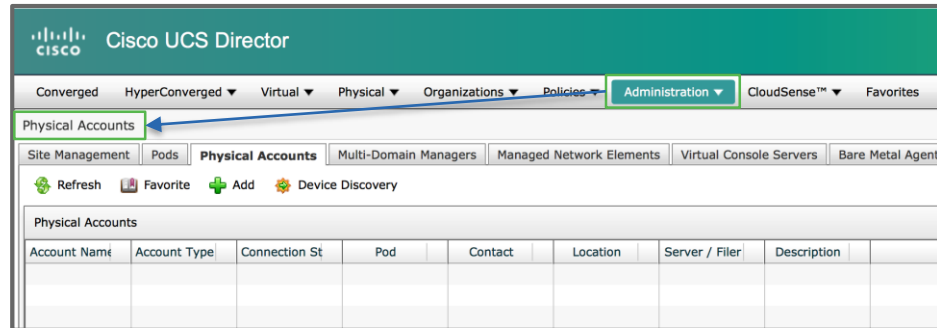
- Add the APIC cluster as a “Multi-Domain Manager” account in UCS Director
- **Location:** Administration → Physical Accounts → Multi-Domain Managers tab



Add Additional Accounts to UCS Director

(optional)

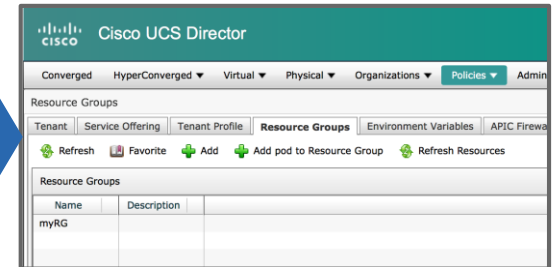
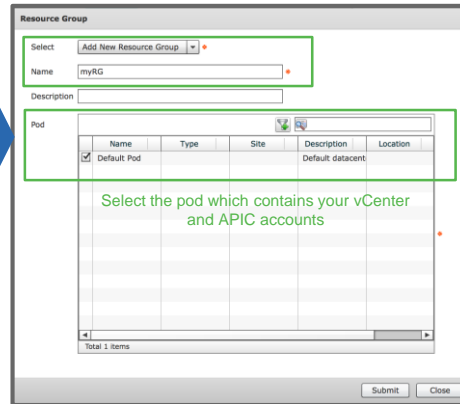
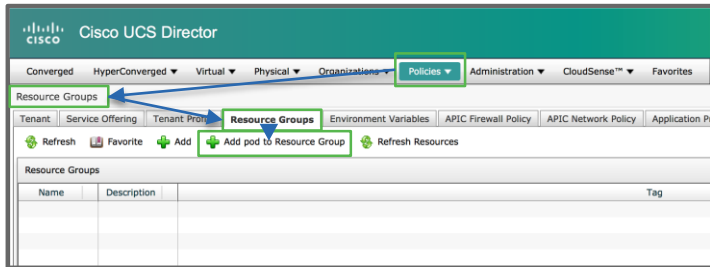
- If any other accounts are to be managed by UCS Director, for example a storage account, it can be added as well
- **Not mandatory, only hypervisor and ACI accounts are required for tenant onboarding**
- **Location:** Administration → Physical Accounts



The screenshot displays the Cisco UCS Director web interface. At the top, the Cisco logo and 'Cisco UCS Director' are visible. Below the header, a navigation bar includes tabs for 'Converged', 'HyperConverged', 'Virtual', 'Physical', 'Organizations', 'Policies', 'Administration', 'CloudSense™', and 'Favorites'. The 'Administration' tab is selected and highlighted with a green box. Below this, a sub-menu shows 'Physical Accounts' selected and highlighted with a green box, with a blue arrow pointing to it from the 'Administration' tab. Other sub-menu items include 'Site Management', 'Pods', 'Physical Accounts', 'Multi-Domain Managers', 'Managed Network Elements', 'Virtual Console Servers', and 'Bare Metal Agents'. Below the sub-menu, there are icons for 'Refresh', 'Favorite', 'Add', and 'Device Discovery'. The main content area is titled 'Physical Accounts' and contains a table with the following columns: 'Account Name', 'Account Type', 'Connection St', 'Pod', 'Contact', 'Location', 'Server / Filer', and 'Description'. The table is currently empty.

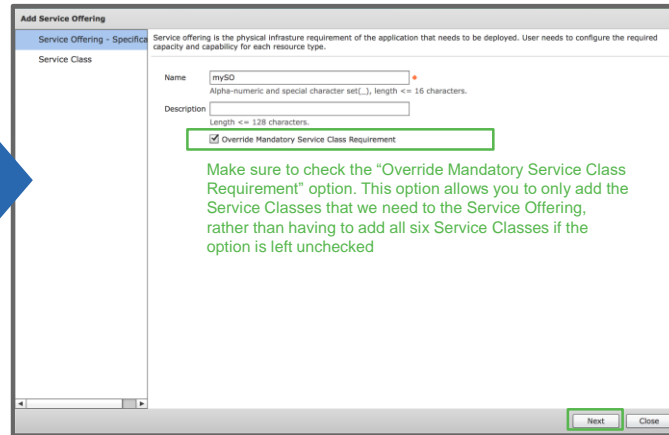
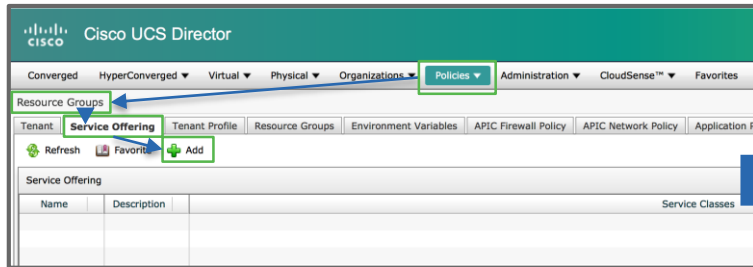
Create Resource Group

- Create a Resource Group and assign the VMware vCenter and APIC accounts to the Resource Group
- Location: Policies → Resource Groups → Resource Groups tab



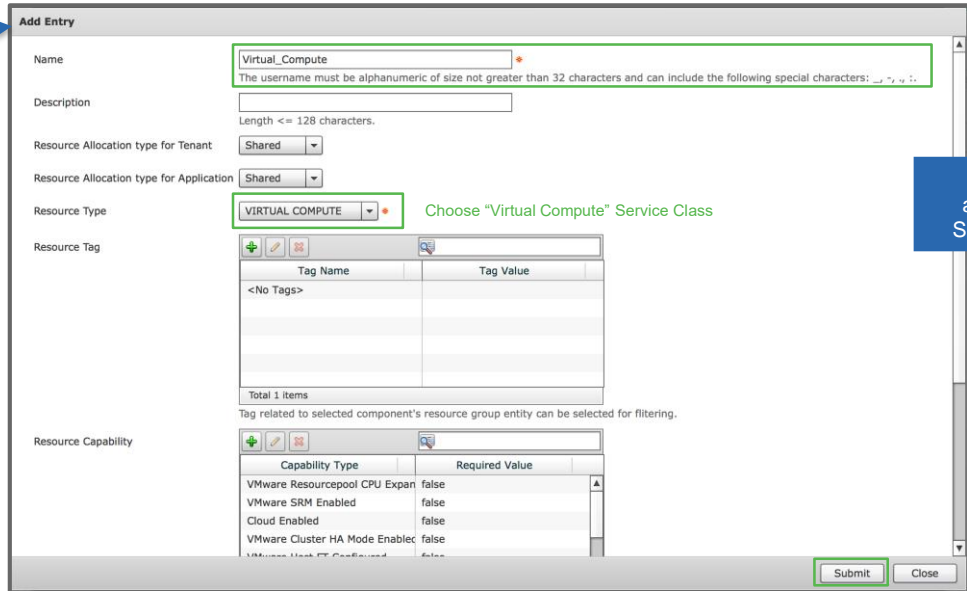
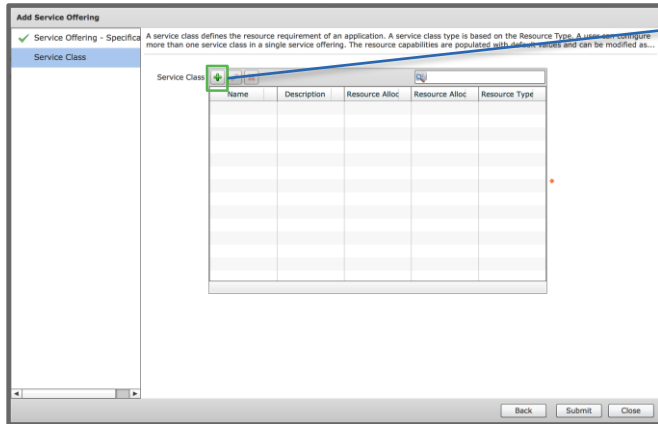
Create Service Offering

- Create a Service Offering to define the necessary Service Classes
- Location: Policies → Resource Groups → Service Offering tab



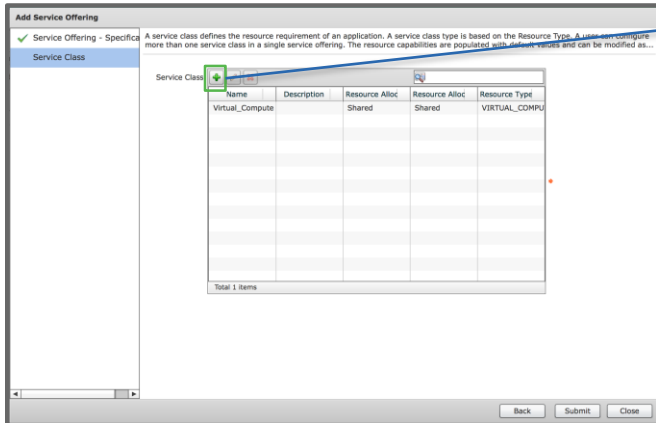
Add Virtual Compute Service Class

- Add a Virtual Compute Service Class to the Service Offering
- Location: within Service Offering



Add Virtual Network Service Class

- Add a Virtual Network Service Class to the Service Offering
- Location: within Service Offering



Add Entry

Name:

Description: The username must be alphanumeric of size not greater than 32 characters and can include the following special characters: _ , , ~ , - . Length <= 128 characters.

Resource Allocation type for Tenant:

Resource Allocation type for Application:

Resource Type: Choose "Virtual Network" Service Class

Resource Tag

Tag Name	Tag Value
<No Tags>	

Total 1 items

Tag related to selected component's resource group entity can be selected for filtering.

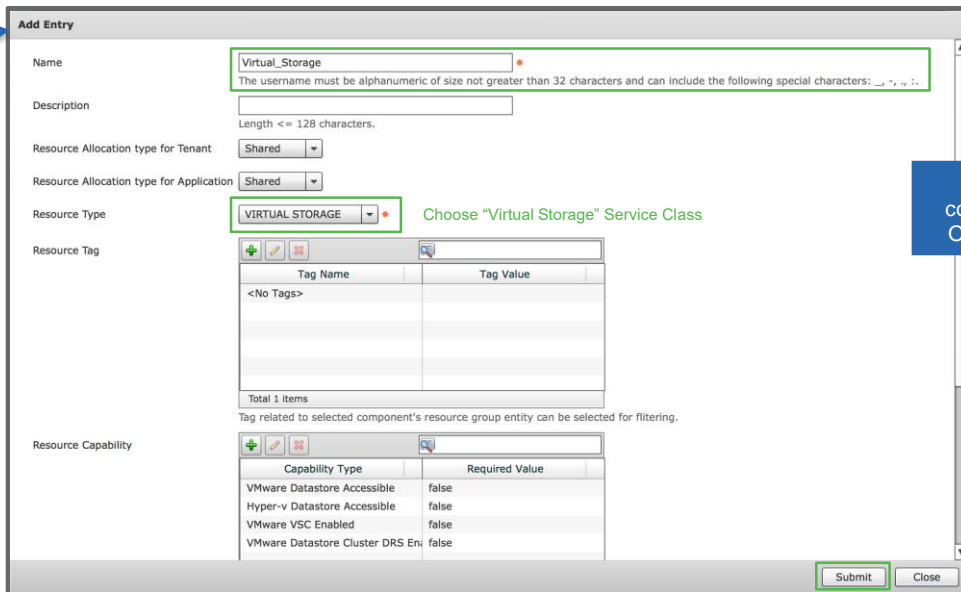
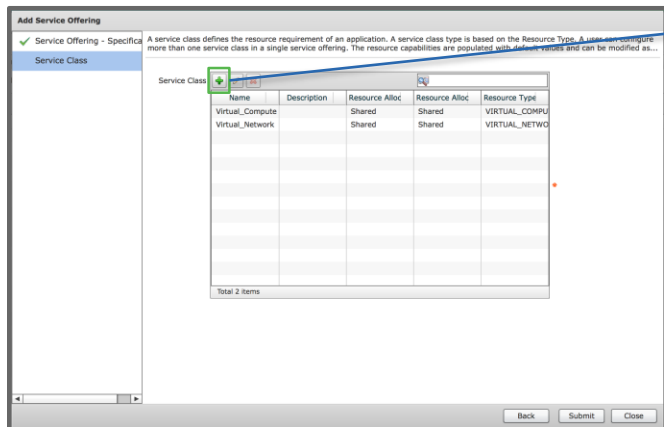
Resource Capability

Capability Type	Required Value
VMware Virtual Portgroup Promisc	false
Is Accessible	false
VM Subnets Available	false
Static Ip Pools Available	false
VMware VMFS3 Support	false



Add Virtual Storage Service Class

- Add a Virtual Storage Service Class to the Service Offering
- Location: within Service Offering



Submit Service Offering

- Submit the completed Service Offering with three Service Classes defined
- **Location:** within Service Offering

Modify Service Offering

✓ Service Offering - Specific... A service class defines the resource requirement of an application. A service class type is based on the Resource Type. A user can configure more than one service class in a single service offering. The resource capabilities are populated with default values and can be modified as...

Service Class

Name	Description	Resource Alloc	Resource Alloc	Resource Type
Virtual_Compute		Shared	Shared	VIRTUAL_COMPU
Virtual_Network		Shared	Shared	VIRTUAL_NETWO
Virtual_Storage		Shared	Shared	VIRTUAL_STORA

Make sure all three "Virtual-based" Service Classes show up the Service Offering

Total 3 items

Back Submit Close



Cisco UCS Director

Converged HyperConverged Virtual Physical Organizations Policies Administration CloudSense™ Favorites

Resource Groups

Tenant **Service Offering** Tenant Profile Resource Groups Environment Variables APIC Firewall Policy APIC Network Policy Application P...

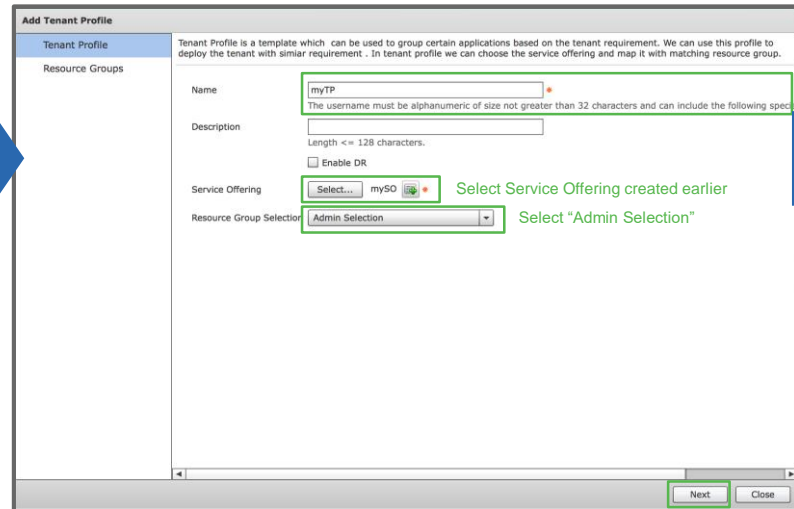
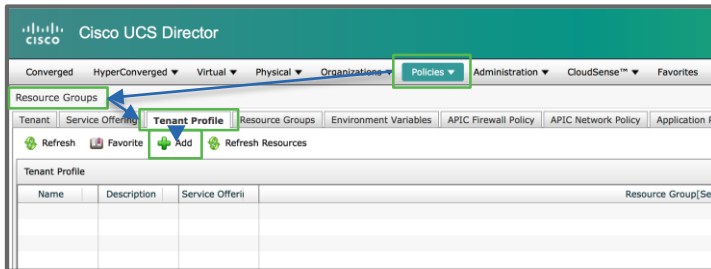
Refresh Favorite Add

Service Offering

Name	Description	Service Classes
mySO		Virtual_Compute,Virtual_Network,Virtual_Storage

Create Tenant Profile

- Create a Tenant Profile to designate which Resource Group(s) should be used against which Service Offering(s)
- Location: Policies → Resource Groups → Tenant Profile tab



Create Tenant Profile (contd.)

Add Tenant Profile

✓ Tenant Profile

Resource Groups

One or more resource groups that matches the each selected service offering will be displayed. User needs to select required Resource Group for each service offering.

Resource Group	Service Offering	Resource Group

Add Entry

Service Offering: mySO Select Service Offering created earlier

Resource Group

Name	Description	Tag
<input checked="" type="checkbox"/> myRG		

Select Resource Group created earlier

Total 1 Items

Submit Close

Add Tenant Profile

✓ Tenant Profile

Resource Groups

One or more resource groups that matches the each selected service offering will be displayed. User needs to select required Resource Group for each service offering.

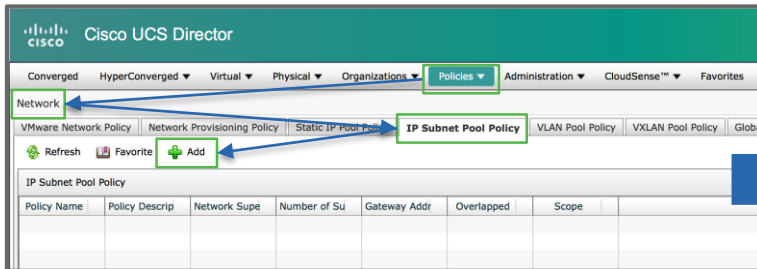
Resource Group	Service Offering	Resource Group
mySO	mySO	myRG

Total 1 Items

Back Submit Close

Create Tenant IP Subnet Pool Policy

- Create an IP Subnet Pool Policy which will be used to reserve IP Subnets for each tenant onboarded
- **Location:** Policies → Virtual/Hypervisor Policies → Network → IP Subnet Pool Policy tab



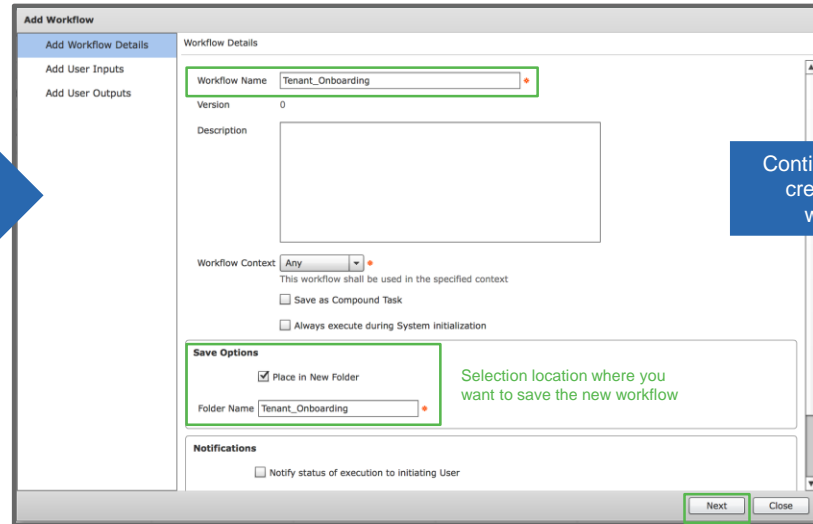
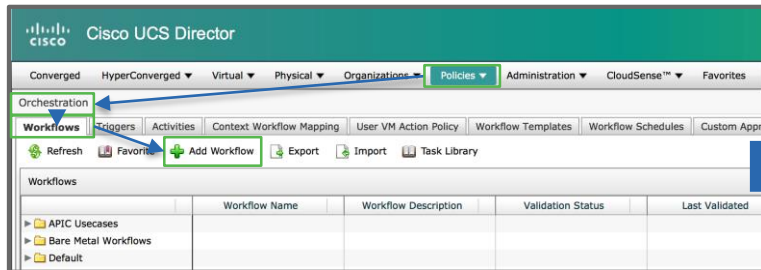
The screenshot shows the 'IP Subnet Pool Policy Information' configuration window. The fields are as follows:

- Policy Name:
- Policy Description:
- Network Supernet Address: Supernet which will be split into subnets
- Network Supernet Mask: Subnet mask of the entire Supernet
- Number of Subnets Required: How many equal subnets should the Supernet be split into
- Gateway Address: Address to be to gateway for each subnet
- Allow IP Overlap: Do you want to allow IP Subnets to overlap...and if so...
- Scope: ...at what scope do you want to allow overlap

Buttons:

Create Tenant Onboarding Workflow

- Create a reusable orchestration workflow to onboard tenants into UCS Director
- **Location:** Policies → Orchestration → Workflows



Create Tenant Onboarding Workflow (contd.)

Add Workflow

- ✓ Add Workflow Details
- Add User Inputs**
- Add User Outputs

Workflow User Inputs

Associate to Activity
If selected, existing workflow's user input(s) will be overridden by selected activities user input(s).

Input Label	Input Descripti	Mandatory	Type	Admin Input V4	Override Admir
Leave blank...you will add workflow inputs later...					

Back Next Close



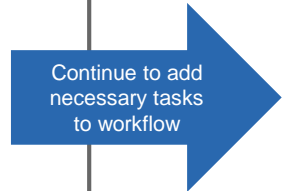
Add Workflow

- ✓ Add Workflow Details
- ✓ Add User Inputs
- Add User Outputs**

Workflow User Outputs

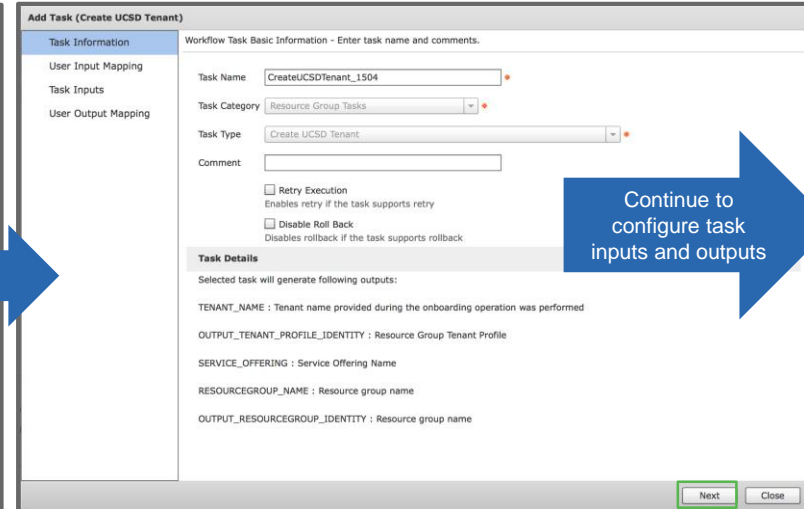
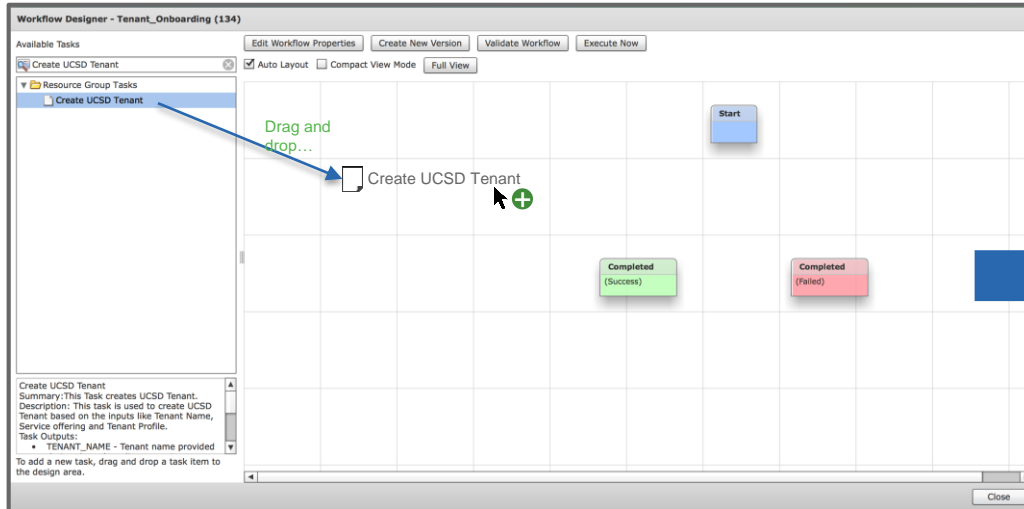
Output Label	Output Description	Mandatory	Type
Leave blank...			

Back Submit Close



Add “Create UCSD Tenant” Task

- Drag and drop the “Create UCD Tenant” task from the task library into the newly created tenant onboarding workflow. The task wizard will automatically open to configure inputs and outputs for the task.
- **Location:** within Tenant Onboarding workflow




Add "Create UCSD Tenant" Task (contd.)

Add Task


✓ Task Information
User Input Mapping


User Input Mappings to Task Input Attributes
Select which of the following attributes you would like to use values from workflow input fields or provide the values in the next step.

If 'Map to User Input' is checked, inputs are prompted during workflow execution unless specified by admin in the workflow definition.

Tenant Name (Mandatory)
Type: Generic Text Input
 Map to User Input
User Input:  Use the "+" to add a new workflow input

Tenant Description
Type: Generic Text Input
 Map to User Input

Tenant Profile (Mandatory)
Type: Resource Group Tenant Profile
 Map to User Input
User Input:  Use the "+" to add a new workflow input

Service Offering (Mandatory)
Type: Resource Group Service Offering
 Map to User Input
User Input:  Use the "+" to add a new workflow input

Back Next Close



Add Task (Create UCSD Tenant)

✓ Task Information
✓ User Input Mapping

Provide the values for the task inputs which are not mapped to workflow inputs.

Tenant Description:

Task Inputs
User Output Mapping

Back Next Close



Add Task (Create UCSD Tenant)

✓ Task Information
✓ User Input Mapping
✓ Task Inputs
User Output Mapping

User Output Mappings to Task Output Attributes
Select which of the following attributes you would like to use values from workflow output fields.

TENANT_NAME
Type: gen_text_input
 Map to User Output

OUTPUT_TENANT_PROFILE_IDENTITY
Type: rgTenantProfileIdentity
 Map to User Output

SERVICE_OFFERING
Type: ServiceOfferingName
 Map to User Output

RESOURCEGROUP_NAME
Type: gen_text_input
 Map to User Output

OUTPUT_RESOURCEGROUP_IDENTITY
Type: ResourceGroupName
 Map to User Output

Back Submit Close

Add “Add Group” Task

- Drag and drop the “Add Group” task from the task library into the newly created tenant onboarding workflow. The task wizard will automatically open to configure inputs and outputs for the task.
- **Location:** within Tenant Onboarding workflow

The screenshot shows the 'Workflow Designer - Tenant_Onboarding (134)' interface. On the left, a task library is expanded to 'User and Group Tasks', where the 'Add Group' task is highlighted. A blue arrow points from this task to the main design area. A green text box says 'Drag and drop...'. In the design area, a workflow is visible with a 'Start' task, a 'CreateUCSDTenant_1504' task, and two 'Completed' tasks (Success and Failed). A mouse cursor is over the 'Add Group' task icon. At the bottom left, a description for the 'Add Group' task is visible: 'Summary: Creates New User Group. Description: This task allows user to create User Group. Task Outputs: OUTPUT_GROUP_NAME - Name of the group that was created by admin. To add a new task, drag and drop a task item to the design area.'

The screenshot shows the 'Add Task (Add Group)' configuration wizard. The 'Task Information' tab is active, showing 'Task Name' as 'AddGroup_1505', 'Task Category' as 'User and Group Tasks', and 'Task Type' as 'Add Group'. The 'Task Details' section lists the following outputs: 'OUTPUT_GROUP_NAME : Name of the group that was created by admin', 'OUTPUT_GROUP_ID : ID of the group that was created by admin', and 'OUTPUT_USER_GROUP : Group Created by admin'. A large blue arrow points from the design area to this wizard. At the bottom right, a 'Next' button is highlighted with a green box.


Continue to
configure task
inputs and outputs

Add “Add Group” Task (contd.)

Add Task

- Task Information
- User Input Mapping
- Task Inputs
- User Output Mapping


User Input Mappings to Task Input Attributes
Select which of the following attributes you would like to use values from workflow input fields or provide the values in the next step.

Name (Mandatory)
Type: Generic Text Input
 Map to User Input
User Input:  Use existing workflow input

Description
Type: Generic Text Input
 Map to User Input

MSP Group
Type: Generic Text Input
 Map to User Input

Code
Type: Generic Text Input
 Map to User Input

Contact Email (Mandatory)
Type: Generic Text Input
 Map to User Input
User Input:  Use the "+" to add a new workflow input

Back Next Close



Add Task (Add Group)

- Task Information
- User Input Mapping
- Task Inputs
- User Output Mapping

Provide the values for the task inputs which are not mapped to workflow inputs.

Description:

Code:

First Name:

Last Name:

Phone:

Address:

Group Share Policy:

Allow Resource Assignment to Users

Back Next Close



Add Task (Add Group)

- Task Information
- User Input Mapping
- Task Inputs
- User Output Mapping

User Output Mappings to Task Output Attributes
Select which of the following attributes you would like to use values from workflow output fields.

OUTPUT_GROUP_NAME
Type: get_text_input
 Map to User Output

OUTPUT_GROUP_ID
Type: get_text_input
 Map to User Output

OUTPUT_USER_GROUP
Type: userGroup
 Map to User Output

Back Submit Close

Add “Tenant Resource Allocation” Task

- Drag and drop the “Tenant Resource Allocation” task from the task library into the newly created tenant onboarding workflow. The task wizard will automatically open to configure inputs and outputs for the task.
- **Location:** within Tenant Onboarding workflow

The image shows two side-by-side screenshots from a workflow designer application.

Left Screenshot: Workflow Designer - Tenant_Onboarding (134)

- Available Tasks:** A list on the left includes "DR Tenant Resource Allocation" and "Tenant Resource Allocation". A blue arrow points from the "Tenant Resource Allocation" task to the workflow canvas.
- Workflow Canvas:** A grid-based workspace containing a "Start" task, "CreateUCSDTenant_1504" (1513. Create UCSD Tenant), and "AddGroup_1505" (1514. Add Group). A green arrow points from the "Tenant Resource Allocation" task icon to the canvas. A blue arrow points from the canvas to the right screenshot.
- Task Description:** A tooltip for "Tenant Resource Allocation" reads: "Summary: This task get the all the allocated resource details store it in the mapping table. Description: This task get the selected entities from the resource group for the particular tenant. Read More..."

Right Screenshot: Add Task (Tenant Resource Allocation)

- Task Information:** A form for configuring the task. Fields include:
 - Task Name: TenantResourceAllocation_1506
 - Task Category: Resource Group Tasks
 - Task Type: Tenant Resource Allocation
 - Comment: (empty text box)
- Task Details:** Checkboxes for "Retry Execution" (Enables retry if the task supports retry) and "Disable Roll Back" (Disables rollback if the task supports rollback).
- Buttons:** "Next" and "Close" buttons are at the bottom right. A large blue arrow points from the "Next" button towards the right.

Add “Tenant Resource Allocation” Task (contd.)

!!! IMPORTANT !!!

- **UCS Director tenant must exist as a prerequisite for users to provision application containers with ACI**
- For a tenant to provision a **basic application container** with Cisco ACI and **VMware vCenter** as the VMM Domain, the following example (slides) shows the resources that must be mapped into a UCS Director tenant within the “Tenant Resource Allocation” task
- For **advanced application containers**, i.e. including connections to an L2, L3 or Shared L3 Out or L4-L7 Services, please see the [Appendix](#) section for a list of any additional resources that are required to be mapped to the tenant within the “Tenant Resource Allocation” task

Add “Tenant Resource Allocation” Task (contd.)

Resource (Input) Label (in “Tenant Resource Allocation” task)	UCS Director Input Type	Description
Tenant	Generic Text Input	The name of the UCS Director tenant to which the resources will be allocated
Resource Group	Generic Text Input	The name of the Resource Group associated with the UCS Director tenant
Service Offering	Resource Group Service Offering	The Service Offering associated with the UCS Director tenant
User Group	User Group	The UCS Director user group that should be associated with the UCS Director tenant. <i>NOTE: The user group name must match the UCS Director tenant and APIC tenant name.</i>
Tenant IP Subnet Pool Policy ID	IP Subnet Pool Policy Identity	The UCS Director IP Subnet Pool Policy from which IP Subnets will be reserved for each provisioned application network tier/EPG that does not require external connectivity
VMware vCenter	VMware Account Selector	The VMware vCenter account in UCS Director where the application VMs will be provisioned
VMware Cluster	VMware Cluster Identity	The VMware ESXi Cluster within the VMware vCenter account in UCS Director where the application VMs will be provisioned
Resource Pool	VMware Resource Pool Identity	The VMware Resource Pool within the VMware ESXi Cluster where the application VMs will be provisioned
Data Store	VMware Datastore Identity	The VMware Datastore where the application VMs will be provisioned
APIC Account Name	APIC Device Identity	The APIC account in UCS Director where the application network profile will be provisioned
Tenant Private Network Name	APIC Device Tenant Private Network Identity	The Private Network (VRF) provisioned in APIC for the specific tenant
DV Switch	VMware DVSwitch Name	The Distributed Virtual Switch which is associated with and created by the association of the VMware vCenter and ACI Fabric VMM Domain

Standard tenant related inputs

Resources required for basic application containers

Add "Tenant Resource Allocation" Task (contd.)

Add Task

Task Information

User Input Mapping

User Input Mappings to Task Input Attributes

Select which of the following attributes you would like to use values from workflow input fields or provide the values in the next step.

If 'Map to User Input' is checked, inputs are prompted during workflow execution unless specified by admin in the workflow definition.

Tenant (Mandatory)

Type: Generic Text Input

Map to User Input

User Input: CreateUCSDTenant_1504.TENANT_NAME Use input from previous task

Resource Group (Mandatory)

Type: Generic Text Input

Map to User Input

User Input: CreateUCSDTenant_1504.RESOURCEGROUP_NAME Use input from previous task

Service Offering (Mandatory)

Type: Resource Group Service Offering

Map to User Input

User Input: CreateUCSDTenant_1504.SERVICE_OFFERING Use input from previous task

User Group

Type: User Group

Map to User Input

User Input: AddGroup_1505.OUTPUT_USER_GROUP Use input from previous task

Tenant IP Subnet Pool Policy ID

Type: IP Subnet Pool Policy Identity

Map to User Input

User Input: Tenant IP Subnet Pool Use the "+" to add a new workflow input

vmWare vCenter

Type: VMware Account Selector

Map to User Input

User Input: VMware vCenter Use the "+" to add a new workflow input

vmWare Cluster

Type: VMware Cluster Identity

Map to User Input

User Input: VMware Cluster Use the "+" to add a new workflow input

Resource Pool

Type: VMware Resource Pool Identity

Map to User Input

User Input: VMware Resource Pool Use the "+" to add a new workflow input

Data Store

Type: VMware Datastore Identity

Map to User Input

User Input: VMware Datastore Use the "+" to add a new workflow input

APIC Account Name

Type: APIC Device Identity

Map to User Input

User Input: APIC Account Use the "+" to add a new workflow input

Tenant Private Network Name

Type: APIC Device Tenant Private Network Identity

Map to User Input

User Input: APIC Tenant Private Network Use the "+" to add a new workflow input

DV Switch

Type: VMware DVSwitch Name

Map to User Input

User Input: VMware DVS or AVS Use the "+" to add a new workflow input

Back Next Close



NOTE: This graphic shows only those inputs required for basic application provisioning within the "Tenant Resource Allocation" task!

Add “Tenant Container Association” Task

- Drag and drop the “Tenant Container Association” task from the task library into the newly created tenant onboarding workflow. The task wizard will automatically open to configure inputs and outputs for the task.
- **Location:** within Tenant Onboarding workflow

The screenshot shows the 'Workflow Designer - Tenant_Onboarding (134)' interface. On the left, the 'Available Tasks' pane is open, showing a search for 'tenant container association' and a list of tasks under 'Resource Group Tasks', with 'Tenant Container Association' selected. A blue arrow points from this task to the main design area. In the design area, a workflow is visible with a 'Start' node, followed by 'CreateUCSDTenant_1504', 'AddGroup_1505', and 'TenantResourceAllocation_1506', all leading to a 'Completed (Success)' node. A 'Completed (Failed)' node is also present. A green arrow points to the 'Tenant Container Association' task icon in the design area, with the text 'Drag and drop...' next to it. A small '+' icon is next to the task icon. At the bottom left, there is a summary for the 'Tenant Container Association' task: 'Summary: This Task Associates Tenant with Container. Description: This task is used to associate Tenant with Container based on Service offering and tenant name. Read More... To add a new task, drag and drop a task item to the design area.' The 'Close' button is at the bottom right.

The screenshot shows the 'Add Task (Tenant Container Association)' wizard. The 'Task Information' tab is active. The 'Task Name' is 'TenantContainerAssociation_1507'. The 'Task Category' is 'Resource Group Tasks'. The 'Task Type' is 'Tenant Container Association'. There is a 'Comment' field. Below these are checkboxes for 'Retry Execution' (disabled), 'Disable Roll Back' (disabled), and 'Disables rollback if the task supports rollback'. The 'Task Details' section is empty. A large blue arrow points from the workflow designer to this screen. A blue arrow points from the right side of the screen to the right, with the text 'Continue to configure task inputs and outputs'. The 'Next' and 'Close' buttons are at the bottom right.

Add “Tenant Container Association” Task

Add Task

- Task Information
- User Input Mapping**
- Task Inputs
- User Output Mapping

User Input Mappings to Task Input Attributes
Select which of the following attributes you would like to use values from workflow input fields or provide the values in the next step.

[Manage Workflow User Inputs](#)

If 'Map to User Input' is checked, inputs are prompted during workflow execution unless specified by admin in the workflow definition.

Tenant Name (Mandatory)
Type: Generic Text Input

Map to User Input

User Input: Use existing workflow input

Service Offering (Mandatory)
Type: Generic Text Input

Map to User Input

User Input: Use existing workflow input

[Back](#) [Next](#) [Close](#)



Add Task (Tenant Container Association)

- Task Information
- User Input Mapping
- Task Inputs**
- User Output Mapping

Provide the values for the task inputs which are not mapped to workflow inputs.

[Back](#) [Next](#) [Close](#)



Add Task (Tenant Container Association)

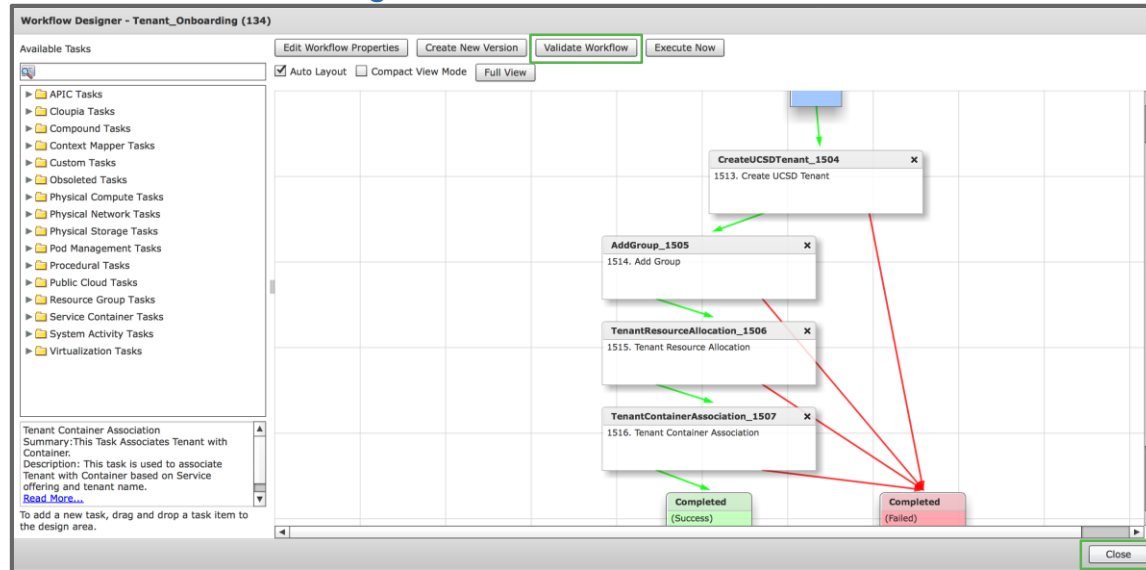
- Task Information
- User Input Mapping
- Task Inputs
- User Output Mapping**

User Output Mappings to Task Output Attributes
Select which of the following attributes you would like to use values from workflow output fields.

[Back](#) [Submit](#) [Close](#)

Validate Tenant Onboarding Workflow

- Your tenant onboarding workflow should now look like the graphic below. Before closing the workflow, use the “Validate” action button to ensure no mandatory inputs are missing. Close the workflow once validated.
- **Location:** within Tenant Onboarding workflow



The tenant onboarding workflow built in this example assumes that all required tenant resources already exist and are simply identified at workflow execution time as workflow inputs

Review Required Workflow Inputs

- At this point, the tenant onboarding workflow is configured to prompt the user for all inputs at execution time
- **Location:** Policies → Orchestration → Highlight the tenant onboarding workflow and click “Edit” → Click “Next” to get to the “Edit User Inputs” page of the workflow

The screenshot shows the 'Edit Workflow' interface with the 'Workflow User Inputs' section. A table lists 12 user inputs, all of which are mandatory. A green box highlights the first six inputs, with a callout stating 'All user inputs required at execution time'. An orange box highlights the last six inputs, with a callout stating 'Resource related user inputs for basic application container provisioning, assumption that these resources already exist'. The table has columns for Input Label, Input Descrip, Mandatory, Type, Admin Input, and Override Adm.

Input Label	Input Descrip	Mandatory	Type	Admin Input	Override Adm
Tenant Name		Yes	gen_text_input		No
Service Offering		Yes	ServiceOffering		No
Tenant Profile		Yes	rgTenantProfile		No
Tenant Contact Email		Yes	gen_text_input		No
Tenant IP Subnet Pool		Yes	IPSubnetPoolPo		No
VMware vCenter		Yes	vmwareAccount		No
VMware Cluster		Yes	vmwareCluster		No
VMware Resource Pool		Yes	vmwareResourc		No
VMware Datastore		Yes	vmwareDatasto		No
APIC Account		Yes	ApicDeviceIden		No
APIC Tenant Private Network		Yes	ApicDeviceTena		No
VMware DVS or AVS		Yes	dvSwitchName		No

Total 12 items

Annotations:

- All user inputs required at execution time (green box)
- Resource related user inputs for basic application container provisioning, assumption that these resources already exist (orange box)

If resource provisioning is required as part of the tenant onboarding workflow, provisioning tasks can be added to the workflow as needed.

Tenant Onboarding: “Day 1” Procedure

The following section details the steps performed in UCS Director to onboard a new tenant

Execute Tenant Onboarding Workflow

- Execute the tenant onboarding workflow and provide the necessary workflow inputs
- Location: Policies → Orchestration → Workflows

The screenshot shows the Cisco UCS Director interface. The top navigation bar includes 'Policies', 'Administration', 'CloudSense™', and 'Favorites'. The 'Policies' menu is expanded to show 'Orchestration', which is further expanded to 'Workflows'. A table lists various workflows, with 'Tenant_Onboarding' highlighted in blue. The 'Execute now' button is also highlighted.

Workflow Name	Workflow Description	Validation Status	Last Validated
Tenant_Onboarding		OK	20 hours 38 minutes ago

The screenshot shows the 'Executing Workflow: Tenant_Onboarding' dialog box. It contains various input fields for workflow execution, including Tenant Name, Service Offering, Tenant Profile, Tenant Contact Email, Tenant IP Subnet Pool, VMware vCenter, VMware Cluster, VMware Resource Pool, VMware Datastore, APIC Account, APIC Tenant Private Network, and VMware DVS or AVS. A 'Submit' button is highlighted at the bottom. A 'Service Request Submit Status' dialog box is overlaid on top, displaying the message: 'Service request is submitted successfully ID 1'. A blue arrow points from the 'Execute now' button in the previous screenshot to the 'Submit' button in this dialog.

APIC Account	Account Type	Pod	Device IP
<input checked="" type="checkbox"/> APIC	APIC	Default Pod	172.31.241.1

Account Name	Tenant Name	Private Netw	Description
<input type="checkbox"/> APIC	common	default	
<input type="checkbox"/> APIC	common	L3Out	
<input type="checkbox"/> APIC	common	BMA	
<input type="checkbox"/> APIC	infra	overlay-1	
<input checked="" type="checkbox"/> APIC	demo_infra	demo_infra_vrt	
<input type="checkbox"/> APIC	mgmt	MGMT	

Appendix

Application Container Tenant Resource Requirements

Required Tenant Resources for Application Provisioning

- The following slides depict the mandatory resources that must be allocated to a tenant for basic application container provisioning as well as Shared L3 Out connectivity options
- Resources are allocated to tenants by leveraging the “Tenant Resource Allocation” workflow task during tenant onboarding

Required Tenant Resources for “Basic” App Container Provisioning

- One or more network tiers/EPGs
- One or more VMs per tier/EPG
- No L2, L3 or Shared L3 Out (“External Routed Network”) connectivity

Required Tenant Resources for “Basic” App Container Provisioning

Resource (Input) Label (in “Tenant Resource Allocation” task)	UCS Director Input Type	Description
Tenant	Generic Text Input	The name of the UCS Director tenant to which the resources will be allocated
Resource Group	Generic Text Input	The name of the Resource Group associated with the UCS Director tenant
Service Offering	Resource Group Service Offering	The Service Offering associated with the UCS Director tenant
User Group	User Group	The UCS Director user group that should be associated with the UCS Director tenant. <i>NOTE: The user group name must match the UCS Director tenant and APIC tenant name.</i>
Tenant IP Subnet Pool Policy ID	IP Subnet Pool Policy Identity	The UCS Director IP Subnet Pool Policy from which IP Subnets will be reserved for each provisioned application network tier/EPG that does not require external connectivity
VMware vCenter	VMware Account Selector	The VMware vCenter account in UCS Director where the application VMs will be provisioned
VMware Cluster	VMware Cluster Identity	The VMware ESXi Cluster within the VMware vCenter account in UCS Director where the application VMs will be provisioned
Resource Pool	VMware Resource Pool Identity	The VMware Resource Pool within the VMware ESXi Cluster where the application VMs will be provisioned
Data Store	VMware Datastore Identity	The VMware Datastore where the application VMs will be provisioned
APIC Account Name	APIC Device Identity	The APIC account in UCS Director where the application network profile will be provisioned
Tenant Private Network Name	APIC Device Tenant Private Network Identity	The Private Network (VRF) provisioned in APIC for the specific tenant
DV Switch	VMware DVSwitch Name	The Distributed Virtual Switch which is associated with and created by the association of the VMware vCenter and ACI Fabric VMM Domain

Standard tenant related inputs

Resources required for basic application containers

Required Tenant Resources for “Basic” App Container Provisioning + Shared L3 Out

Application Container with...

- One or more network tiers/EPGs
- One or more VMs per tier/EPG
- Shared L3 Out connectivity

Required Tenant Resources for “Basic” App Container Provisioning + Shared L3 Out

Resource (Input) Label (in “Tenant Resource Allocation” task)	UCS Director Input Type	Description
Tenant	Generic Text Input	The name of the UCS Director tenant to which the resources will be allocated
Resource Group	Generic Text Input	The name of the Resource Group associated with the UCS Director tenant
Service Offering	Resource Group Service Offering	The Service Offering associated with the UCS Director tenant
User Group	User Group	The UCS Director user group that should be associated with the UCS Director tenant. <i>NOTE: The user group name must match the UCS Director tenant and APIC tenant name.</i>
Tenant IP Subnet Pool Policy ID	IP Subnet Pool Policy Identity	The UCS Director IP Subnet Pool Policy from which IP Subnets will be reserved for each provisioned application network tier/EPG that does not require external connectivity
VMware vCenter	VMware Account Selector	The VMware vCenter account in UCS Director where the application VMs will be provisioned
VMware Cluster	VMware Cluster Identity	The VMware ESXi Cluster within the VMware vCenter account in UCS Director where the application VMs will be provisioned
Resource Pool	VMware Resource Pool Identity	The VMware Resource Pool within the VMware ESXi Cluster where the application VMs will be provisioned
Data Store	VMware Datastore Identity	The VMware Datastore where the application VMs will be provisioned
APIC Account Name	APIC Device Identity	The APIC account in UCS Director where the application network profile will be provisioned
Tenant Private Network Name	APIC Device Tenant Private Network Identity	The Private Network (VRF) provisioned in APIC for the specific tenant
DV Switch	VMware DVSwitch Name	The Distributed Virtual Switch which is associated with and created by the association of the VMware vCenter and ACI Fabric VMM Domain
Unique IP Subnet Pool Policy ID	IP Subnet Pool Policy Identity	The UCS Director IP Subnet Pool Policy from which IP Subnets will be reserved for each provisioned application network tier/EPG that requires connectivity to a shared L3 Out. IP subnets can not overlap for those tiers that access Shared L3Out
APIC External Network(Shared L3 Out)	APIC Device Tenant External Network In Outside Network Identity	The shared L3 Out External Routed Network configured in APIC in the “common” tenant
APIC Contract(Shared L3 Out)	APIC Device Tenant Contract to External Network Identity	The APIC contract which is configured in the “common” APIC tenant and is being provided by the Shared L3 Out External Routed Network which also resides in the “common” tenant

Standard tenant related inputs

Resources required for basic + Shared L3Out application containers

ACI Fabric Configuration Prerequisites for Tenant Onboarding

ACI Fabric Pre-requisite Checklist

- ACI Leaf and Spine nodes discovered and configured in ACI fabric through APIC
- VMware vCenter VMM Domain configured in APIC
- UCS Physical Domain configured in APIC
 - Using UCS B-Series blades in this example