



Sales & Partner Training
Worldwide Sales Strategy & Operations



EZ Cloud Release 1.1

Quickly get started with Enterprise Cloud Suite, UCS and ACI

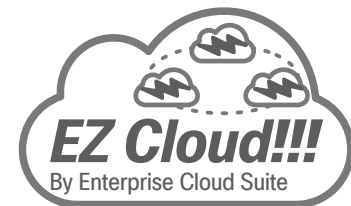
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Goals for “EZ Cloud”

- 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 use cases needed for a Private Cloud Foundation

Pre-requisite

- The Use Case in this release builds on the foundation laid out by EZ Cloud Release 1
- See the content at <https://communities.cisco.com/docs/DOC-63857> for background

Agenda

- Secure 3 Tier Project with FW and Load Balancing Use Case
- Adding Load Balanced VMs to a vDC
- Implementing this use case in your lab

- Find on the Community at <https://communities.cisco.com/docs/DOC-63965>

- 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



Secure 3 Tier Project with FW and Load Balancing Use Case

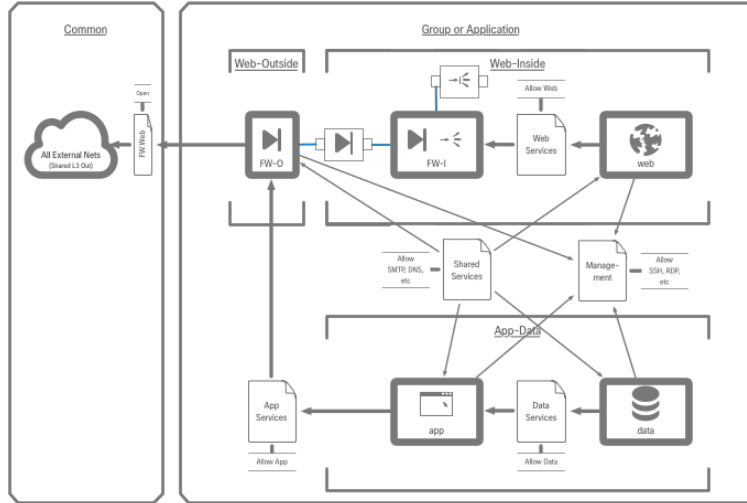


New Secure 3 Tier Project in ACI

☆☆☆☆☆ (0)

Create a new 3 Tier Project for the selected group. The new Project will be configured with Web, Application, and Data Tiers. An ASA Firewall will protect the Web Tier, and standard segmentation rules will protect App and Data. An F5 Loadbalancer will be prepared for future Web Server VMs.

Specification



Back

Order For Others

Order

“I have an idea/application/update... where to put it?”

Automation steps in ACI, UCS, ASA, F5 and UCSD to complete this use case.

Workflow Status | Log | Objects Created and Modified | Input/Output

Service Request

Status Refresh

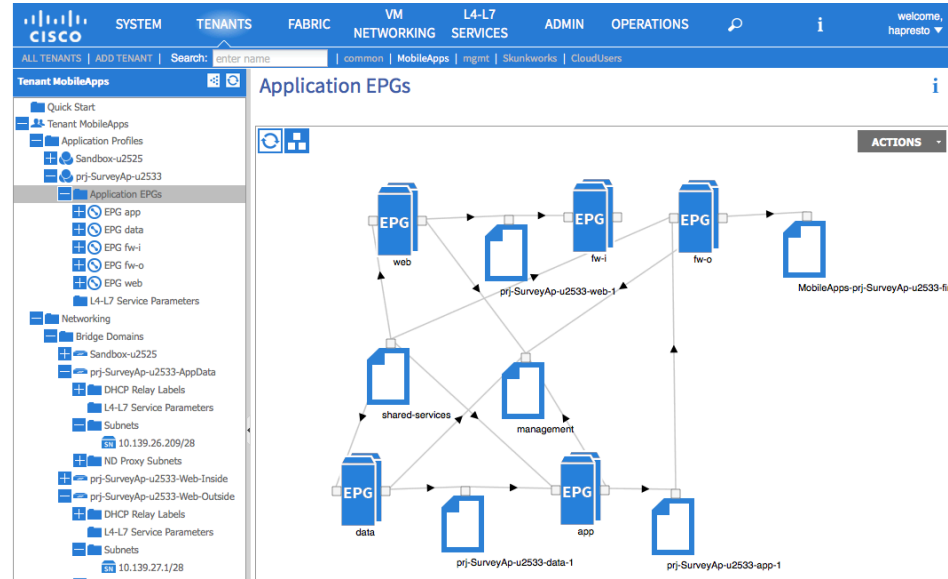
Current status for the service request.

Step	Description	Timestamp
13	Formatted Name: prj-SurveyAp-u2533web	
14	Create UCS VLAN Name App Formatted Name: prj-SurveyAp-u2533app	11/09/2015 17:25:06
15	Create UCS VLAN Name Data Formatted Name: prj-SurveyAp-u2533data	11/09/2015 17:25:12
16	Add FW Outside VLAN	11/09/2015 17:26:07
17	Add FW Inside VLAN	11/09/2015 17:27:04
18	Add Web VLAN	11/09/2015 17:28:03
19	Add App VLAN	11/09/2015 17:29:08
20	Add Data VLAN	11/09/2015 17:30:13
21	App-Data Workload IP Range The range is: 10.139.26.211-10.139.26.222	11/09/2015 17:30:16
22	Create App-Data IP Pool Policy	11/09/2015 17:30:19
23	Web Workload IP Range The range is: 10.139.27.3-10.139.27.14	11/09/2015 17:30:25
24	Create Web IP Pool Policy	11/09/2015 17:30:31
25	Get Web FW BVI Address	11/09/2015 17:30:40
26	Configure Web Firewall	11/09/2015 17:37:09
27	F5 VLAN Name FW-1 Formatted String: MobileApps_prj-SurveyAp-u2533_fw-1	11/09/2015 17:37:10
28	F5 Pool and Virtual Server Name Formatted String: MobileApps_prj-SurveyAp-u2533_web	11/09/2015 17:37:16
29	Get F5 Self-IP Address	11/09/2015 17:37:25
30	Get Virtual Server IP Address	11/09/2015 17:37:31
31	Add F5 Load Balancer to Web Tier	11/09/2015 17:38:29
32	Create Project vDC Completed action	11/09/2015 17:39:05

Close

Standard Application Policy
built for manual stitching
Firewall and LB inline.

Also supports shared services
and management of tiers.



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

UCS Central

UCS Domains Fault Summary

1	31	2	25
---	----	---	----

Domains | Servers | **Network** | Storage | Operations Management | Statistics | Logs and Faults | Administration | Import

Filter: All

Network

- Domain Groups
 - Domain Group root
 - Domain Group Cisco-Live
 - Domain Group CL-Demo
 - LAN Cloud**
- Policies
- Pools
- VLAN Org Permissions

LAN Cloud

You are creating VLANs common to all available fabrics of this domain group

Filter (on) + Create VLANs Refresh Records: 5

Name	VLAN ID	VLAN Sharing	Multicast Policy Name
prj-SurveyAp-u2533app	1145	none	
prj-SurveyAp-u2533data	1075	none	
prj-SurveyAp-u2533fw-i	1074	none	
prj-SurveyAp-u2533fw-o	1142	none	
prj-SurveyAp-u2533web	1144	none	

Load Balancing for the Web Tier is prepped with a new VLAN, Self-IP, Pool, and Virtual Server deployed with a basic, functional configuration.

The image displays four overlapping screenshots of the Cisco F5 configuration interface, showing the setup of various components for load balancing.

- Top Screenshot:** Shows the configuration for a new VLAN named "MobileApps_prj-SurveyAp-u2533_fw-1". The "General Properties" section includes:
 - Name: MobileApps_prj-SurveyAp-u2533_fw-1
 - Partition / Path: Common
 - Description: (empty)
 - Tag: 1074The "Resources" section shows "Interfaces" as "Untagged".
- Second Screenshot (top right):** Shows the configuration for a new Self-IP named "MobileApps_prj-SurveyAp-u2533_fw-1". The "Configuration" section includes:
 - Name: MobileApps_prj-SurveyAp-u2533_fw-1
 - Partition / Path: Common
 - IP Address: 10.139.27.4
 - Netmask: 255.255.255.240
 - VLAN / Tunnel: MobileApps_p...
 - Port Lockdown: Allow Default
 - Traffic Group: traffic-group-local-only (non-floating)
- Third Screenshot (bottom left):** Shows the configuration for a new Virtual Server named "MobileApps_prj-SurveyAp-u2533_web". The "General Properties" section includes:
 - Name: MobileApps_prj-SurveyAp-u2533_web
 - Partition / Path: Common
 - Type: Standard
 - Source: 0.0.0.0/0
 - Destination: Type: Network, Address: 10.139.27.5
 - Service Port: 80, HTTP
 - Notify Status to Virtual Address: checked
 - Availability: Unavailable (Enabled) - The...
 - Synccookie Status: Off
 - State: Enabled
- Bottom Screenshot:** Shows the configuration for a new Pool named "MobileApps_prj-SurveyAp-u2533_web". The "General Properties" section includes:
 - Name: MobileApps_prj-SurveyAp-u2533_web
 - Partition / Path: Common
 - Description: (empty)
 - Availability: Unavailable (Enabled) - The children pool member(s) might be disabledThe "Configuration" is set to "Basic". The "Health Monitors" section shows:
 - Active: /Common gateway_icmp
 - Available: /Common http, http_head_f5, https, https_443

New Sub-Interfaces and Bridge Group Configured for the Transparent FW.

Basic ACLs configured to protect Web Tier and allow development to begin.

The screenshot displays the Cisco ASDM 7.2 for ASA configuration interface. The top window shows the 'Configuration > Device Setup > Interfaces' view, listing various interfaces and their configurations. The bottom window shows the 'Configuration > Firewall > Access Rules' view, detailing the configured access rules.

Interface	/1	State	Name	Security Level	VLAN	Redundant	Group	Type
BVI6		Enabled			native	No		Bridge Group
BVI7		Enabled			native	No		Bridge Group
BVI8		Enabled			native	No		Bridge Group
BVI9		Enabled			native	No		Bridge Group
GigabitEthernet0/1015		Enabled	Stunkworks[prj-just-u2392]fw-o	0	vlan1015	No	BVI6	Logical
GigabitEthernet0/1089		Enabled	Stunkworks[prj-SEVTSurv-u2531]fw-o	0	vlan1089	No	BVI8	Logical
GigabitEthernet0/1142		Enabled	MobileApps[prj-SurveyAp-u2533]fw-o	0	vlan1142	No	BVI9	Logical
GigabitEthernet0/1074		Enabled	Stunkworks[prj-SEVTSurv-u2531]fw-i	100	vlan1074	No	BVI8	Logical
GigabitEthernet0/1074		Enabled	MobileApps[prj-SurveyAp-u2533]fw-i	100	vlan1074	No	BVI9	Logical
GigabitEthernet0/1161		Enabled	Stunkworks[prj-envy-u2406]fw-i	100	vlan1161	No	BVI7	Logical
GigabitEthernet0/2		Disabled		0	native	No		Hardware

#	Enabled	Source Criteria:	User	Security Group	Destination	Security Group	Service	Action	Hits	Logging
MobileApps[prj-SurveyAp-u2533]fw-i (1 incoming rule)										
1	✓	any			any		IP: ip	✓ Permit	0	
MobileApps[prj-SurveyAp-u2533]fw-o (6 incoming rules)										
1	✓	any			any		IP: https	✓ Permit	0	
2	✓	any			any		IP: http	✓ Permit	0	
3	✓	any			any		IP: 3389	✓ Permit	0	
4	✓	any			any		IP: ssh	✓ Permit	0	
5	✓	any			any		IP: icmp	✓ Permit	0	
6	✓	any			any		IP: ip	✗ Deny	0	
Stunkworks[prj-SEVTSurv-u2531]fw-i (1 incoming rule)										
Stunkworks[prj-SEVTSurv-u2531]fw-o (6 incoming rules)										
Stunkworks[prj-envy-u2406]fw-i (1 incoming rule)										
Stunkworks[prj-envy-u2406]fw-o (6 incoming rules)										
Stunkworks[prj-just-u2392]fw-i (1 incoming rule)										
Stunkworks[prj-just-u2392]fw-o (6 incoming rules)										
Global (2 rules)										
1	✓	any			any		IP: ip	✓ Permit	600	
2		any			any		IP: ip	✗ Deny		

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

This version includes an input asking user if they wish to Load Balance these VMs. If selected YES, the workflow looks to see if the vDC Category is configured for load balancing with an F5 configuraito

Be sure to look at the details on the Custom Tasks for selecting catalog to understand how it work.

Number of VMs	<input type="text" value="3"/> ▼ *
Project	<input type="text" value="prj-SurveyAp-u2533"/> ▼ *
Operating System	<input type="text" value="Ubuntu 14"/> ▼ *
Application Tier	<input type="text" value="Web"/> ▼ *
Performance Tier	<input type="text" value="Standard"/> ▼ *
VM Label	<input type="text" value="Web Servers"/> *
Add to Load Balancer Pool	<input type="text" value="Yes"/> ▼ *

I need to deploy load balanced servers...

** this image from UCS Director Catalog, can be added to Prime Service Catalog as well*

Automation steps to
deploy VMs in a loop, find
F5 Server pool, and add
new VMs to pool.

Current status for the service request.





New Servers added to F5 Server Pool

Load Balancing

Load Balancing Method	Round Robin
Priority Group Activation	Disabled

Update

Current Members







<input checked="" type="checkbox"/>	Status	Member
<input type="checkbox"/>		10.139.27.6:80
<input type="checkbox"/>		10.139.27.7:80

Enable Disable Remove

Implementing this use case in your lab

Getting the Workflows and Custom Tasks

- Download the .wfdx file from the community
- <https://communities.cisco.com/docs/DOC-63965>
- Import into UCS Director

Workflows	
Top > EZ Cloud Release 1.1	
	Workflow Name
 Version Label	EZ Cloud Bulk Deploy VM Based on User Input with LB Option
	EZ Cloud Configure F5 to Load Balance a vDC Category
	EZ Cloud Configure L2 FW Bridge on ASA v1
	EZ Cloud Find F5 LB Pool for vDC Category
	EZ Cloud New 3 Tier Application Profile Manual L2 FW Stitching Structure
	EZ Cloud New Secure 3 Tier Project with ASA and F5 v1

Use Case: Order a New Secure Project with Load Balancing

- Parent Workflow “EZ Cloud New Secure 3 Tier Project with ASA and F5 v1”
 - This example uses UCS Central managed UCS. Modifying to use UCSM directly is an easy change
- Child Workflows
 - EZ Cloud New 3 Tier Application Profile Manual L2 FW Stitching Structure
 - EZ Cloud Add VLAN to UCS Central and vNIC Template
 - EZ Cloud Configure L2 FW Bridge on ASA v1
 - EZ Cloud Configure F5 to Load Balance a vDC Category
 - EZ Cloud New 3 Tier vDC

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 version assumes the Compute Environment is managed by UCS Central.

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

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

Workflow Context *

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 *

Use Case: Order a New Secure Project with Load Balancing

Update Task: EZ Cloud New 3 Tier Application Profile Manual L2 FW Stitching Structure

- Open and edit task to identify your local ACI objects
- Task Inputs to Set
 - The Private Network (Context) from common
 - Subnet Pool – Where to provision new IP range
 - This structure also asks for Web and App/Data Subnet Pools. Identify those pools as well
 - Loadbalancer EPG – This full Use Case actually attaches a load balancer to the Web Tier directly, rather than use shared. For this case, just pick anything in this task, it won't matter.
 - 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 Nar	Tenant Nam	Private Netv	Description
<input checked="" type="checkbox"/>	cloud-apic1	common	cloud
<input type="checkbox"/>	cloud-apic1	common	default
<input type="checkbox"/>	cloud-apic1	common	l2-transit-routi
<input type="checkbox"/>	cloud-apic1	infra	overlay-1
<input type="checkbox"/>	cloud-apic1	Group7	Group7-VRF
<input type="checkbox"/>	cloud-apic1	mgmt	oob

Total 7 Items

Subnet Pool

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

Loadbalancer EPG

Account Nar	Tenant Nam	Application I	EPG Name
<input checked="" type="checkbox"/>	cloud-apic1	common	shared-services
<input type="checkbox"/>	cloud-apic1	Skunkworks	IaAs-u1521
<input type="checkbox"/>	cloud-apic1	Skunkworks	IaAs-u1521
<input type="checkbox"/>	cloud-apic1	Skunkworks	IaAs-u1521
<input type="checkbox"/>	cloud-apic1	Skunkworks	prj-lust-u2392
<input type="checkbox"/>	cloud-apic1	Skunkworks	prj-lust-u2392

Total 103 Items

Common Contract Management Services

Account Name	Tenant Name	Tenant Contracts I
<input type="checkbox"/>	cloud-apic1	common
<input type="checkbox"/>	cloud-apic1	common

Use Case: Order a New Secure Project with Load Balancing

Update Task: EZ Cloud New 3 Tier Application Profile Manual L2 FW Stitching Structure

- 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.
- External 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 I
<input type="checkbox"/> cloud-apic1	common	CloudAdmins-prj-fire
<input type="checkbox"/> cloud-apic1	common	default
<input type="checkbox"/> cloud-apic1	common	external_allow_all
<input type="checkbox"/> cloud-apic1	common	CloudAdmins-prj-sky
<input type="checkbox"/> cloud-apic1	common	management
<input checked="" type="checkbox"/> cloud-apic1	common	shared-services

Total 37 Items

External EPG Default Outside

Account N	Tenant N	Outside N	Outside N	External I
<input checked="" type="checkbox"/> cloud-apic1	common	Routed	cloud-out	all-ips
<input type="checkbox"/> cloud-apic1	Group7	Routed	Group7-L3	L3-EPG
<input type="checkbox"/> cloud-apic1	mgmt	Routed	mgmt_l3_out	all_ips

Total 3 Items

L3 Out

Account Name	Tenant Name	Tenant L3 Out Name
<input checked="" type="checkbox"/> cloud-apic1	common	cloud-out
<input type="checkbox"/> cloud-apic1	common	default
<input type="checkbox"/> cloud-apic1	Group7	Group7-L3
<input type="checkbox"/> cloud-apic1	mgmt	mgmt_l3_out

Use Case: Order a New Secure Project with Load Balancing

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.

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

Domain Group

Account Name	DN	Domain Group	Description
<input checked="" type="checkbox"/>	cloud-ucsc(ID: : domaingroup-rc	root	
<input type="checkbox"/>	cloud-ucsc(ID: : domaingroup-rc	Cisco-Live	
<input type="checkbox"/>	cloud-ucsc(ID: : domaingroup-rc	CL-Demo	

Total 3 Items

UCSC Account:

UCSC Org Name:

ESXA vNIC Template:

ESXB vNIC Template:

Use Case: Order a New Secure Project with Load Balancing

Update Task: EZ Cloud Configure L2 FW Bridge on ASA v1

- Open and edit task to identify your local ASA
- Task Inputs to Set
 - ASA Firewall
 - Outside Trunk Interface– This use case works by building sub-interfaces for each bridge group
 - Inside Trunk Interface
 - Management Allowed – pick which management protocols you want allowed through the FW
 - Application Type – pick the application type that will be served by behind the FW

*** Management Allowed and Application Type dropdowns and options provide a couple of options, but you can customize to support other protocols and combinations*

The screenshot shows a configuration interface for the task "EZ Cloud Configure L2 FW Bridge on ASA v1". At the top left is a "Revalidate" button. Below it are five configuration fields, each with a red asterisk icon to its right:

- ASA Firewall:** A "Select..." dropdown menu followed by the IP address "10.139.1.71".
- Outside Trunk Interface:** A text input field containing "g0/0".
- Inside Trunk Interface:** A text input field containing "g0/1".
- Management Allowed:** A dropdown menu showing "ssh rdp icmp".
- Application Type:** A dropdown menu showing "HTTP(S)".

Use Case: Order a New Secure Project with Load Balancing

Update Task: EZ Cloud Configure F5 to Load Balance a vDC Category

- Open and edit task to identify your local F5 resources
- Task Inputs to Set
 - F5 Device
 - F5 Partition – Only tested with Common
 - F5 Trunk Interface – each new VLAN will be added to a shared trunk interface
 - Virtual Server Port
 - Service Profile
 - Protocol Profile
 - F5 Credential Policy – the String Name of the Credential Policy for SSH access to the F5

*** Current task only built to support http based load balancing. Other protocols are possible, but need to be customized*

The screenshot displays a configuration form with a 'Revalidate' button at the top left. Below it are several input fields, each with a red asterisk icon to its right, indicating required or validated fields. The fields are: 'F5 Device' with a 'Select...' dropdown and the value '10.139.1.76'; 'F5 Partition' with a 'Select...' dropdown and the value 'Common'; 'F5 Trunk Interface' with a text input field containing '1.1'; 'Virtual Server Port' with a text input field containing '80'; 'Service Profile' with a dropdown menu showing 'http'; 'Protocol Profile' with a dropdown menu showing 'tcp'; and 'F5 Credential Policy' with a text input field containing 'F5 SSH Local'.

Use Case: Order a New Secure Project with Load Balancing

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.

vDC Profile *

Compute Policy Cluster *

Compute Policy Resource Pool Resources *

Storage Policy Datastore *

Join Domain *

Domain Username *

Domain Password *

End User Self Service Policy ID *

Use Case: Order New Load Balanced Virtual Machines

- Parent Workflow “EZ Cloud Bulk Deploy VM Based on Input with LB Option”
 - This Workflow can be used to deploy non-load balanced servers as well
- Child Workflows
 - EZ Cloud Deploy VM Based on User Input (From EZ Cloud Release 1)
 - EZ Cloud Find F5 LB Pool for vDC Category

Workflow Details

Workflow Name EZ Cloud Bulk Deploy VM Based on User Input with LB Option

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.

This version includes an input asking user if they wish to Load Balance these VMs. If selected YES, the workflow looks to see if the vDC Category is configured for load balancing with an F5 configuraiton. If not found, VMs will deploy but not be load blanaced.

Workflow Context *

This workflow shall be used in the specified context

Save as Compound Task

Always execute during System initialization



CISCO

TOMORROW starts here.