



UCS Director: Tenant Onboarding

Cisco ACI & Microsoft HyperV

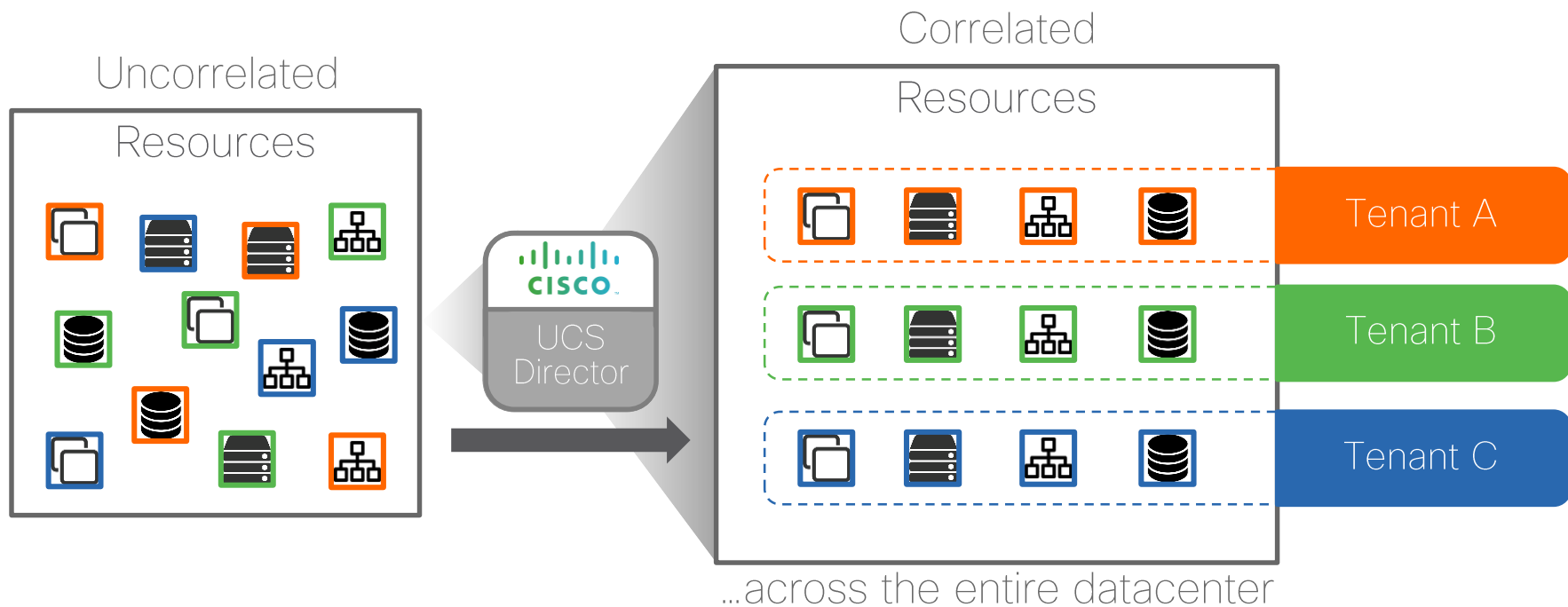
Dec. 2016

The following presentation covers
tenant onboarding in UCS Director with
ACI and a HyperV-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

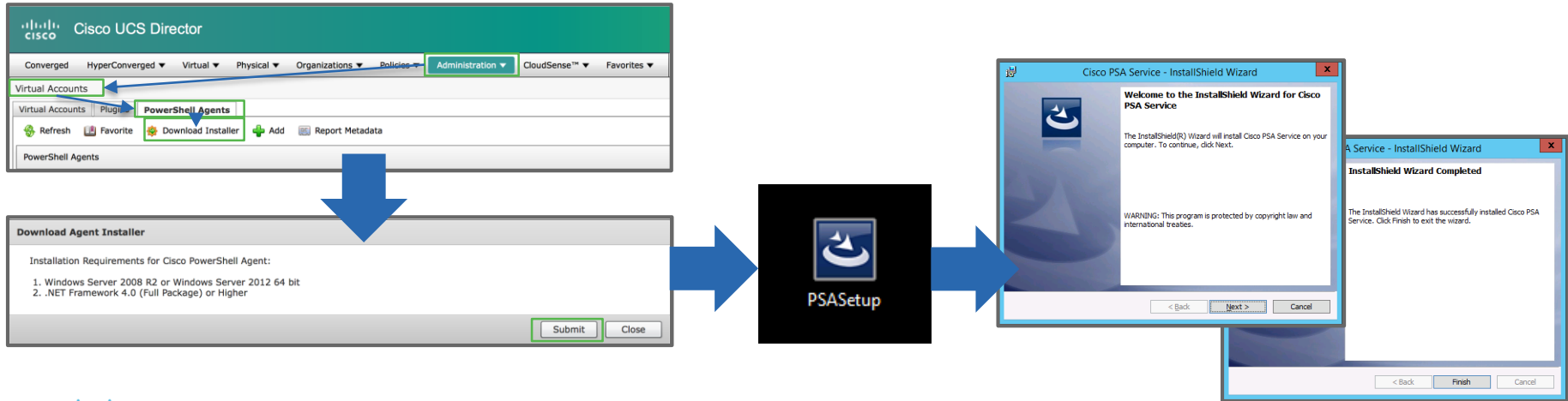
1. Install and Configure UCS Director PowerShell Agent
2. Add Virtual Account to UCS Director
3. Add APIC Account to UCS Director
4. Add Other Accounts to UCS Director (optional)
5. Create Resource Group
6. Create Service Offering
 - Add Virtual Compute Service Class
 - Add Virtual Network Service Class
 - Add Virtual Storage Service Class
7. Create Tenant Profile
8. 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
- UCS Director does not support Hyper-V Cluster or Cluster Shared Volumes. Instead map all individual Hyper-V Hosts and all non-CSV datastores to the tenant.

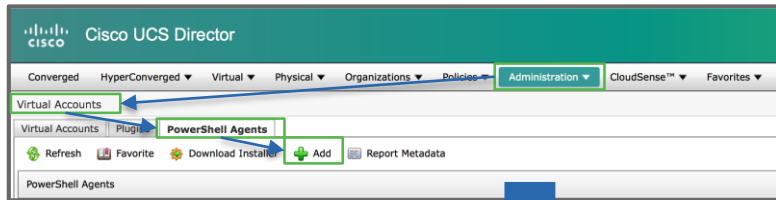
Install and Configure UCSD PowerShell Agent

- Download the UCS Director PowerShell Agent installer file directly from UCS Director
- Install on a Windows server that will serve as the PowerShell Agent server
- **Location:** Administration → Virtual Accounts → PowerShell Agents



Install and Configure UCSD PowerShell Agent (contd.)

- Add the UCS Director PowerShell Agent account to UCS Director
- Location : Administration → Virtual Accounts → PowerShell Agents



The 'Modify Agent' window is shown with the following fields:

- Agent Name: PSA_HyperV
- Agent Address: 172.31.241.50
- Use Credential Policy
- Agent Access Port: 43891
- Access Key: DWXE123MNLK1K
- Description: (empty)

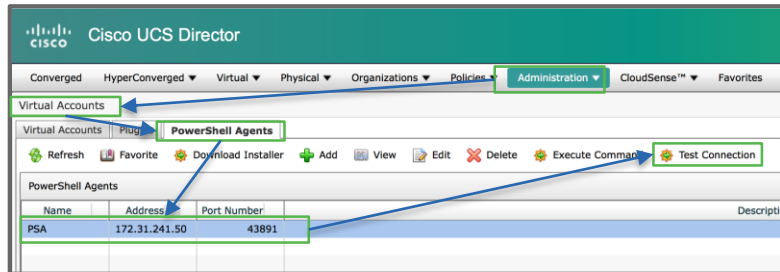
The 'Agent Access Port' and 'Access Key' fields are highlighted with an orange box. A blue arrow points from the 'PowerShell Agents' link in the previous screenshot to this window. At the bottom, there are 'Submit' and 'Close' buttons.

```
<?xml version="1.0"?>
- <ApplicationProperties>
  <authKey>DWXE123MNLK1K</authKey>
  <serverPort>43891</serverPort>
  <cnName>CN=cloudpia</cnName>
  <expiryYear>2013</expiryYear>
  <expiryMonth>12</expiryMonth>
  <expiryDay>31</expiryDay>
  <insecurePassword/>
  <friendlyName>My cloudpia Certificate</friendlyName>
</ApplicationProperties>
```

The Agent Access Port and Access Key inputs must match the settings on the PowerShell Agent server in the following file:
"C:\Program Files (x86)\Cisco Systems\Cisco PSA\props\properties.xml"

Install and Configure UCSD PowerShell Agent (contd.)

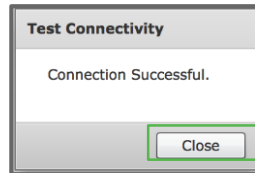
- Test the UCS Director PowerShell Agent connectivity
- **Location** : Administration → Virtual Accounts → PowerShell Agents



Note: You may need to restart the UCS Director PowerShell Agent Service running on Windows in order for any key or port changes to take effect.

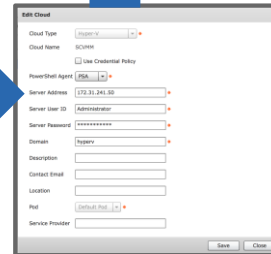
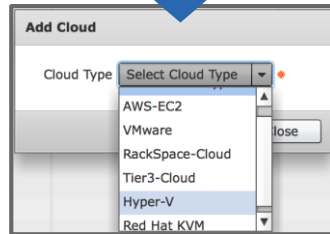
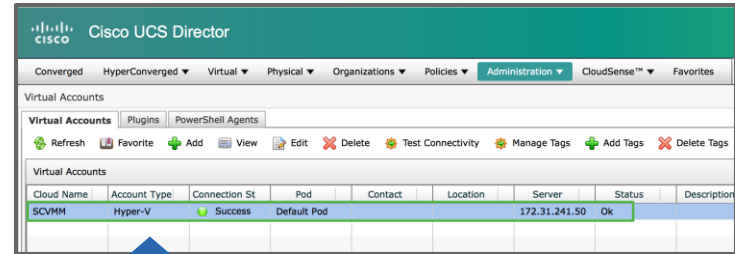
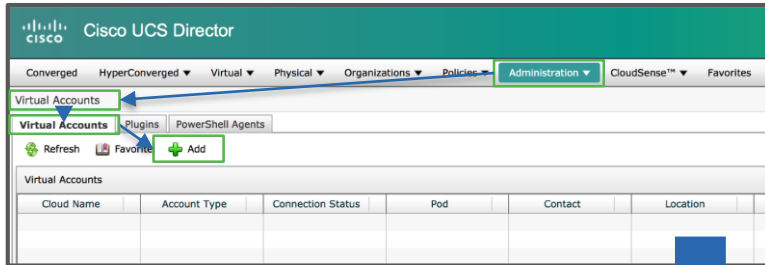
Note: You may need to enable winrm or make changes to the winrm configuration

For more information on installing and configuring the UCS Director PowerShell Agent, refer to the PowerShell Agent Installation and Configuration Guide found under the Installation Guides section here: http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/ucs-director/doc-roadmap/b_UCSDirectorDocRoadmap.html#reference_E936C66752254FBEADCF28EC59624471



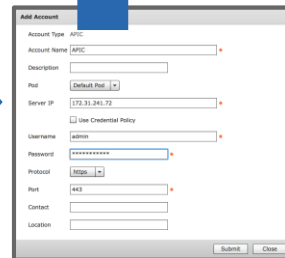
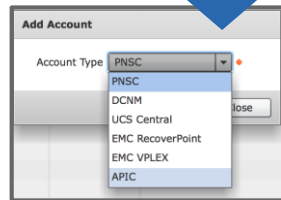
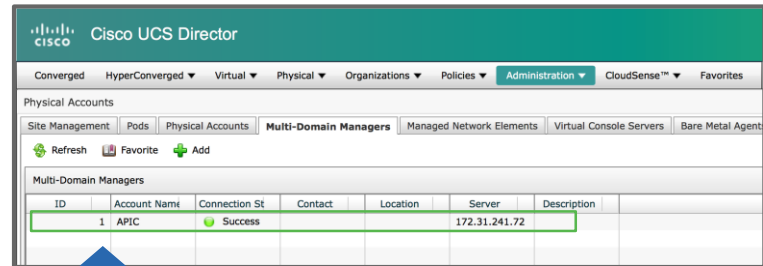
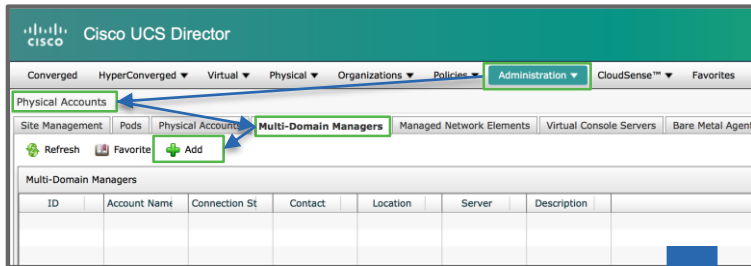
Add Virtual Account to UCS Director

- Add the Microsoft SCVMM 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



Add APIC Account to UCS Director

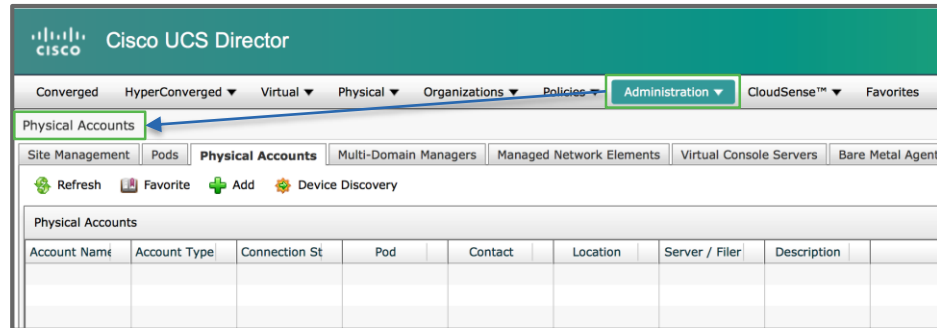
- Add the APIC cluster as a “Multi-Domain Manager” account in UCS Director
- **Location:** Administration → Physical Accounts → Multi-Domain Managers tab



Add Additional Accounts to UCS Director

(optional)

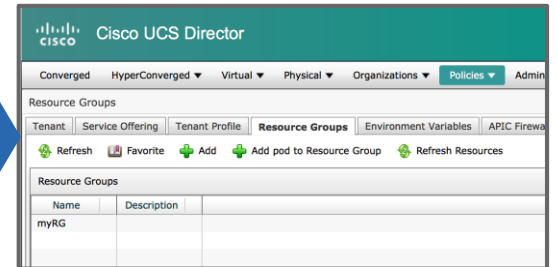
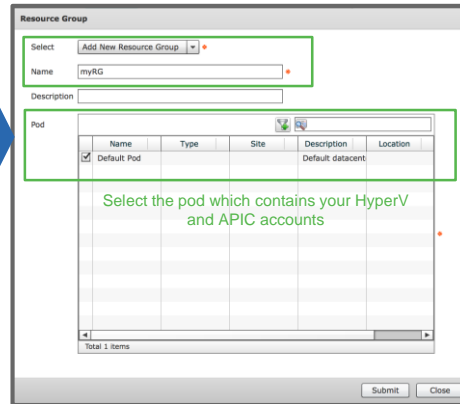
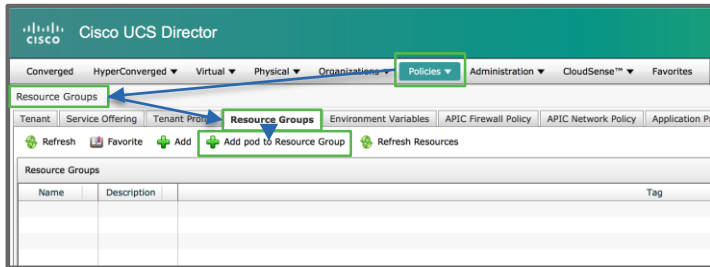
- If any other accounts are to be managed by UCS Director, for example a storage account, it can be added as well
- **Not mandatory, only hypervisor and ACI accounts are required for tenant onboarding**
- **Location:** Administration → Physical Accounts



The screenshot displays the Cisco UCS Director web interface. At the top, the navigation bar includes 'Administration' (highlighted in green) and 'Physical Accounts' (indicated by a blue arrow). Below this, the 'Physical Accounts' tab is selected, showing a table with the following columns: Account Name, Account Type, Connection St, Pod, Contact, Location, Server / Filer, and Description. The table is currently empty.

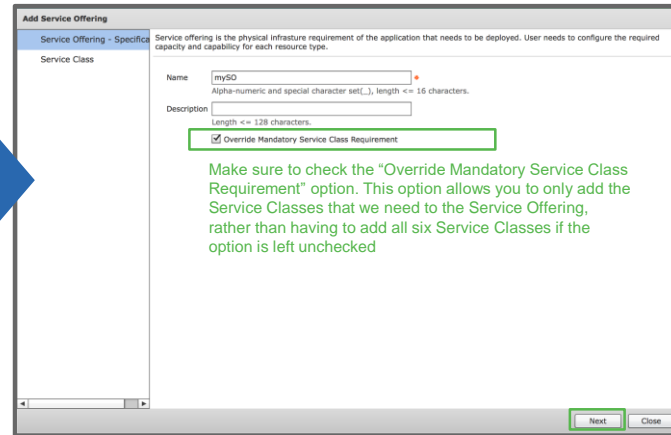
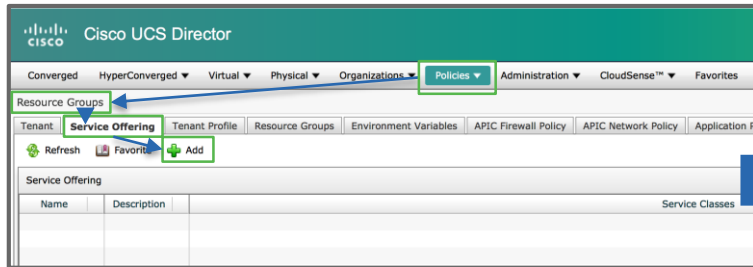
Create Resource Group

- Create a Resource Group and assign the Microsoft SCVMM and APIC accounts to the Resource Group
- **Location:** Policies → Resource Groups → Resource Groups tab



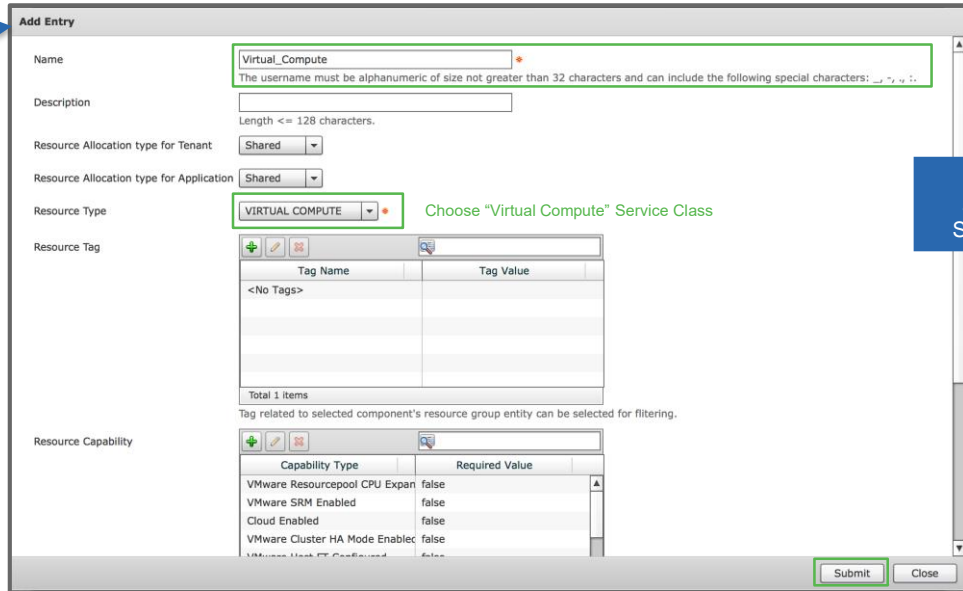
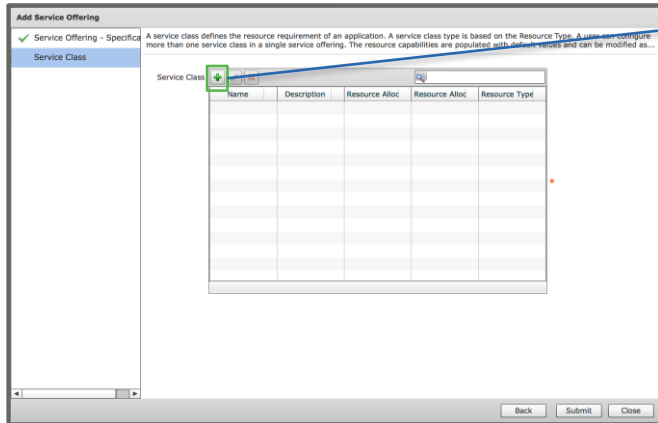
Create Service Offering

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



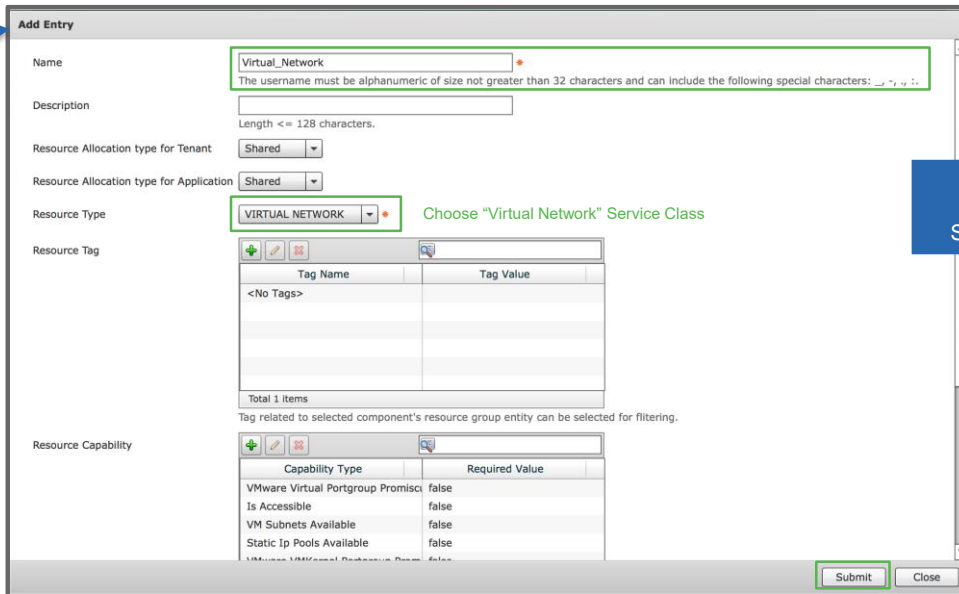
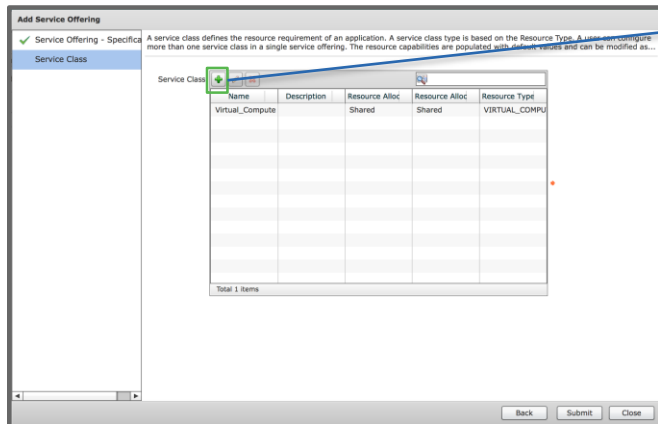
Add Virtual Compute Service Class

- 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 Virtual Storage Service Class

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

Add 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 virtual storage offering more than one service class in a single service offering. The resource capabilities are populated with **Auto-extended** 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_NETWORK

Total 2 items

Back Submit Close

Add Entry

Name: Virtual_Storage
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: Shared

Resource Allocation type for Application: Shared

Resource Type: VIRTUAL STORAGE Choose "Virtual Storage" 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 Datastore Accessible	false
Hyper-v Datastore Accessible	false
VMware VSC Enabled	false
VMware Datastore Cluster DRS En	false

Submit Close



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

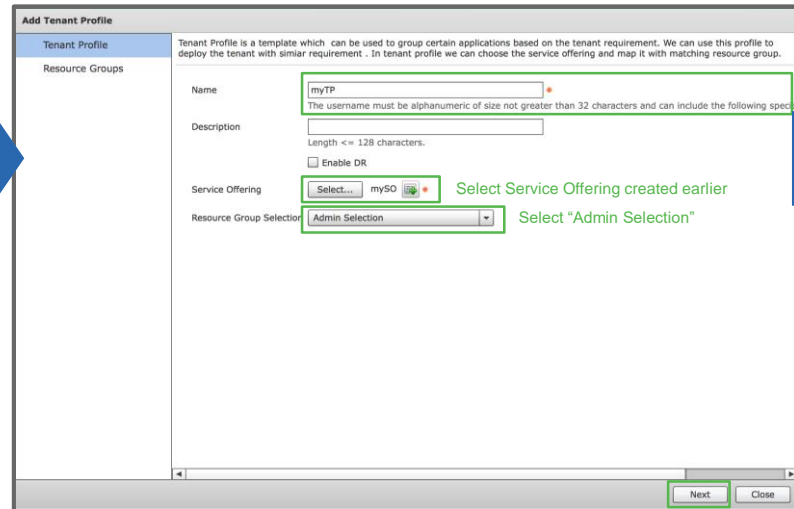
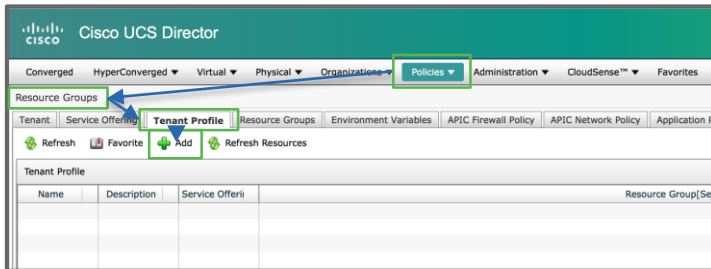
Refresh Favorite Add

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.

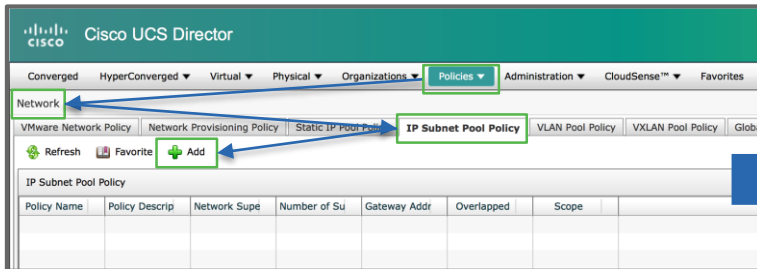
Resource Group	Service Offering	Resource Group
mySO	myRG	

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



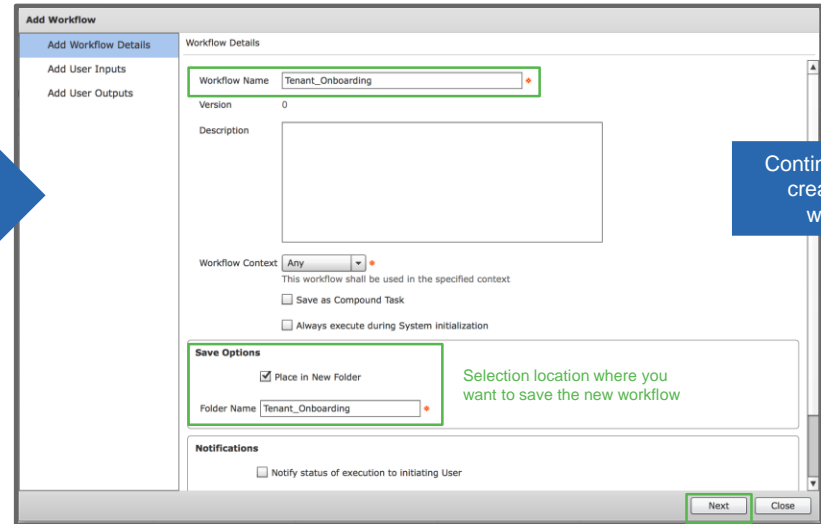
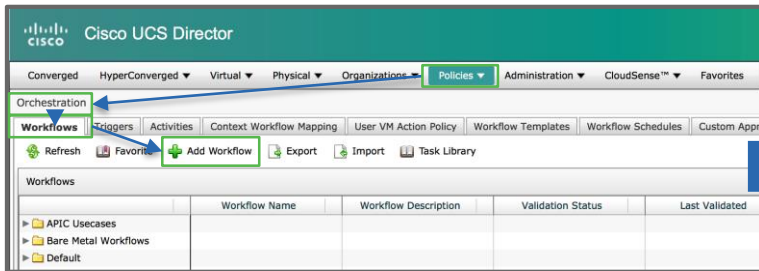
The screenshot shows the 'IP Subnet Pool Policy Information' configuration form. The form contains the following fields and values:

- Policy Name: Tenant IP Subnet Pool
- Policy Description: (empty)
- Network Supernet Address: 10.1.0.0
- Network Supernet Mask: 255.255.0.0
- Number of Subnets Required: 512
- Gateway Address: First address in the subnet
- Allow IP Overlap: Yes
- Scope: Group/Customer Organization

Each field has a red asterisk icon indicating a required field. The 'Submit' and 'Close' buttons are located at the bottom right of the form.

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



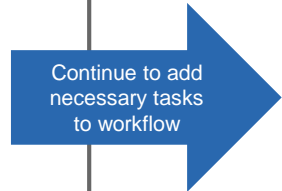
Add Workflow

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

Workflow User Outputs

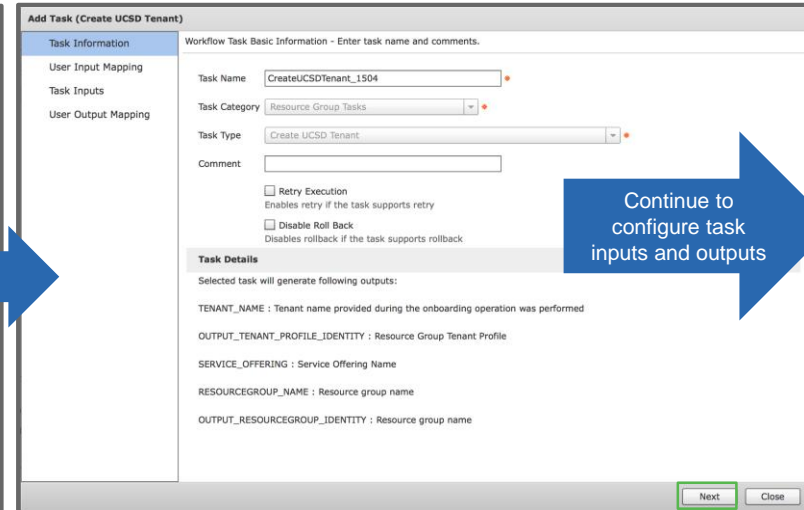
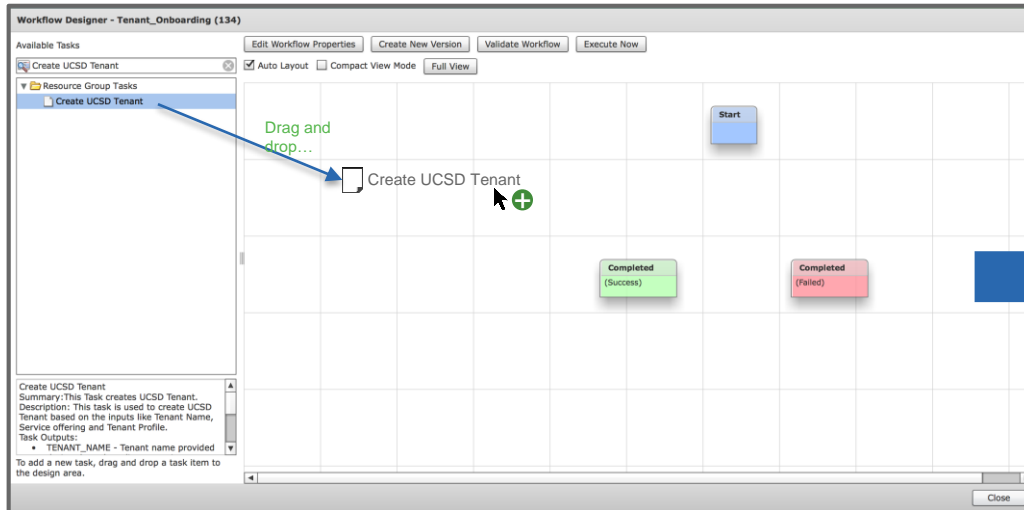
Output Label	Output Description	Mandatory	Type
Leave blank...			

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

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.

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

Task Inputs

User Output Mapping

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

Tenant Description:

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, the 'Available Tasks' pane is open, showing a tree view of tasks. The 'Add Group' task is highlighted in blue. A blue arrow points from the 'Add Group' task in the library to the workflow canvas. A green text box with the text 'Drag and drop...' and a green plus sign icon is positioned over the 'Add Group' task icon. The workflow canvas shows a 'Start' task connected to a 'CreateUCSDTenant_1504' task, which is connected to two 'Completed' tasks (Success and Failed). A blue arrow points from the workflow canvas to the right-hand screenshot.


The screenshot shows the 'Add Task (Add Group)' wizard configuration screen. The 'Task Information' tab is selected. The 'Task Name' field is set to 'AddGroup_1505'. The 'Task Category' is 'User and Group Tasks' and the 'Task Type' is 'Add Group'. The 'Comment' field is empty. There are checkboxes for 'Retry Execution', 'Disable Roll Back', and 'Disable Roll Back'. The 'Task Details' section shows 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 blue arrow points from the right side of the screen to the text 'Continue to configure task inputs and outputs'. The 'Next' button is highlighted with a green box.

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 displays the Workflow Designer interface for a tenant onboarding workflow. On the left, the 'Available Tasks' pane shows the 'Tenant Resource Allocation' task being dragged into the workflow canvas. The workflow canvas shows a sequence of tasks: 'Start' leading to 'CreateUCSDTenant_1504', which then leads to 'AddGroup_1505'. Below 'AddGroup_1505', there are two 'Completed' status boxes, one for 'Success' and one for 'Failed'. A blue arrow points from the 'Tenant Resource Allocation' task in the available tasks pane to the workflow canvas. Another blue arrow points from the workflow canvas to the 'Add Task (Tenant Resource Allocation)' wizard on the right. The wizard has the following configuration:

- Task Information:**
 - Task Name: TenantResourceAllocation_1506
 - Task Category: Resource Group Tasks
 - Task Type: Tenant Resource Allocation
 - Comment: (empty field)
- Task Details:**
 - Retry Execution: Enables retry if the task supports retry
 - Disable Roll Back: Disables rollback if the task supports rollback

At the bottom right of the wizard, there is a blue arrow pointing right with the text 'Continue to configure task inputs and outputs'. The 'Next' button is highlighted with a green box.

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 **Microsoft Hyper-V** 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
Hyper-V Account	HyperV Account Selector	The Hyper-V account in UCS Director where the application VMs will be provisioned
Hyper-V Multi Host	Hyper V Multi Host Identity	The Identities of all Hyper-V hosts available for provisioning
Hyper-V Multi Datastore	Hyper V Multi Datastore Identity	The identities of all Hyper-V datastores available for provisioning that reside on the available Hyper-V Hosts
Hyper-V Logical Switch	Hyper V Logical Switch Identity	The Hyper-V Logical Switch which is associated with and created by the association of the VMware vCenter and ACI Fabric VMM Domain
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

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 Mapping

Task Inputs
User Output Mapping

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

Hyper-V Account
Type: Hyper-V Account Selector
Map to User Input
User Input: Hyper-V Account
Use the "+" to add a new workflow input

Hyper-V Multi Host
Type: Hyper V Multi Host Identity
Map to User Input
User Input: Hyper-V Hosts
Use the "+" to add a new workflow input

Hyper-V Multi Datastore
Type: Hyper V Multi Datastore Identity
Map to User Input
User Input: Hyper-V Datastores
Use the "+" to add a new workflow input

Hyper-V Logical Switch
Type: Hyper V Logical Switch Identity
Map to User Input
User Input: Hyper-V Logical Switch
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

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, displaying 'Workflow Task Basic Information - Enter task name and comments.' 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)

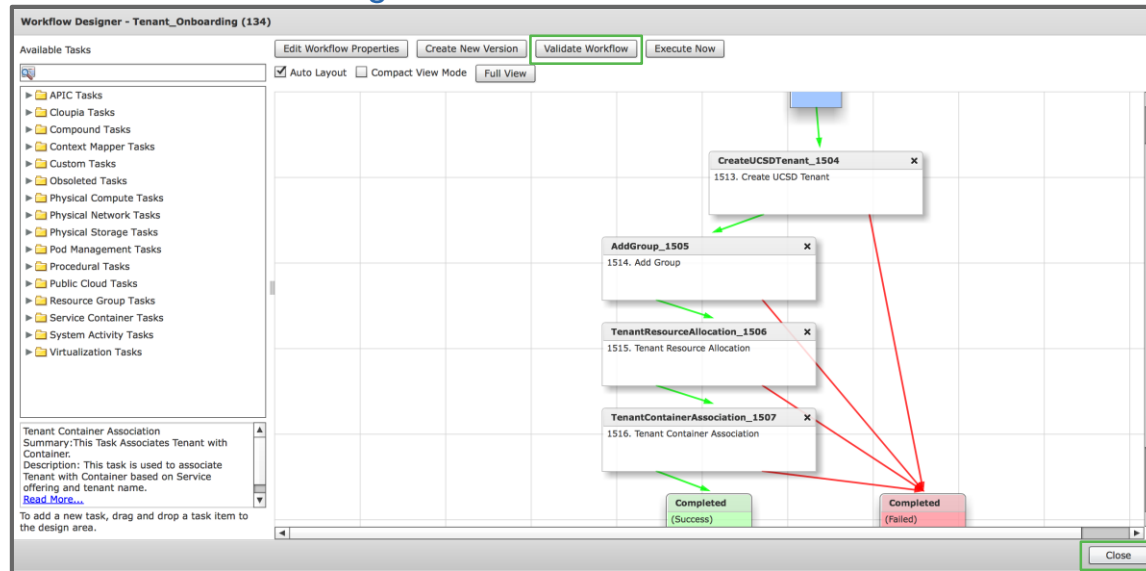
- Task Information
- User Input Mapping
- Task Inputs
- User Output Mapping

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

All user inputs required at execution time

Resource related user inputs for basic application container provisioning, assumption that these resources already exist

Input Label	Inpt	Mand	Type	Admir	Overrid
Tenant Name	Yes		gen_text_input		No
Service Offering	Yes		ServiceOfferingName		No
Tenant Profile	Yes		rgTenantProfileIdentity		No
Tenant Contact Email	Yes		gen_text_input		No
Tenant IP Subnet Pool	Yes		IPSubnetPoolPolicy		No
APIC Account	Yes		ApicDeviceIdentity		No
APIC Tenant Private Network	Yes		ApicDeviceTenantPrivateNetworkIdentity		No
Hyper-V Account	Yes		hypervAccountName		No
Hyper-V Hosts	Yes		hypervMultiHost		No
Hyper-V Datastores	Yes		hypervMultiDatastore		No
Hyper-V Logical Switch	Yes		hypervLogicalSwitchIdentity		No

Total 11 items

Back Next Close

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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 workflow categories, with 'Tenant_Onboarding' selected. The 'Execute now' button is highlighted with a green box. A blue arrow points from the 'Execute now' button to the right-hand screenshot.

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 tenant information and a table for APIC accounts. A 'Service Request Submit Status' pop-up window is displayed, indicating that the service request was submitted successfully.

Service Request Submit Status
Service request is submitted successfully ID 7
[Show Detail Status] [Close]

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

Account Nar	Tenant Name	Private Netw	Description
<input type="checkbox"/> APIC	demo_infra	demo_infra_vrf	
<input type="checkbox"/> APIC	mgmt	oob	
<input type="checkbox"/> APIC	mgmt	inb	
<input type="checkbox"/> APIC	mgmt	MGMT	
<input checked="" type="checkbox"/> APIC	Brown	Brown_VRF	
<input type="checkbox"/> APIC	Brown	Brown01-netw	

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 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
Hyper-V Account	HyperV Account Selector	The Hyper-V account in UCS Director where the application VMs will be provisioned
Hyper-V Multi Host	Hyper V Multi Host Identity	The Identities of all Hyper-V hosts available for provisioning
Hyper-V Multi Datastore	Hyper V Multi Datastore Identity	The identities of all Hyper-V datastores available for provisioning that reside on the available Hyper-V Hosts
Hyper-V Logical Switch	Hyper V Logical Switch Identity	The Hyper-V Logical Switch which is associated with and created by the association of the VMware vCenter and ACI Fabric VMM Domain
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
Hyper-V Account	HyperV Account Selector	The Hyper-V account in UCS Director where the application VMs will be provisioned

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
Hyper-V Account	HyperV Account Selector	The Hyper-V account in UCS Director where the application VMs will be provisioned
Hyper-V Cluster	Hyper V Cluster Identity	The Hyper-V Cluster within the Hyper-V account in UCS Director where the application VMs will be provisioned
Hyper-V Datastore	Hyper V Datastore Identity	The Hyper-V Datastore where the application VMs will be provisioned
Hyper-V Logical Switch	Hyper V Logical Switch Identity	The Hyper-V Logical Switch which is associated with and created by the association of the VMware vCenter and ACI Fabric VMM Domain
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
Hyper-V Account	HyperV Account Selector	The Hyper-V account in UCS Director where the application VMs will be provisioned
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
- Hyper-V (SCVMM) VMM Domain configured in APIC
- UCS Physical Domain configured in APIC
 - Using UCS B-Series blades in this example