EZ Cloud Release 1

Quickly get started with Enterprise Cloud Suite, UCS and ACI

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EZ Cloud!!!
By Enterprise Cloud Suite

Goals for "EZ Cloud"

- Customers are demanding solutions for enabling faster and more efficient IT Services

- Cisco has a portfolio of infrastructure, software, and services to aid customers

- Cisco's Architectural Strength comes from the bringing our solutions together

- Provide a quick and easy way to provide the most common uses cases needed for a Private Cloud Foundation

Agenda

- The EZ Cloud Intended User Experience

- Suggestions on having a Successful Cloud Project

- Getting your own EZ Cloud

- Find on the Community at https://communities.cisco.com/docs/DOC-63857

- Everything in the EZ Cloud Use Cases has been tested with shipping products

- This is not the ONLY way to do "Cloud"

- This provides a starting point for what is possible

- See Appendix Slides for Reference Details on replicating the Use Cases

KEEP CALM AND CARRY ON

The User Experience

"What do you mean people will use my cloud?"

Sales & Partner Training
Worldwide Sales Strategy & Operations

UCS Director Automates Tenant and Network creation in ACI, vDC Policy and Creation in UCSD, and Network Configuraiton in UCS and vSphere

Use Case: Onboard a Group
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Worldwide Sales Strategy & Operations

Each new Group gets a simple 3 Tier Cloud Environment supported by ACI

Use Case: Onboard a Group
Sales & Partner Training
Worldwide Sales Strategy & Operations

New VLANs created in UCS Central for each EPG in the new vDC

"Give me VMs… the work horse of IT"

Use Case: Order new Virtual Machines

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View and Manage Virtual Machines

ACI recognizes them in the correct EPGs

Application EPG - EPG web

POLICY | **OPERATIONAL** | STATS | HEALTH | FAULTS | HISTORY

CLIENT END-POINTS | CONTRACTS | CONTROLLER END-POINTS

100

END POINT	— MAC	IP	LEARNING SOURCE	HOSTING SERVER	REPORTING CONTROLLER NAME	INTERFACE	ENCAP	MULTICAST ADDRESS
u2562	00:50:56:...	---	learned vmm	cloud-esxcl2.csc.richfield...	cloud-vce...	10.136.10.102 (vmm) Node-101-102/cloud-fib...	vlan-1144	---
u2557	00:50:56:...	---	learned vmm	cloud-esxcl1.csc.richfield...	cloud-vce...	10.136.10.102 (vmm) Node-101-102/cloud-fib...	vlan-1144	---

Application EPG - EPG app

POLICY | **OPERATIONAL** | STATS | HEALTH | FAULTS | HISTORY

CLIENT END-POINTS | CONTRACTS | CONTROLLER END-POINTS

100

END POINT	— MAC	IP	LEARNING SOURCE	HOSTING SERVER	REPORTING CONTROLLER NAME	INTERFACE	ENCAP	MULTICAST ADDRESS
u2554	00:50:56:...	10.139.26.211	learned vmm	cloud-esxcl2.csc.richfiel...	cloud-vce...	10.136.10.102 (vmm) Node-101-102/cloud-fi...	vlan-1145	---

Use Case: Order new Virtual Machines

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"But I need physical servers too…"

After determining the proper ACI Tenant, ANP, and EPG for the Project …

Provision a new VLAN for Staticly Assigning Bare Metal Servers into the EPG

Use Case: Order New Bare Metal Server

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Physical Domain for UCS added to the EPG

The new VLAN mapped to the EPG

Use Case: Order New Bare Metal Server

This workflow is deploying a new Bare Metal Server into the Prepared VDC Tier.

Fairly typical Bare Metal Deployment from UCSD until moving to Production (ie EPG)

Use Case: Order New Bare Metal Server

Here in UCS Manager the new Bare Metal Server is seen connected to the correct VLAN

Here the new Bare Metal Server is seen in the Data EPG.

Suggestions on having a Successful Cloud Project

Start with the Use Cases

Cloud is about user experience.

Use Cases will drive everything else

Use Case: Onboard New Group

Automate the provisioning steps in the compute, storage and network layers of the cloud to enable a new end user group to login and begin consuming cloud resources.

Sample Request Interface

| User Group | Group List ▼ |
| Sandbox Name | Text Entry |

Order

Automation Rough Cut

Provision Resources *(i.e. Name/IP)* → Create Network Tenant → Create Network Profile

Configure Compute Network → Create Cloud Resources → Create Cloud Policies

Create Cloud VDC → Ready for Use

Use Case: Order a New Basic Project

Create a new basic three teir project environtment for a group to deploy resources into. The project should implement standard traffic segmentation policies for web, app, and data tiers.

Sample Request Interface

| User Group | Group List ▼ |
| Project Name | Text Entry |

Order

Automation Rough Cut

Provision Resources *(i.e. Name/IP)* → Find Network Tenant → Create Network Profile
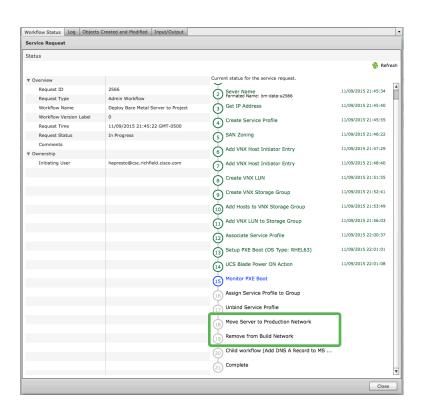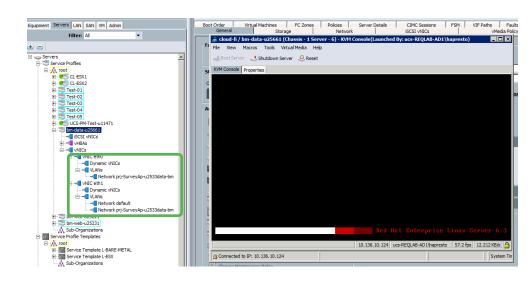
Configure Compute Network → Create Cloud Resources → Create Cloud Policies

Create Cloud VDC → Ready for Use

Use Case: Order New Virtual Machine

Enable End Users to Self-Service Order a Standard Virtual Machine. The new VM details will be determined based on basic user input.

Sample Request Interface

Operating System	Win/RHEL ▼
Category*	Web/App/Data ▼
Performance**	Std/Adv/Ext ▼
Quantity	1/2/3/4 ▼
Project	Project List ▼

Order

Automation Rough Cut

Determine VM Template → Clone Template → Customize Guest

Register DNS → Notify User → Ready for Use

Use Case: Order New Bare Metal Server

Enable End Users to Self-Service Order a Standard Bare Metal Server. The new server details will be determined based on basic user input.

Sample Request Interface

Operating System	Win/RHEL ▼
Category*	Web/App/Data ▼
Performance**	Std/Adv/Ext ▼
Project	Project List ▼

Order

Automation Rough Cut

Provision Resources *(i.e. Name/IP)* → Create Service Profile → Zone Storage Fabric

Configure SAN Boot → Configure PXE Session → Image New Server

Update SP Build > Prod → Register DNS → Notify User

Ready for Use

Plan your use cases

New Project Order Form

Project Name:	Textbox
Group:	Dropdown
Web Server OS:	Dropdown
Web Server Quantity:	Dropdown
App Server OS:	Dropdown
App Server Quantity:	Dropdown
Data Server OS:	Dropdown
Data Server Quantity:	Dropdown

General Automation Workflow

Gather User Input and Create Names

Potentially build the ANP Creation as a Compound Workflow

Create ANP → Create Bridge Domain/Subnets ? → Create EPGs → Create Filters and Contracts → Create Service Chain → Associate Contracts

Associate Service Chain → Add VMM Domain to EPG

Create UCSD vDC → Deploy Loadbalanced Web VMs → Deploy Application VMs → Deploy Data VMs

Use "Bulk Deploy VM" Compound Tasks

UCS Director vDC Structure

General
Network Policy – Gen
System Policy – Gen

Application
Network Policy – App
System Policy – App

Webserver
Network Policy – Web
System Policy – Web

Database
Network Policy – Data
System Policy – Data

Each new project will create a Virtual Data Center owned by the indicated group. The vDC Network Structure will be backed by the ACI ANP tying each vDC Category to the related EPG within the ANP. The System Policy for each category will adjust the naming convention for the VMs to indicate the tier.

Basic 3 Tier Application Profile Structure

Filter   Filter   Filter

EZ Cloud Architecture – Release 1

For EZ Cloud Release 1 this is the basic component breakdown.

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Infrastrcuture Architecture

With the Use Cases and Software Architecture determine the infrastructure needs.

Getting your own EZ Cloud

Contents

- General Info

- UCSD -> ACI Object Relationship Map

- ACI Configuration Notes

- Use Case Implementation Notes

- Find on the Community at https://communities.cisco.com/docs/DOC-63857

EZ Cloud Reference Material
EZ Cloud Type 1: Release 1 Use Cases

Use Cases

Use Case: Onboard New Group

Automate the provisioning steps in the compute, storage and network layers of the cloud to enable a new end user group to login and begin consuming cloud resources.

Sample Request Interface

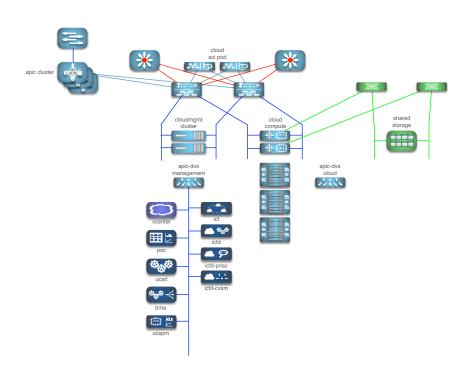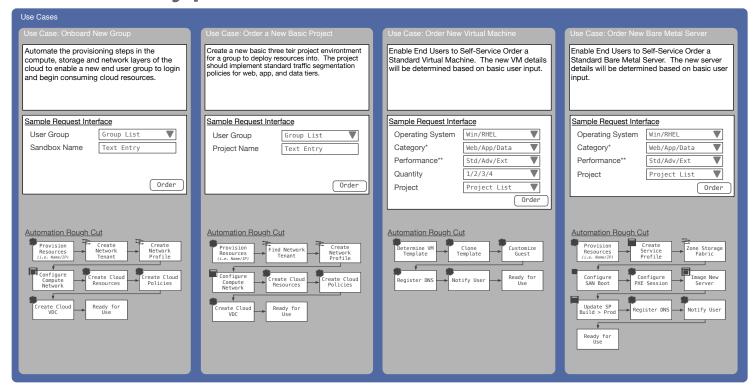|	
User Group	Group List ▼
Sandbox Name	Text Entry

Order

Automation Rough Cut

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Sample Request Interface

User Group	Group List ▼
Project Name	Text Entry

Order

Automation Rough Cut

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Use Case: Order New Virtual Machine

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Automation Rough Cut

Provision Resources *(i.e. Name/IP)* → Create Service Profile → Zone Storage Fabric

Configure SAN Boot → Configure PXE Session → Image New Server

Update SP Build > Prod → Register DNS → Notify User

Ready for Use

EZ Cloud Reference Material
EZ Cloud Release 1 Conceptual Cloud Architecture

EZ Cloud!!!
By Enterprise Cloud Suite

Application End User

Application Owner

Services Architect

Infrastructure Engineering

Operations User

Prime Service Catalog: End User Portal and Catalog

End User Portal

Service Ordering and Tracking

Service Management

Service Admin Portal

Service Catalog

CMDB

Financial System

Help Desk

User Authentication

User Database

Email Notifications

Cisco Cloud API's

UCS Performance Manager

Operations

Infrastructure Monitoring and Capacity Planning

LDAP User Database
MS AD

SMTP Server

UCS Director: Private Cloud Infrastructure Automation

Admin Portal

Infrastructure Management and Operations

Technical Automation and Orchestration

Cisco Cloud API's

User Authentication

User Database

Email Notifications

User Portal

Site: Data Center

Pod: Cloud Pod

Virtual — vCenter

Compute — UCS, UCSC

Network — ACI, MDS

Storage — VNX

ICF Director: Public Cloud Integration

Admin Portal

Public Provider Management

Public Cloud Extension Configuration

User Portal

Public Clouds

Provider 1

IcfCloud 1 — Group: Business Unit 1 / Group: Business Unit 2

IcfCloud 2 — Group: Business Unit 3 / Group: Business Unit 1

Provider 2

IcfCloud 1 — Group: Business Unit 2 / Group: Business Unit 1

IcfCloud 2

CISCO

Logical Construct Mapping Between UCS Director and ACI

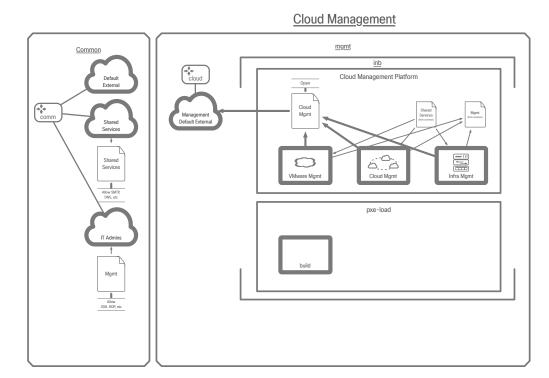A basic association between UCS Director logical components and ACI Components is leveraged.

Group: Group Name	**Tenant: Group Name**
Virtual Data Center (vDC): prj-NAME	Application Profile (ANP): prj-Name
Category Label: Web Server / Category Code: web	EPG: web
Category Label: Application Server / Category Code: app	EPG: app
Category Label: Database Server / Category Code: data	EPG:data

"Category Code" is a modifiable field in UCSD. Highly recommend changing from defaults to these indicated

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EZ Cloud Type 1 General ACI Fabric Expectations

This is the basics for the ACI topology considered for EZ Cloud Type 1 Use Cases and examples.

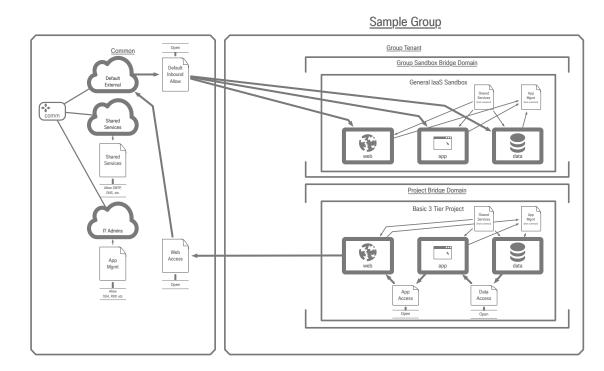# EZ Cloud Reference Material
EZ Cloud Type 1 Group Onboarding and Project ACI Design

This represents the standard ACI Application Profiles for Groups Onboarded and Projects ordered with EZ Cloud Release 1 Use Cases.
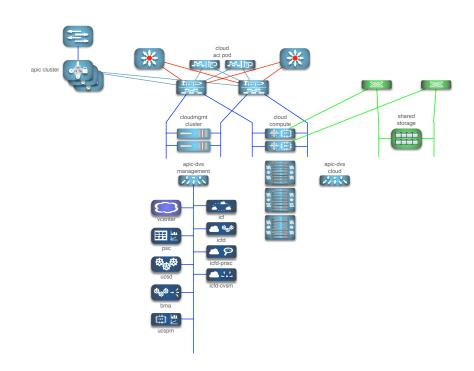
EZ Cloud Reference Material
EZ Cloud Sample Physical Infrastructure Architecture

This is a sample physical architecture and topology for use with EZ Cloud Release 1 and Type 1 Use Cases.
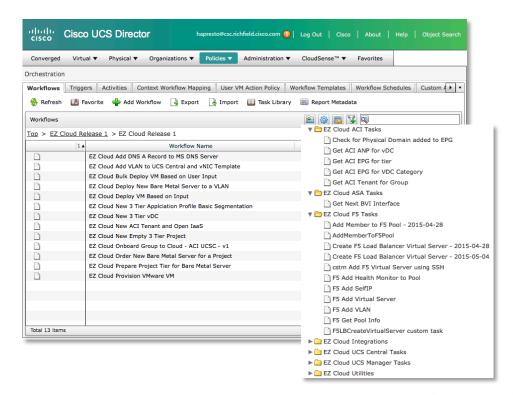

apic cluster

cloud
aci pod

cloudmgmt
cluster

cloud
compute

shared
storage

apic-dvs
management

apic-dvs
cloud

vcenter

psc

ucsd

bma

ucspm

icf

icfd

icfd-pnsc

icfd-cvsm

EZ Cloud Reference Material
EZ Cloud Release 1 Workflows and Custom Tasks

Soon to be posted to the Cisco Community Site…

- All workflows and tasks used in the Use Cases

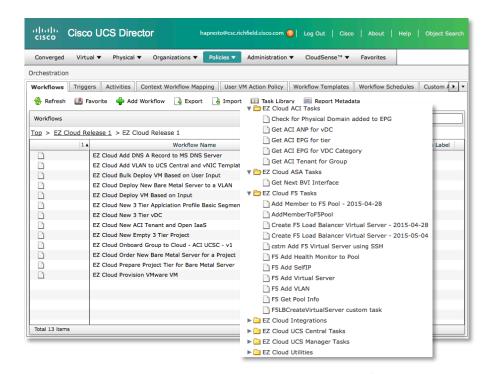- Instructions on standing up use cases in your lab or environment

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Workflow Import and Implementation Notes

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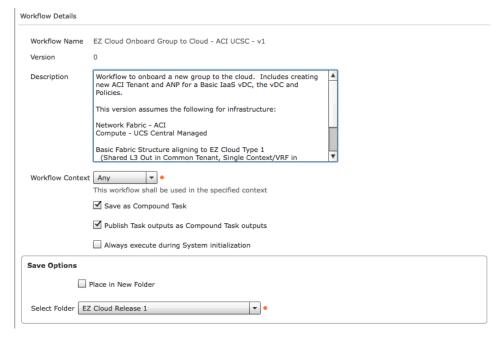
Getting the Workflows and Custom Tasks

- Download the .wfdx file from the community
  - https://communities.cisco.com/docs/DOC-63857

- Import into UCS Director

Use Case: Onboard New Group

- Parent Workflow "EZ Cloud Onboard Group to Cloud – ACI UCSC – v1
    - This example uses UCS Central managed UCS. Modifying to use UCSM directly is an easy change

- Child Workflows
    - EZ Cloud New ACI Tenant and Open IaaS
    - EZ Cloud New 3 Tier vDC
    - EZ Cloud Add VLAN to UCS Central and vNIC Template

Workflow Details

Workflow Name	EZ Cloud Onboard Group to Cloud - ACI UCSC - v1
Version	0
Description	Workflow to onboard a new group to the cloud. Includes creating new ACI Tenant and ANP for a Basic IaaS vDC, the vDC and Policies. This version assumes the following for infrastructure: Network Fabric - ACI Compute - UCS Central Managed Basic Fabric Structure aligning to EZ Cloud Type 1 (Shared L3 Out in Common Tenant, Single Context/VRF in

Workflow Context [Any ▾] *
This workflow shall be used in the specified context

☑ Save as Compound Task

☑ Publish Task outputs as Compound Task outputs

☐ Always execute during System initialization

Save Options

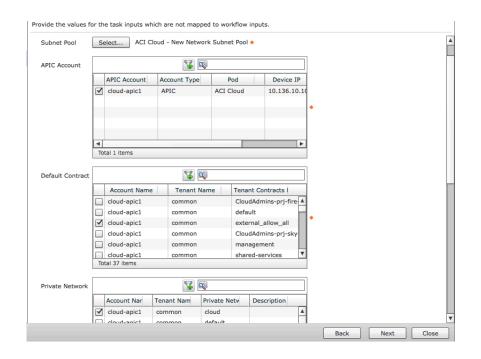☐ Place in New Folder

Select Folder [EZ Cloud Release 1 ▾] *

Use Case: Onboard New Group
Update Task: EZ Cloud New ACI Tenant and Open IaaS

- Open and edit task to identify your local ACI objects

- Task Inputs to Set
  - Subnet Pool – Where to provison new IP range
  - Default Contract – Each EPG in the Open IaaS ANP will Consume this Contract to enable access. Suggest it be a permit ip any policy. This needs to be provided by the External IP used for incoming traffic.
  - The Shared Private Network (Context) from common
  - The Shared L3 Out from Common
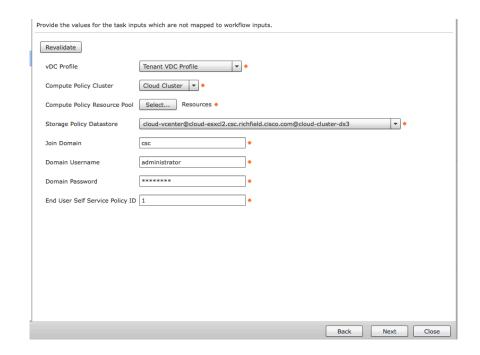 - The VMM Domain in which to create the EPGs

Use Case: Onboard New Group
Update Task: EZ Cloud New 3 Tier vDC

- Open and edit task to identify local UCSD and Cloud Info

- Task Inputs to Set

  - vDC Profile – Template vDC Profile

  - Compute Policy Cluster to deploy new VMs onto

  - Compute Policy Resource Pool from the above cluster

  - Storage Policy Datastore to store new VMs on

  - AD Domain info to join windows server with (fill in something even if not joining domains)

  - End User Self Service Policy ID – The Policy ID Number for a policy to enable end user management of VMs

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

Revalidate	
vDC Profile	Tenant VDC Profile ▾ *
Compute Policy Cluster	Cloud Cluster ▾ *
Compute Policy Resource Pool	Select... Resources *
Storage Policy Datastore	cloud-vcenter@cloud-esxcl2.csc.richfield.cisco.com@cloud-cluster-ds3 ▾ *
Join Domain	csc *
Domain Username	administrator *
Domain Password	******* *
End User Self Service Policy ID	1 *

Back   Next   Close

Use Case: Onboard New Group
Update Task: EZ Cloud Add VLAN to UCS Central and vNIC Template

- Open and edit task to identify local Compute details for new VLANs

- Modify all three instances

- Task Inputs to Set

  - Domain Group from UCSC where VLANs will be created

  - UCSC Account – Requires a Credential Policy be created and used to access the UCS Central account

  - UCSC Org Name – the org that will have permissions to the new vlan. Format of org-NAME

  - ESXA and B vNIC Template Names used with the Service Profiles for ESX Hosts.

Use Case: Order a New Basic Project

- Parent Workflow "EZ Cloud New Empty 3 Tier Project"

  - This example uses UCS Central managed UCS. Modifying to use UCSM directly is an easy change

- Child Workflows

  - EZ Cloud Onboard Group to Cloud – ACI UCSC – v1 (Only if the Identified Group has not been onboarded)

  - EZ Cloud New 3 Tier Application Profile Basic Segmentation

  - EZ Cloud New 3 Tier vDC

  - EZ Cloud Add VLAN to UCS Central and vNIC Template

Workflow Details

Workflow Name	EZ Cloud New Empty 3 Tier Project
Version	0

Description

Create a new "Project" for a group in the cloud. The Project will be represented by a vDC in UCSD and the network structure will be backed by an Application Profile in ACI. This verison assumes the Compute Environment is managed by UCS Central.

The Proejct will be a standard 3 Tier (Web, App, Data) wiht standard segmentation (Web -> App -> Data) style.

Be sure to modify the inputs in the Child Workflows for Creating the New 3 Tier Applciation Profile, and Adding VLANs to UCS Central to reflect the infrastructure accounts and shared contacts from your

Workflow Context   Any   *

This workflow shall be used in the specified context

☐ Save as Compound Task

☐ Always execute during System initialization

Save Options

☐ Place in New Folder

Select Folder   EZ Cloud Release 1   *

Use Case: Order a New Basic Project
Update Task: EZ Cloud New 3 Tier Application Profile Basic Segmentation
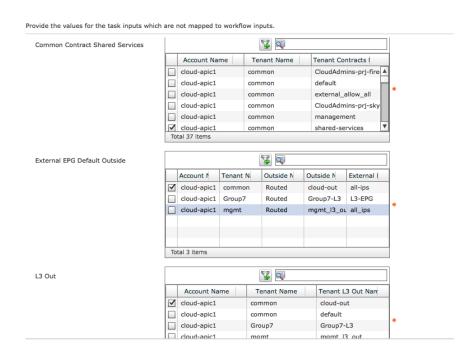
- Open and edit task to identify your local ACI objects

- Task Inputs to Set

  - The Private Network (Context) from common

  - Subnet Pool – Where to provison new IP range

  - Loadbalancer EPG – An EPG in Common where Loadbalancers could be deployed. If not using LBs, just select something.

  - Common Contract Management Services – A contract from the common tenant that will be provided by all new EPGs to allow inbound management access like SSH and RDP. This needs to be consumed by any EPGs (Internal or External) where management traffic will come from.

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

Private Network

	Account Nam	Tenant Nam	Private Netv	Description
☑	cloud-apic1	common	cloud	
☐	cloud-apic1	common	default	
☐	cloud-apic1	common	l2-transit-routi	
☐	cloud-apic1	infra	overlay-1	
☐	cloud-apic1	Group7	Group7-VRF	
☐	cloud-apic1	mgmt	oob	

Total 7 items

Subnet Pool   Select...   ACI Cloud - New Network Subnet Pool ＊

Loadbalancer EPG

	Account Nar	Tenant Nam	Application	EPG Name
☑	cloud-apic1	common	shared-services	loadbalancing
☐	cloud-apic1	Skunkworks	IaAs-u1521	web
☐	cloud-apic1	Skunkworks	IaAs-u1521	app
☐	cloud-apic1	Skunkworks	IaAs-u1521	data
☐	cloud-apic1	Skunkworks	prj-lust-u2392	fw-o
☐	cloud-apic1	Skunkworks	prj-lust-u2392	fw-i

Total 103 items

Common Contract Management Services

	Account Name	Tenant Name	Tenant Contracts
☐	cloud-apic1	common	CloudAdmins-prj-fire
☐	cloud-apic1	common	default

Use Case: Order a New Basic Project
Update Task: EZ Cloud New 3 Tier Application Profile Basic Segmentation
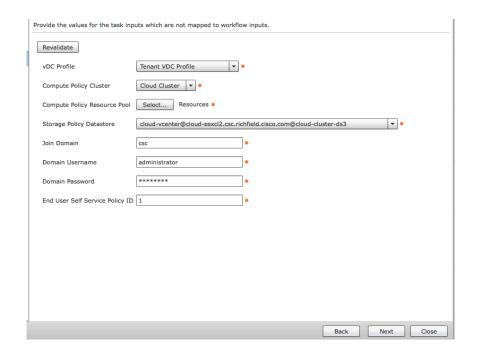
- Task Inputs to Set – con't
  - Common Contract Shared Services – A contract from the common tenant that will be consumed by all new EPGs for services like DNS and SMTP. Must be provided by the EPG (Internal or External) where services are provided.
  - Externral EPG Default Outside – This EPG will consume the contract provided by the Web Tier. Needs to be in the Common Tenant.
  - The L3 Out from Common and the Tenant (should be common) where the L3 Out is built
  - The VMM Domain in which to create the EPGs

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

Common Contract Shared Services

	Account Name	Tenant Name	Tenant Contracts
☐	cloud-apic1	common	CloudAdmins-prj-fire
☐	cloud-apic1	common	default
☐	cloud-apic1	common	external_allow_all
☐	cloud-apic1	common	CloudAdmins-prj-sky
☐	cloud-apic1	common	management
☑	cloud-apic1	common	shared-services

Total 37 items

External EPG Default Outside

	Account N	Tenant N	Outside N	Outside N	External
☑	cloud-apic1	common	Routed	cloud-out	all-ips
☐	cloud-apic1	Group7	Routed	Group7-L3	L3-EPG
☐	cloud-apic1	mgmt	Routed	mgmt_l3_ou	all_ips

Total 3 items

L3 Out

	Account Name	Tenant Name	Tenant L3 Out Nam
☑	cloud-apic1	common	cloud-out
☐	cloud-apic1	common	default
☐	cloud-apic1	Group7	Group7-L3
☐	cloud-apic1	mgmt	mgmt_l3_out

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Use Case: Order a New Basic Project
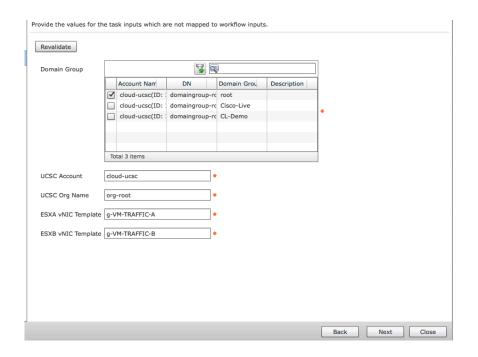## Update Task: EZ Cloud New 3 Tier vDC

- Open and edit task to identify local UCSD and Cloud Info

- Task Inputs to Set

    - vDC Profile – Template vDC Profile

    - Compute Policy Cluster to deploy new VMs onto

    - Compute Policy Resource Pool from the above cluster

    - Storage Policy Datastore to store new VMs on

    - AD Domain info to join windows server with (fill in something even if not joining domains)

    - End User Self Service Policy ID – The Policy ID Number for a policy to enable end user management of VMs

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

Revalidate

vDC Profile	Tenant VDC Profile
Compute Policy Cluster	Cloud Cluster
Compute Policy Resource Pool	Select... Resources
Storage Policy Datastore	cloud-vcenter@cloud-esxcl2.csc.richfield.cisco.com@cloud-cluster-ds3
Join Domain	csc
Domain Username	administrator
Domain Password	*******
End User Self Service Policy ID	1

Back Next Close

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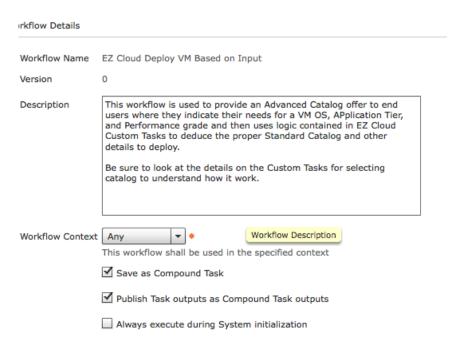
Use Case: Order a New Basic Project
Update Task: EZ Cloud Add VLAN to UCS Central and vNIC Template

- Open and edit task to identify local Compute details for new VLANs

- Modify all three instances

- Task Inputs to Set

  - Domain Group from UCSC where VLANs will be created

  - UCSC Account – Requires a Credential Policy be created and used to access the UCS Central account

  - UCSC Org Name – the org that will have permissions to the new vlan. Format of org-NAME

  - ESXA and B vNIC Template Names used with the Service Profiles for ESX Hosts.

Sales & Partner Training
Worldwide Sales Strategy & Operations
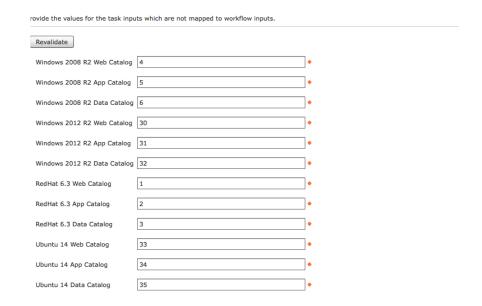
Use Case: Order New Virtual Machine

- Parent Workflow "EZ Cloud Deploy VM Based on Input"

  - There is also a "Bulk" version workflow that just loops over this workflow to deploy more than on VM

- Child Workflows

  - EZ Cloud Provision VMware VM

  - EZ Cloud Add DNS A Record to MS DNS Server

rkflow Details

Workflow Name	EZ Cloud Deploy VM Based on Input
Version	0
Description	This workflow is used to provide an Advanced Catalog offer to end users where they indicate their needs for a VM OS, APplication Tier, and Performance grade and then uses logic contained in EZ Cloud Custom Tasks to deduce the proper Standard Catalog and other details to deploy. Be sure to look at the details on the Custom Tasks for selecting catalog to understand how it work.

Workflow Context   Any   ✶   **Workflow Description**

This workflow shall be used in the specified context

☑ Save as Compound Task

☑ Publish Task outputs as Compound Task outputs

☐ Always execute during System initialization

Use Case: Order New Virtual Machine
Update Task: Select Catalog

- This is a Custom Task that uses logic to determin the Standard Catalog based on user input.

- The Custom Task supports 4 OS's and 3 Tiers by default. This can be changed fairly easy by editing the Custom Task.

- Task Inputs to Set

  - Provide the Standard Catalog ID for each of the potential combinations of User Inputs. Standard Catalog IDs can be found at Policies > Catalog and showing the ID field after clicking the "gear"

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

Revalidate

Windows 2008 R2 Web Catalog	4
Windows 2008 R2 App Catalog	5
Windows 2008 R2 Data Catalog	6
Windows 2012 R2 Web Catalog	30
Windows 2012 R2 App Catalog	31
Windows 2012 R2 Data Catalog	32
RedHat 6.3 Web Catalog	1
RedHat 6.3 App Catalog	2
RedHat 6.3 Data Catalog	3
Ubuntu 14 Web Catalog	33
Ubuntu 14 App Catalog	34
Ubuntu 14 Data Catalog	35

Use Case: Order New Virtual Machine
Update Task: Set vCPU and vRAM

- This is a Custom Task that uses logic to the CPU and RAM sizes based on Performance Level.

- The Custom Task supports 3 Performance Tiers by Default (Standard, Advanced, Extreme). This can be changed fairly easy by editing the Custom Task.

- Task Inputs to Set

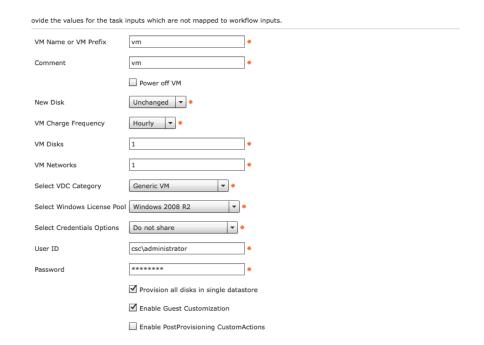 - Provide the vCPU Count and vRAM (in MB) for each of the performance tiers.

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

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Standard vCPU Count	1
Advanced vCPU Count	2
Extreme vCPU Count	2
Standard vRAM	1024
Advanced vRAM	2048
Extreme vRAM	4096

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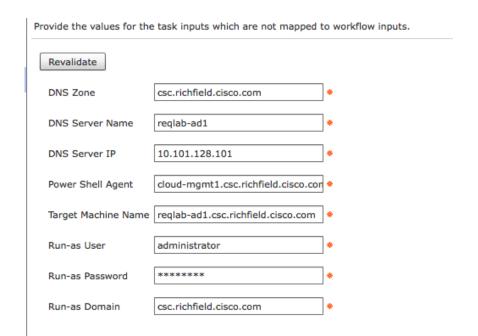# Use Case: Order New Virtual Machine
Update Task: Add VM

- This is a slightly customized version of the OOB Vmware Provisioning Workflow used by UCSD

- Task Inputs to Set
  - Each of the Listed Task Inputs needs to have some value assigned
  - Most of these Task Inputs are overridden by the Standard Catalog being deployed or the vDC Policies, but the Workflow needs initial values so fill in something
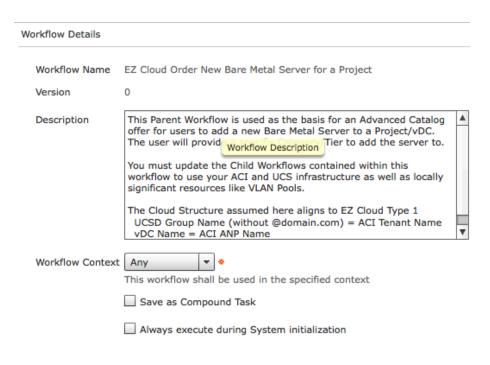
Use Case: Order New Virtual Machine
Update Task: Add DNS Entry

- This is a Child Workflow that will add (and rollback) DNS A records to a Microsoft DNS Server

- If you have another DNS server delete this task completely and replace with your task.

- Task Inputs to Set
  - DNZ Zone to add the record to
  - DNS Server Name – short name, not FQDN
  - DNS Server IP
  - Power Shell Agent – FQDN of the Powershell Agent
  - Target Machine Name – Typically the DNS server itself, use FQDN
  - Run-as Credentials – must be an account with permissions to modify DNS

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

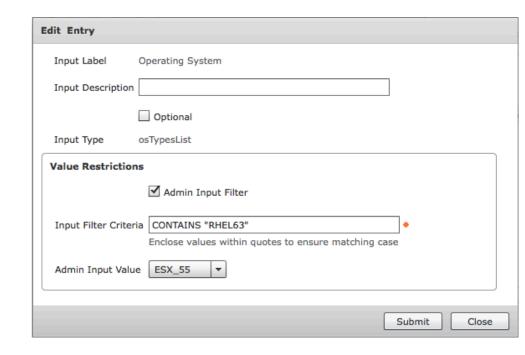| Revalidate	
DNS Zone	csc.richfield.cisco.com
DNS Server Name	reqlab-ad1
DNS Server IP	10.101.128.101
Power Shell Agent	cloud-mgmt1.csc.richfield.cisco.com
Target Machine Name	reqlab-ad1.csc.richfield.cisco.com
Run-as User	administrator
Run-as Password	********
Run-as Domain	csc.richfield.cisco.com

Use Case: Order New Bare Metal Server

- Parent Workflow "EZ Cloud Order New Bare Metal Server for a Project"

    - This use case will require the BMA to be already setup and have a functioning PXE Image working

    - The Child Workflows in this use case have some changes that need to be made to themselves, review all slides for this uses case closely

    - This Use Case relies heavily on the UCSD – ACI object mapping.

- Child Workflows

    - EZ Cloud Prepare Project Tier for Bare Metal Server

    - EZ Cloud Deploy New Bare Metal Server to a VLAN

Workflow Details

Workflow Name	EZ Cloud Order New Bare Metal Server for a Project
Version	0
Description	This Parent Workflow is used as the basis for an Advanced Catalog offer for users to add a new Bare Metal Server to a Project/vDC. The user will provide [Workflow Description] Tier to add the server to.

You must update the Child Workflows contained within this workflow to use your ACI and UCS infrastructure as well as locally significant resources like VLAN Pools.

The Cloud Structure assumed here aligns to EZ Cloud Type 1
  UCSD Group Name (without @domain.com) = ACI Tenant Name
  vDC Name = ACI ANP Name

Workflow Context [Any ▼] ✳
This workflow shall be used in the specified context

☐ Save as Compound Task

☐ Always execute during System initialization

Use Case: Order New Bare Metal Server
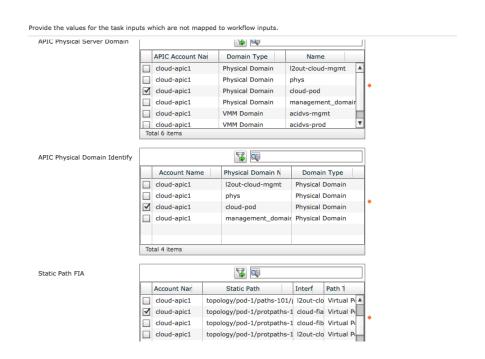## Update Workflow Input: Add VM

- The imported workflow is set to ONLY show an OS choice of "RHEL63" from the osTypeList from the BMA Servers.

- Edit the Workflow Input and adjust the filter or clear it to show the proper OS Choices for your setup

- This use case was designed to deploy a Windows or Linux Server, not an ESX host. It could be updated, but consider that when setting your OS filter.

Edit Entry

Input Label   Operating System

Input Description

☐ Optional

Input Type   osTypesList

Value Restrictions

☑ Admin Input Filter

Input Filter Criteria   CONTAINS "RHEL63"   ✳

Enclose values within quotes to ensure matching case

Admin Input Value   ESX_55 ▾

Submit   Close

Use Case: Order New Bare Metal Server
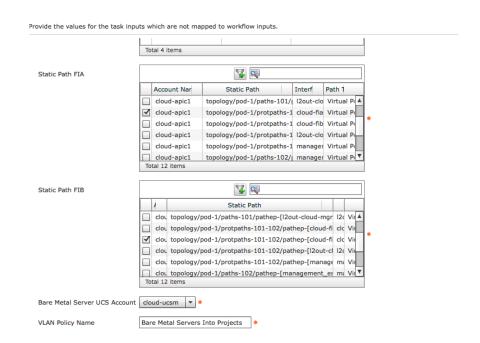## Update Task: EZ Cloud Prepare Project Tier for Bare Metal Server

- This Child Workflow will Update the corresponding EPG in ACI to the selected vDC/Project Category that is indiecated.

- This includes adding the needed Physical Domain and Static Pathing to the EPG.

- Task Inputs to Set

  - Physical Domain and Domain Identity – Pick the Physical Domain where your UCS FIs connect to the ACI Fabric. Pick in both of the inputs.

  - Static Path FIA and FIB – Pick the vPC Path for each FI. Be sure to pick the vPC path, and not a path to a single leaf. Look for "protpath" in the name

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

APIC Physical Server Domain

	APIC Account Nar	Domain Type	Name
☐	cloud-apic1	Physical Domain	l2out-cloud-mgmt
☐	cloud-apic1	Physical Domain	phys
☑	cloud-apic1	Physical Domain	cloud-pod
☐	cloud-apic1	Physical Domain	management_domain
☐	cloud-apic1	VMM Domain	acidvs-mgmt
☐	cloud-apic1	VMM Domain	acidvs-prod

Total 6 items

APIC Physical Domain Identify

	Account Name	Physical Domain N	Domain Type
☐	cloud-apic1	l2out-cloud-mgmt	Physical Domain
☐	cloud-apic1	phys	Physical Domain
☑	cloud-apic1	cloud-pod	Physical Domain
☐	cloud-apic1	management_domain	Physical Domain

Total 4 items

Static Path FIA

	Account Nar	Static Path	Interf	Path T
☐	cloud-apic1	topology/pod-1/paths-101/	l2out-clo	Virtual P
☑	cloud-apic1	topology/pod-1/protpaths-1	cloud-fia	Virtual P
☐	cloud-apic1	topology/pod-1/protpaths-1	cloud-fib	Virtual P
☐	cloud-apic1	topology/pod-1/protpaths-1	l2out-clo	Virtual P

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Use Case: Order New Bare Metal Server
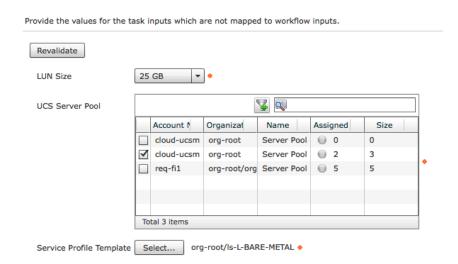## Update Task: EZ Cloud Prepare Project Tier for Bare Metal Server

- Task Inputs to Set – con't
  - Bare Metal Server UCS Account
  - VLAN Policy Name – The String name of the VLAN Policy (Policies > Virtual/Hypervisor > Network > VLAN Pool Policy) from where the new VLAN will be provisioned. This VLAN range must be already be mapped to the Physical Domain in APIC.

Use Case: Order New Bare Metal Server
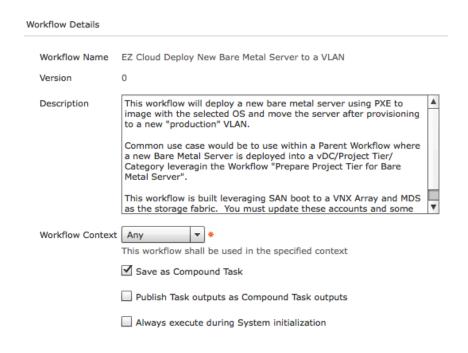## Update Task: EZ Cloud Deploy New Bare Metal Server to a VLAN

- This Child Workflow provisions a new Service Profile, Zone's the SAN, Creates a new Boot LUN, PXE Images the new server, and moves the server onto the proper VLAN for the Project/Category identified.

- The Child Workflow itself will need to be updated for your environment. Details on that follow.

- Task Inputs to Set

  - LUN Size for the Boot Volume – You could update the Workflow to ask the user for this info if you wish

  - UCS Server Pool to find new physical blade

  - Service Profile Template: Details on setting up the teamplate follow

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

Revalidate

LUN Size   25 GB ▾ ✳

UCS Server Pool

	Account N	Organizat	Name	Assigned	Size
☐	cloud-ucsm	org-root	Server Pool	◉ 0	0
☑	cloud-ucsm	org-root	Server Pool	◉ 2	3
☐	req-fi1	org-root/org	Server Pool	◉ 5	5

Total 3 items

Service Profile Template   Select...   org-root/ls-L-BARE-METAL ✳

Use Case: Order New Bare Metal Server
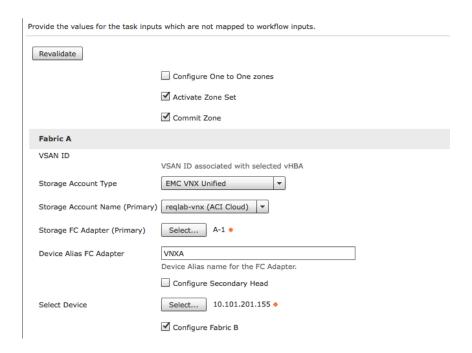## Update Child Workflow: EZ Cloud Deploy New Bare Metal Server to a VLAN

- This Child Workflow provisions a new Service Profile, Zone's the SAN, Creates a new Boot LUN, PXE Images the new server, and moves the server onto the proper VLAN for the Project/Category identified.

- This Workflow is built expecting MDS as the SAN Fabric (1 A switch and 1 B switch) and a VNX as the Disk Array

- If your environment has a different storage environment, you will need to adjust this workflow to reflect your vendors and topology.

Workflow Details

Workflow Name	EZ Cloud Deploy New Bare Metal Server to a VLAN
Version	0

Description

This workflow will deploy a new bare metal server using PXE to image with the selected OS and move the server after provisioning to a new "production" VLAN.

Common use case would be to use within a Parent Workflow where a new Bare Metal Server is deployed into a vDC/Project Tier/Category leveragin the Workflow "Prepare Project Tier for Bare Metal Server".

This workflow is built leveraging SAN boot to a VNX Array and MDS as the storage fabric. You must update these accounts and some

Workflow Context   [Any ▾] ✳
This workflow shall be used in the specified context

☑ Save as Compound Task

☐ Publish Task outputs as Compound Task outputs

☐ Always execute during System initialization

Child Workflow: Deploy New Bare Metal Server to a VLAN
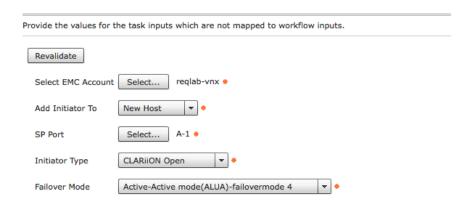## Update Tasks: Generic Configure SAN Zoning

- This single task zones both the A and B MDS Switches for the new Server

- Task Inputs to Set (For both Fabric A and B)
  - Storage Account Type (this example is built for VNX)
  - Storage Account Name
  - Storage FC Adapter (the port on the VNX)
  - Select Device (the MDS Switch)

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

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☐ Configure One to One zones

☑ Activate Zone Set

☑ Commit Zone

Fabric A

VSAN ID

VSAN ID associated with selected vHBA

Storage Account Type | EMC VNX Unified ▼

Storage Account Name (Primary) | reqlab-vnx (ACI Cloud) ▼

Storage FC Adapter (Primary) | Select... | A-1 ✱

Device Alias FC Adapter | VNXA

Device Alias name for the FC Adapter.

☐ Configure Secondary Head

Select Device | Select... | 10.101.201.155 ✱

☑ Configure Fabric B

Child Workflow: Deploy New Bare Metal Server to a VLAN
Update Tasks: VNX Host Initiator – Fab A and B
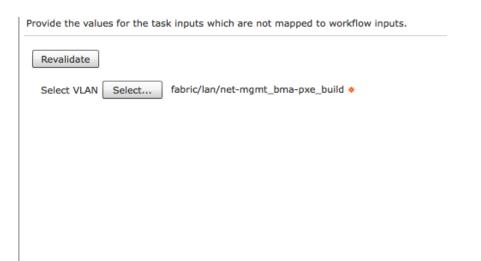
- Update both of these two tasks

- Task Inputs to Set (For both Fabric A and B)
    - Select EMC Account for VNX
    - For Fabric A Add Initiator to "New Host"
    - For Fabric B Add Initiator to "Existing Host"
    - SP Port

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

Revalidate	
Select EMC Account	Select... reqlab-vnx *
Add Initiator To	New Host ▾ *
SP Port	Select... A-1 *
Initiator Type	CLARiiON Open ▾ *
Failover Mode	Active-Active mode(ALUA)-failovermode 4 ▾ *

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Child Workflow: Deploy New Bare Metal Server to a VLAN
Update Tasks: Remove from Build Network

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

Revalidate

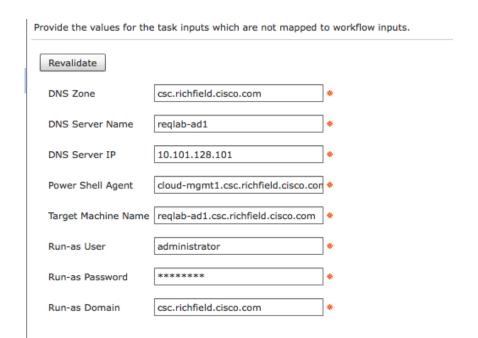Select VLAN Select... fabric/lan/net-mgmt_bma-pxe_build *

- This task will remove the Build (PXE) Network VLAN from the Service Profile after it completes

- Task Inputs to Set (For both Fabric A and B)
  - Select VLAN – pick the UCS VLAN used for PXE imaging in your setup. This should have been part of the Service Profile Tempalte vNIC config and is cleared

Child Workflow: Deploy New Bare Metal Server to a VLAN
Update Tasks: Add DNS Entry

- This is a Child Workflow that will add (and rollback) DNS A records to a Microsoft DNS Server

- If you have another DNS server delete this task completely and replace with your task.

- Task Inputs to Set
  - DNZ Zone to add the record to
  - DNS Server Name – short name, not FQDN
  - DNS Server IP
  - Power Shell Agent – FQDN of the Powershell Agent
  - Target Machine Name – Typically the DNS server itself, use FQDN
  - Run-as Credentials – must be an account with permissions to modify DNS

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

Revalidate

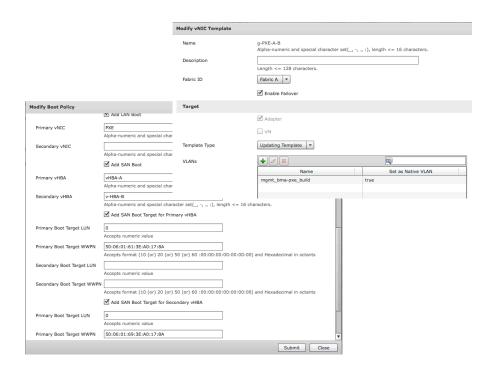|	
DNS Zone	csc.richfield.cisco.com
DNS Server Name	reqlab-ad1
DNS Server IP	10.101.128.101
Power Shell Agent	cloud-mgmt1.csc.richfield.cisco.con
Target Machine Name	reqlab-ad1.csc.richfield.cisco.com
Run-as User	administrator
Run-as Password	********
Run-as Domain	csc.richfield.cisco.com

Use Case: Order New Bare Metal Server
Details on Service Profile Template Setup

- This use case will create a new SP from the template, PXE image the new server, and then unbind from the template to move to the proper network

- For the most part, setup the template as you want for your normal standards

- The Network and Boot configurations must be set appropriately though

- Network Policy

  - The first vNIC must be configured with the PXE VLAN supported by the BMA as the native VLAN

- Boot Policy

  - The boot policy should be set to PXE and then SAN boot

CISCO

TOMORROW *starts here.*