



Introducción a Virtualización en ACI

Comunidad de Cisco

Armando Varret – Technical Consulting Engineer
Pablo Juárez – Technical Consulting Engineer

Jueves 2 de mayo de 2024



Conecte, Interactúe, ¡Colabore!

Soluciones

Ayuda a otros usuarios a encontrar las respuestas correctas en el motor de búsqueda de la comunidad indicando que la duda fue resuelta al activar la opción “Aceptar como solución” u otórgales un voto de utilidad.

Aceptar como solución

Votos de utilidad

¡Resalta el esfuerzo de otros miembros!

Los votos útiles motivan a otros miembros que colaboran en la comunidad, a seguir ayudándonos a contestar las preguntas abiertas, y ofreciéndoles la oportunidad de ganar premios. ¡Reconoce su esfuerzo!

👍 0 Útil

Premios Spotlight Awards

¡Destaca por tu esfuerzo y compromiso para mejorar la comunidad y ayudar a otros miembros!

Los Premios Spotlight se otorgan trimestralmente para reconocer a los miembros más destacados.

Conoce a los ganadores de [Agosto-Octubre 2024](#)

¡Ahora también puedes nominar a un candidato! [Haga clic aquí](#)



Nuestros expertos

Armando Varret



Team Captain Content Security

Armando forma parte del equipo de ACI desde hace más de cinco años.

Actualmente se desempeña en el Centro de Asistencia Técnica (TAC) global de Cisco, apoyando a los clientes en la resolución de casos.

Armando está certificado en ACI Fundamentals, ACI Advanced y CCNA R&S.

Descarga la presentación <https://bit.ly/CLdoc-may24>

Nuestros expertos

Pablo Juárez



Technical Consulting Engineer

Pablo forma parte del equipo de ACI desde hace más de un año.

Como miembro del equipo de TAC global de Cisco, su función principal es brindar apoyo a clientes en la resolución de problemas en de redes definidas por software (SDN) diseñada para el centro de datos.

Cuenta con las certificaciones de CCNA R&S y Security. Actualmente está estudiando para la certificación de 300-620 DCACI.

Descarga la presentación <https://bit.ly/CLdoc-may24>

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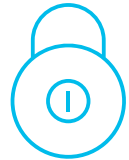
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Agenda



1. Introducción a la Virtualización entre ACI & vMware



2. VMMDomain Integración

3. VMMDomain Validación



4. VMMDomain Troubleshooting

Acrónimos

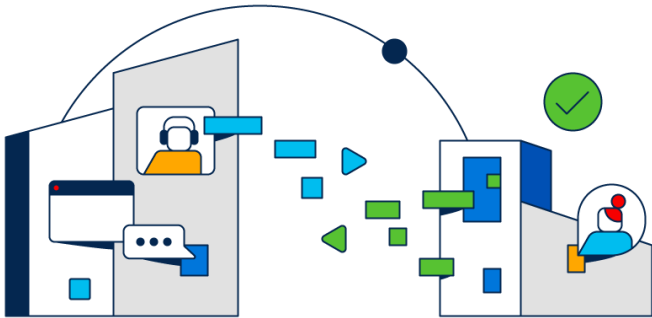
Acrónimo	Definición	Acrónimo	Definición
ACI	Application Centric Infrastructure	UCS	Unified Computing System
AEP	Attachable Entity Profile	UFN	Unmanaged Fabric node
API	Application Programming Interface	VC	Virtual Center
APIC	Application Policy Infrastructure Controller	VM	Virtual Machine
CDP	Cisco Discovery Protocol	VMM	Virtual Machine Manager
DNS	Domain Name System	VMNIC	NIC física de un host
DME	Data management engine	VNIC	NIC virtual (para una VM)
vDS	vSphere Distributed Switch	vSphere	Nombre que VMware otorga a su suite de productos virtualizados
EPG	Endpoint Group	6.0(3e)	Version utilizada para la demostración
fabricLooseNode	Object "MO" para Blade Switch		
FI	Fabric Interconnect (Blade Switch para UCS B servidores)		
LACP	Link aggregation control protocol		
LLDP	Link Layer Discovery Protocol		
NIC Teaming	Proceso de combinar múltiples puertos para mejorar el performance		

Introducción

- Introducción
- Integración
- Validación
- Troubleshooting

Ventajas de la Virtualización

La importancia práctica de la virtualización es el aprovechamiento de los recursos físicos, la movilidad, flexibilidad y resiliencia en los **DC** modernos.



- **Automatización** de red.
- **Consistencia** de políticas.
- **Visibilidad** / **control** de la infraestructura.
- **Simplificación** de gestión.
- **Escalabilidad** en infraestructura.
- **Soporte** en entornos multi-tenant.
- **Orquestación** de flujos y cargas
- **Compatibilidad** entre múltiples hipervisores.
- Reducción de **costos**.
- **Aprovisionamiento** de aplicaciones y servicios.

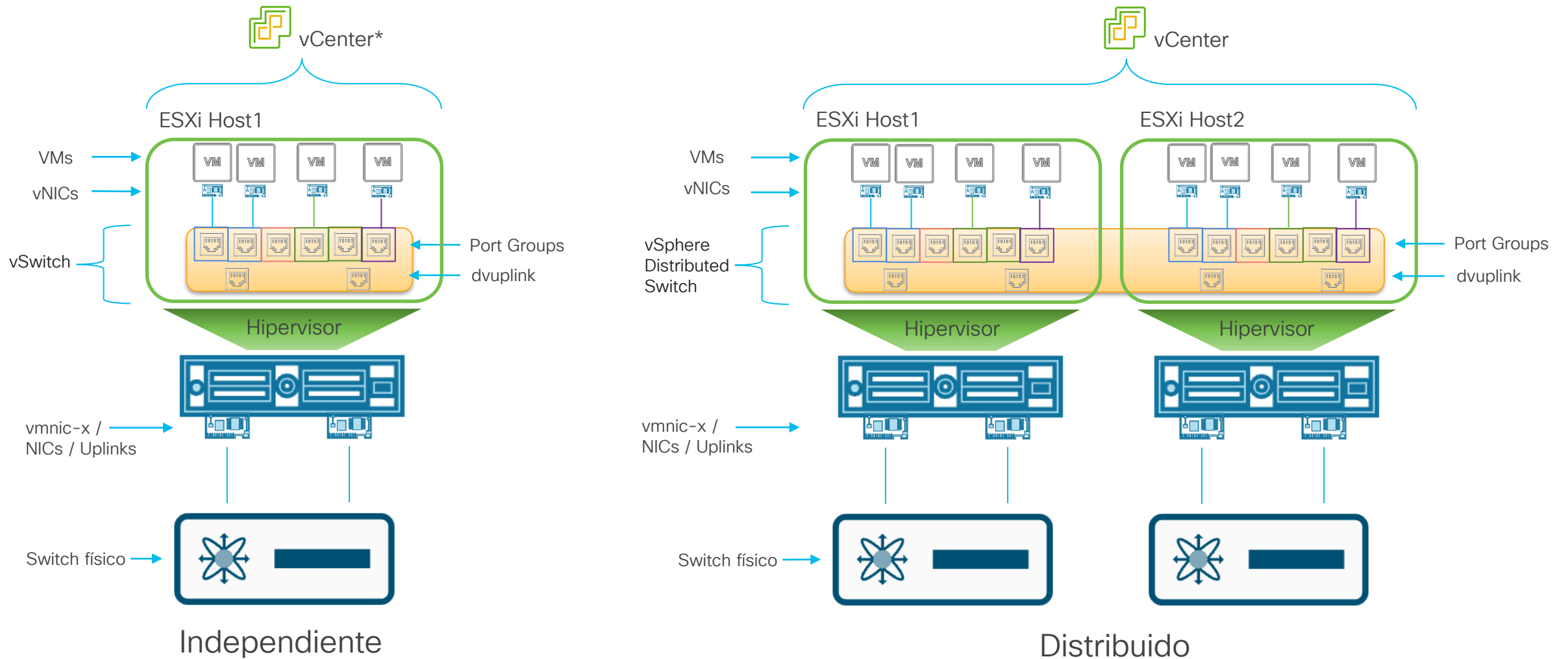
Entornos Virtualizados



- Virtualización de **red**
- Virtualización de **almacenamiento**
- Virtualización de **datos**
- Virtualización de **aplicaciones**
- Virtualización de escritorios
- Virtualización de **servidores***

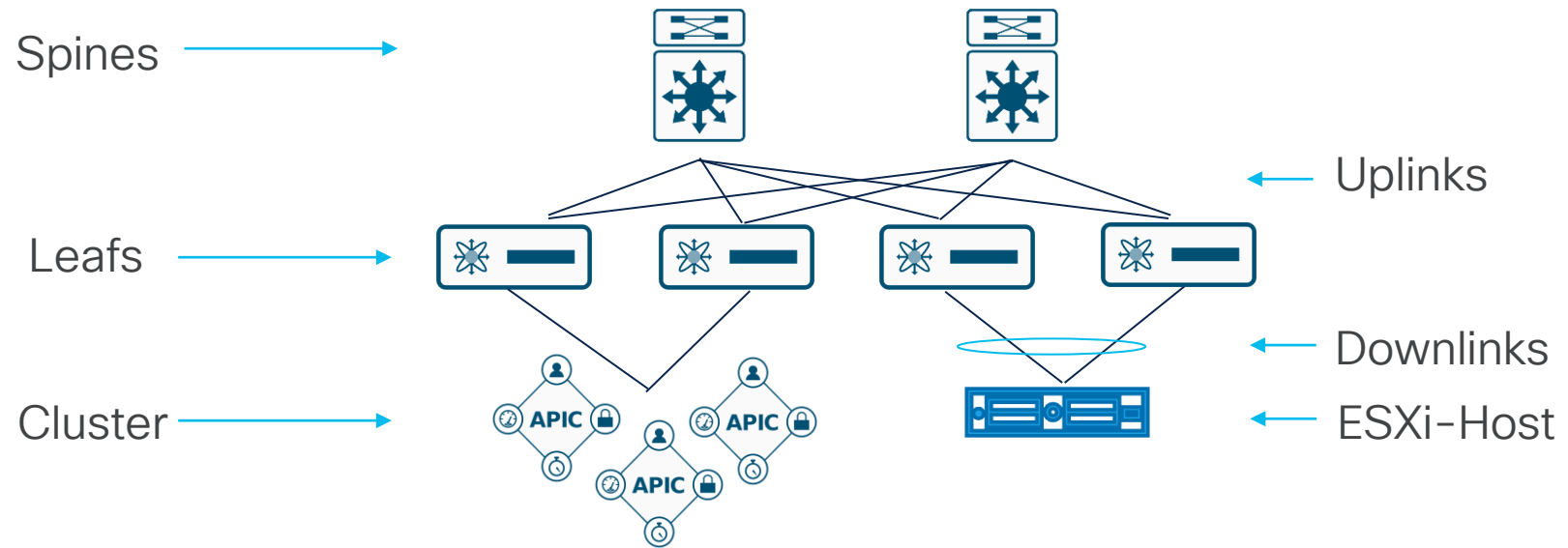
 Nota: en este webinar nos enfocaremos en la Integración y validación del vDS de Vmware *

Topología Física / Lógica de VMware



* Puede ser administrado o independiente al VC

Topología Física de ACI



Matriz de Compatibilidad de VMware



VMware / ACI Release	3.2(1)	3.2(2)	3.2(3)	3.2(4) to 3.2(6)	3.2(7) to 3.2(10)	4.0(1)	4.0(2) 4.0(3)	4.1(1) 4.1(2)	4.2(1) to 4.2(3)	4.2(4)	4.2(5) to 4.2(7)	5.0(1)	5.0(2)	5.1(1) to 5.1(4)	5.2(1) to 5.2(7)	5.2(8)	5.3(1) to 5.3(2)	6.0(1) to 6.0(2)	6.0(3) to 6.0(5)	
VMware vSphere 5.1, 5.5, 6.0*, 6.5*																				
VMware vSphere 6.7*	x																			
VMware vSphere 7.0*	x	x	x	x	x	x	x	x	x	Note		x								
VMware vSphere 8.0*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Note	Note	x	Note	
VMware vRealize 6.2.x																				
VMware vRealize 7.0, 7.1, 7.2, 7.3																				
VMware vRealize 7.4, 7.5**	x																			
VMware vRealize 7.6**	x	x	x	x	x	x	x	x	Note											
VMware vRealize vRA 8.2, 8.3, 8.4**	x	x	x	x	x	x	x	x												
VMware NSX-T Data Center 3.0	x	x	x	x	x	x	x	x	x	x	x	x	x							
VMware vSphere Web Client 5.5 or above																				
Enhanced LACP (eLACP)	x	x	x	x																
Cisco ACI HTML5 vCenter Plug-in	x	x	x	x	Note															

[Matriz de compatibilidad completa.](#)

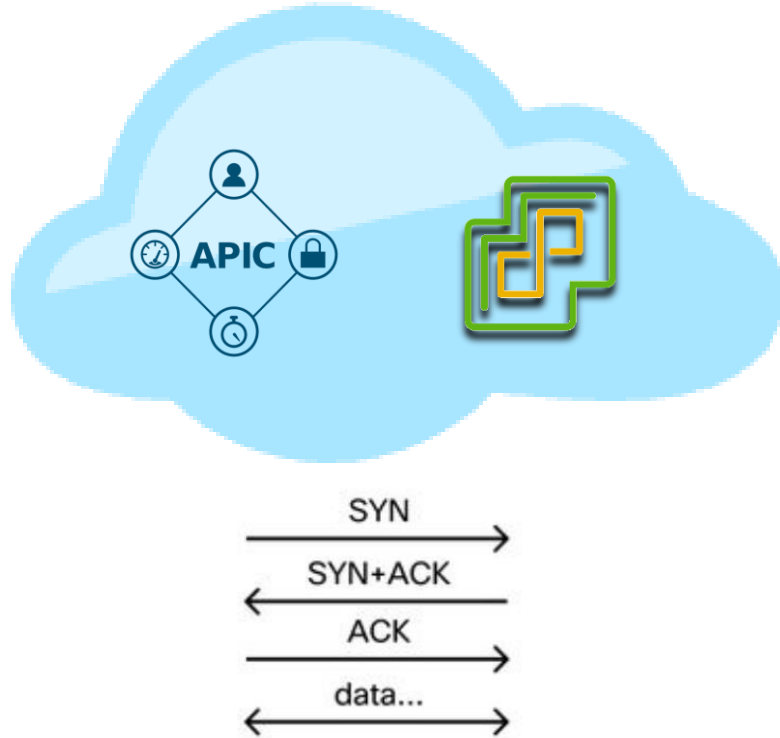
* Toda actualización de vMware son soportados a menos que se mencione explícitamente.

** Alta disponibilidad (HA) activo-activo con múltiples vROs no es soportado.

Integración

- Introducción
- Integración
- Validación
- Troubleshooting

Conexión del APIC con el VCenter.



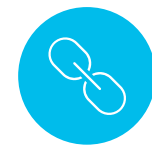
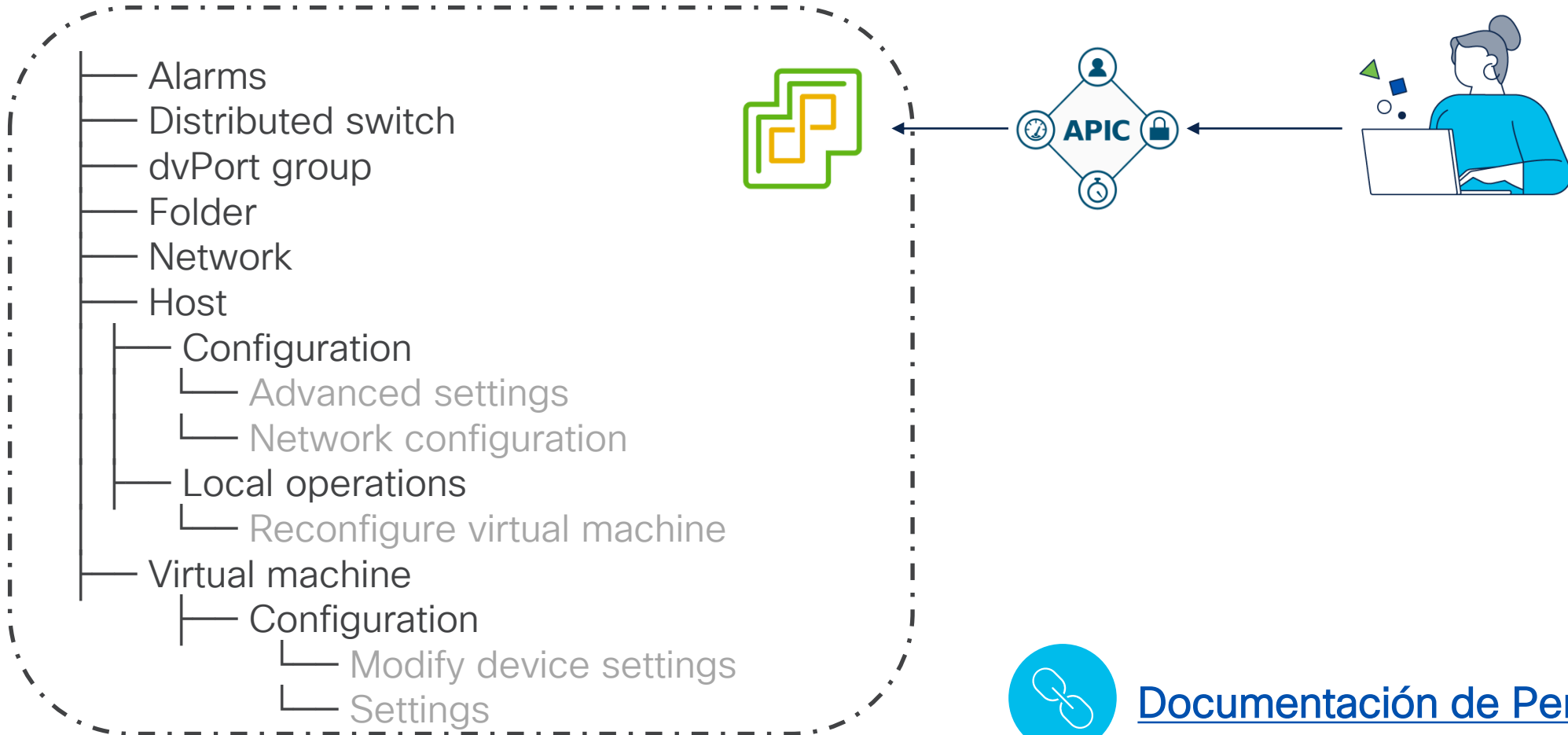
Teoría:

- Usando el puerto **443/HTTPS** la comunicación APIC / VC será efectiva ya sea **OOB** o **INB**.
- La comunicación entre APIC y VC se establece usando una cuenta de **usuario admin**
- Un **APIC** es **Leader** por VMMdomain

¿Qué sucede si la conectividad falla?

- **Imposible** nuevas configuraciones.
- **Sincronización** de inventario fallida.
- **Eventos** del VC no reflejados en el **APIC**.

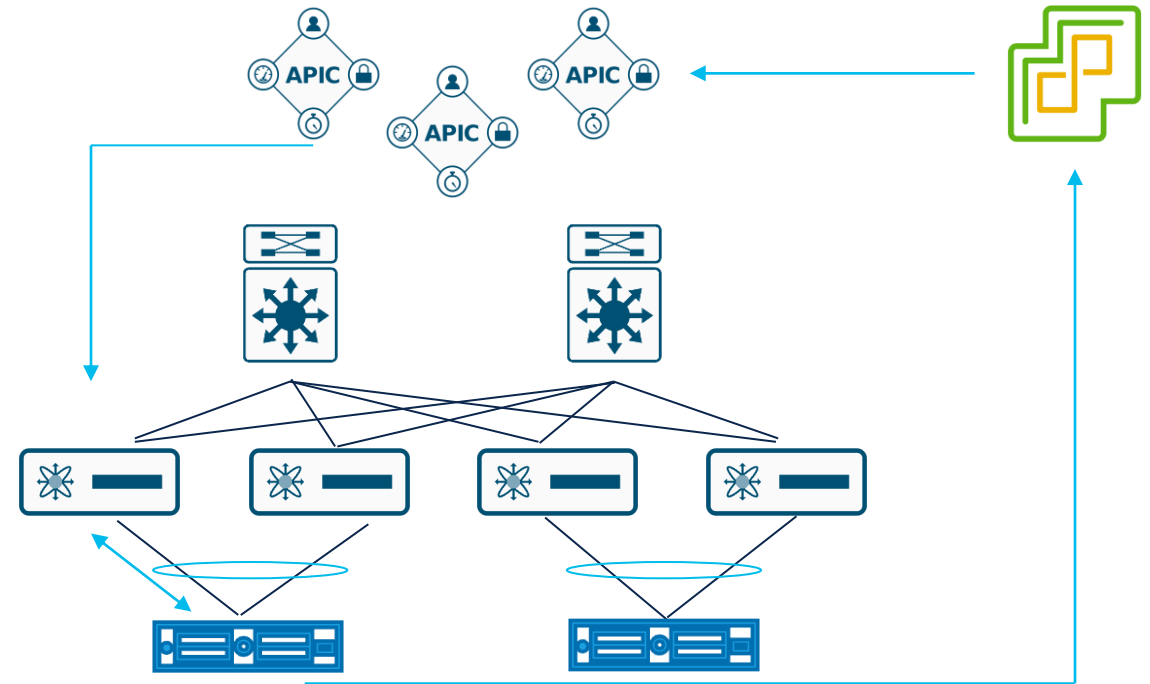
Permisos Requeridos para la Integración



[Documentación de Permisos](#)

Descubriendo ESXi

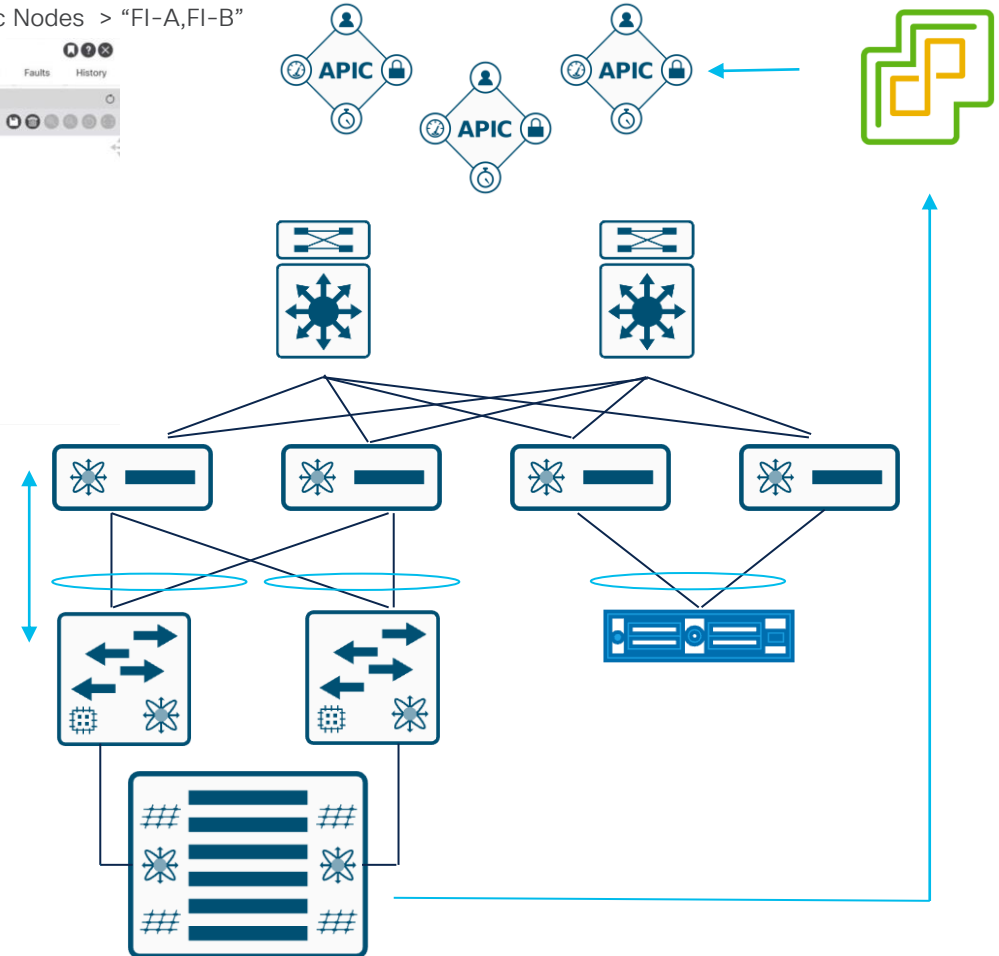
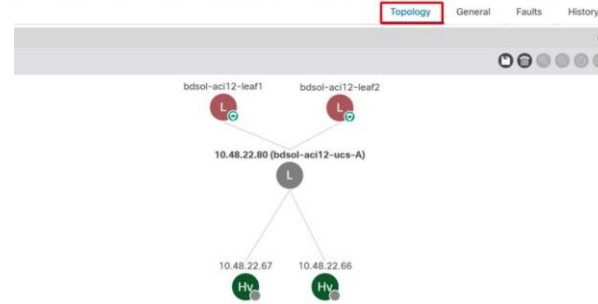
- Interfaces **UP**, **Leafs** descubriendo **ESXi** via **LLDP** o **CDP**.
- **ESXi** reportan información al vCenter.
- **VC** comunica al **APIC**
- Sin **adyacencia**, es sinónimo de **afectación**.



Descubriendo Blade Switches

- Interfaces UP.
- Los Leafs descubren como vecino al FI (Fabric Interconnect.) via LLDP / CDP.
- ESXi / Line cards reportan al vCenter interfaces internas al Blade Switch “vEth” (Virtual Ethernet) vía CDP o LLDP.
- El VC comunica al APIC que los ESXi son conocidos port una vEthernet.
- ACI las relaciona por medio del UFN “Unmanaged Fabric Node”, Object fabricLooseNode“”.

Fabric > Fabric Membership > Unmanaged Fabric Nodes > “FI-A,FI-B”
Unmanaged Fabric Node - 10.48.22.80 (bdsol-aci12-ucs-A)





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¿Qué protocolo se utiliza en la comunicación del APIC y vCenter?

a) HTTPS

0%

b) HTTP y HTTPS

0%

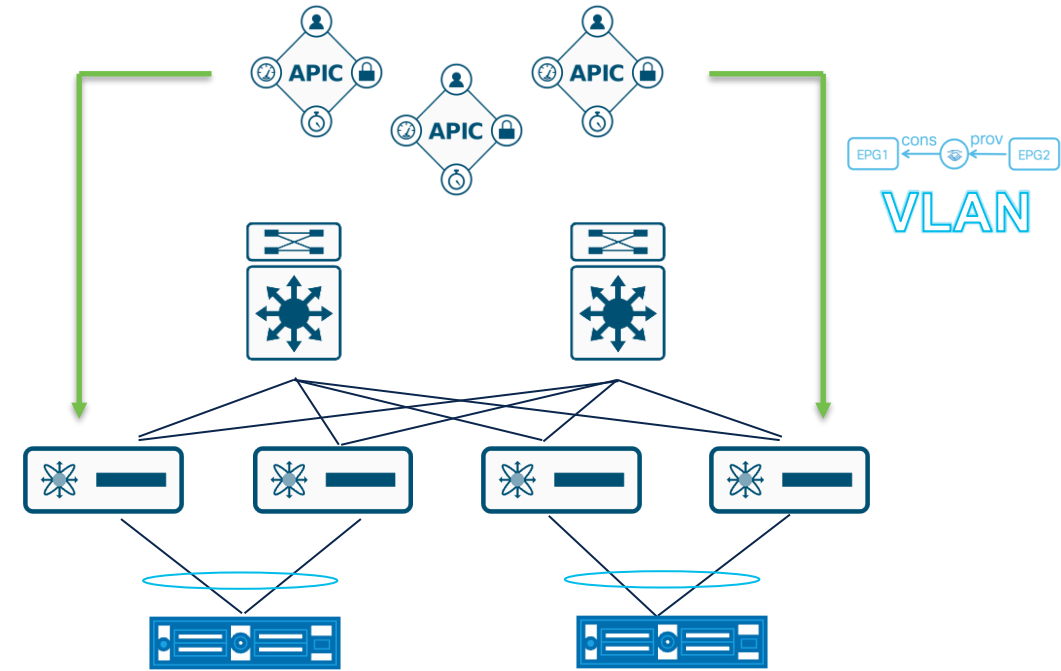
c) FTP y FTPS

0%

Descargando Políticas

Resolution Immediacy: Determina cuando los contratos & VLANs son descargados a los LEAFs.

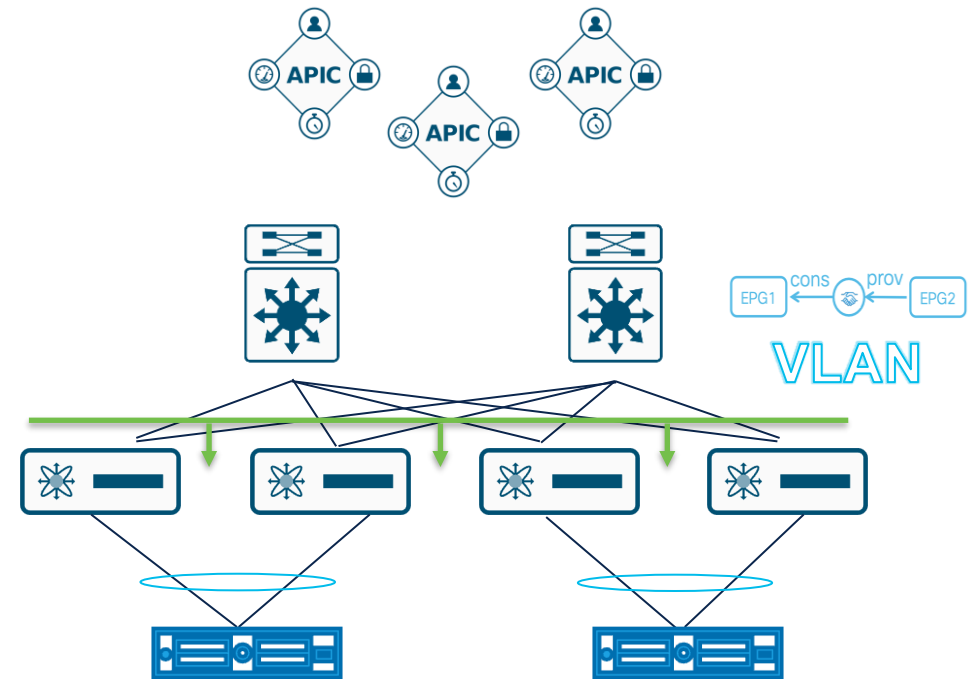
- **OnDemand:** Cuando un port-group es *attachado* a una VM y los Leafs descubren los ESXi via CDP/LLDP.
- **Immediate:** Cuando se detectan los ESXi vía CDP/LLDP.
- **Pre-Provision:** Se descarga a todos los puertos & leafs des AAEP (Attachable Application Entity Profile) asociado al VMMDomain.



Instalando Políticas

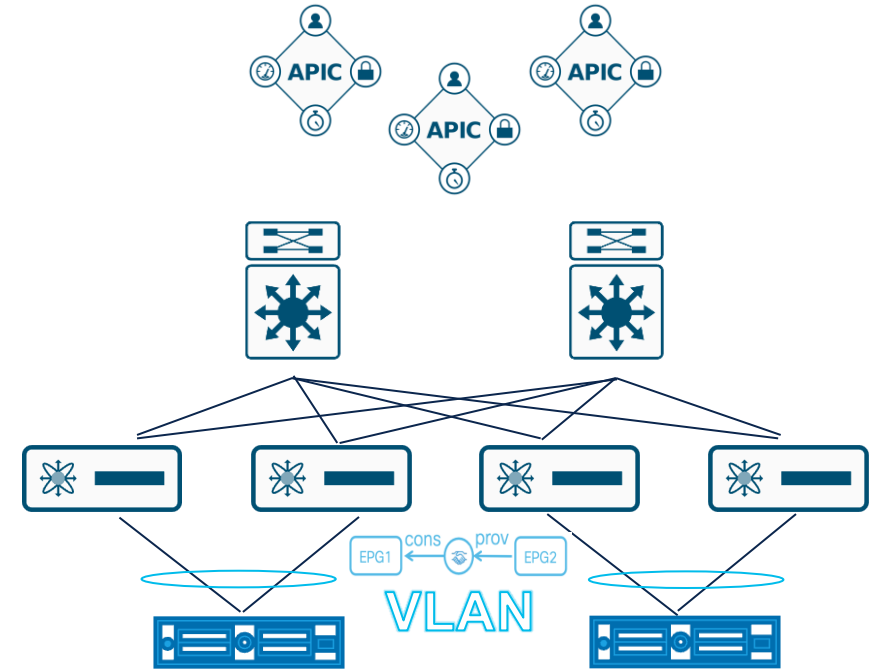
Deployment Immediacy: Determina cuando los contratos son instalados en la TCAM del Leaf.

- **On-Demand:** El contrato & VLANs son instalados cuando el primer paquete de la VM asociada a un portgroup llega al Leaf.
- **Immediate:** El contrato & VLANs son instalados tan pronto se reciba la política en el Leaf del APIC.

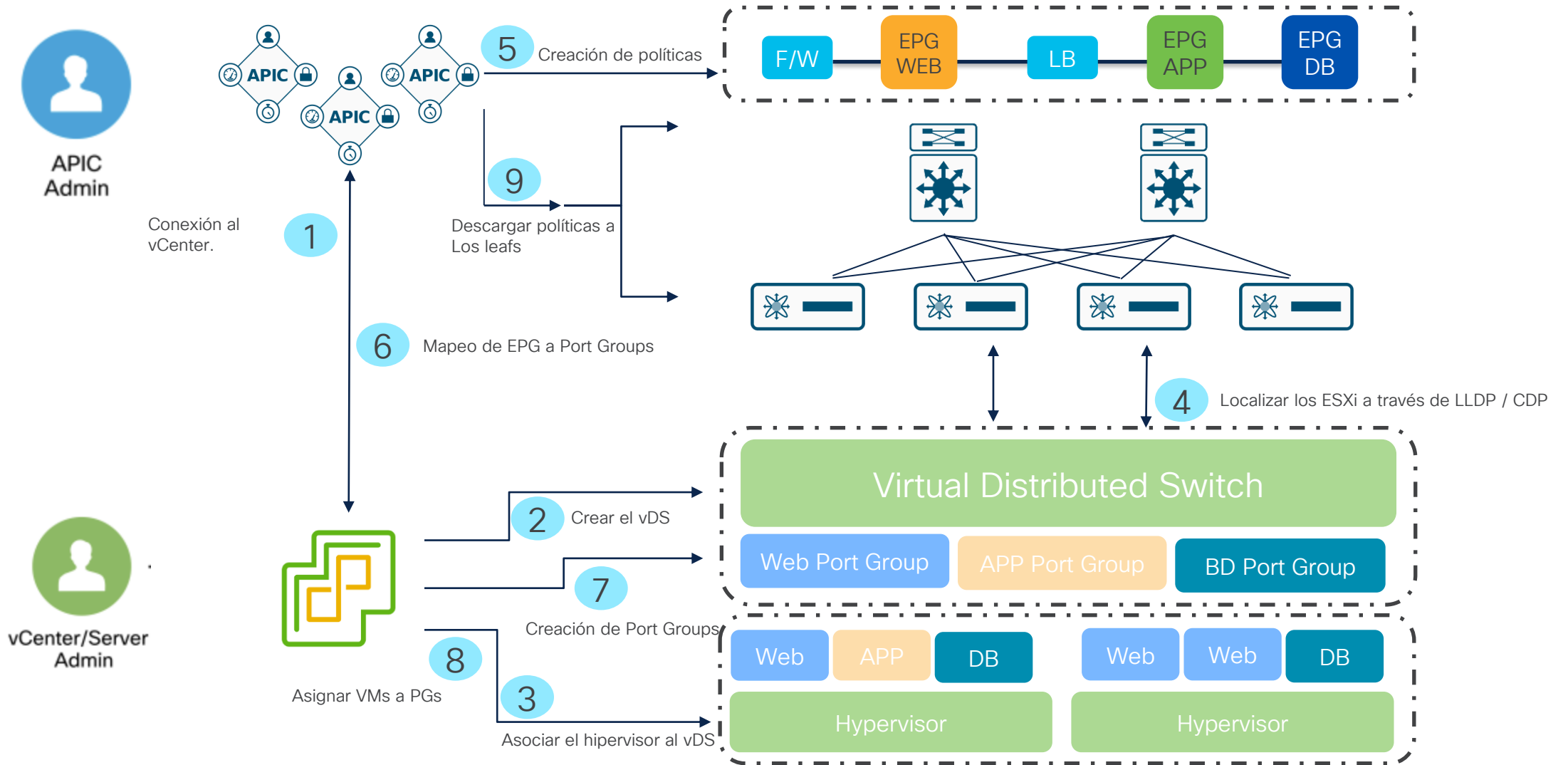


Pre-Provision Casos de Uso

- **Puertos de administración VMK:** Si la administración del entorno virtual es a través del vDS.
- **Mantenimiento:** Durante el mantenimiento los puertos o adyacencias pueden *flapear*.
- **Resolución de problemas:** en momentos de afectación para asegurar que los contratos & VLANs se encuentren presentes.



Cisco ACI Integración del Hipervisor



Proceso VMmmgr (Virtual Machine Monitor Manager)

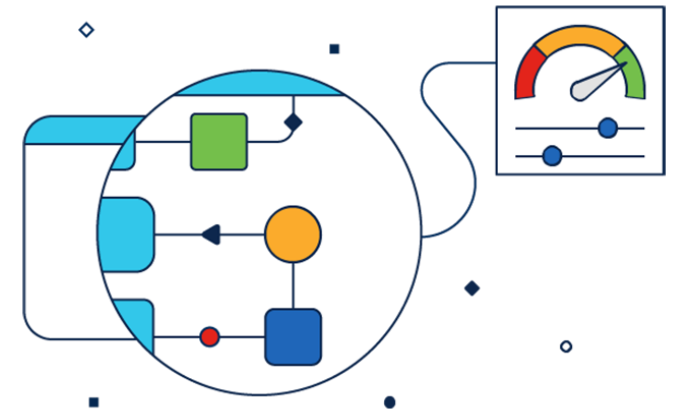
VMmmgr: maneja los procesos entre el APIC y los Hipervisores.

```
MXS2-AP001# moquery -c procEntry -f 'proc.Entry.name=="vmmmgr"'  
...  
# proc.Entry  
name      : vmmmgr  
childAction :  
descr     : Virtual Machine Management Process  
dn        : topology/pod-1/node-1/sys/proc/proc-vmmmgr  
esp       : 0  
id        : 3576  
maxMemAlloc : 686604288  
maxMemUsed  : 0  
modTs     : 2024-04-29T18:24:46.369+00:00  
monPolDn  : uni/fabric/monfab-default  
nameAlias  :  
operSt    : intr-sleep  
operState  : up  
pc        : 0  
rn        : proc-vmmmgr  
stackBase  : 0  
startCnt   : 1  
status     :  
tty       :  
...
```

```
MXS2-AP001# ps aux | egrep "PID|vmmmgr"  
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND  
ifc       3576  0.8  1.0 1449696 676040 ?        Ss1  Apr17 178:08 /mgmt//bin/svc_ifc_vmmmgr.bin --x  
admin     42764 0.0  0.0   3444   724 pts/0    S+   18:59   0:00 grep -E PID|vmmmgr
```

Ruta UI APICs y Leafs:

System > Controllers > Controller > Proceses
Fabric > Inventory > Pod > Node > Processes



TAC Tip  El proceso en todo momento activo.



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¿Cuál es el proceso encargado de establecer comunicación entre el APIC y la integración de vCenter?

a) Policy Manager

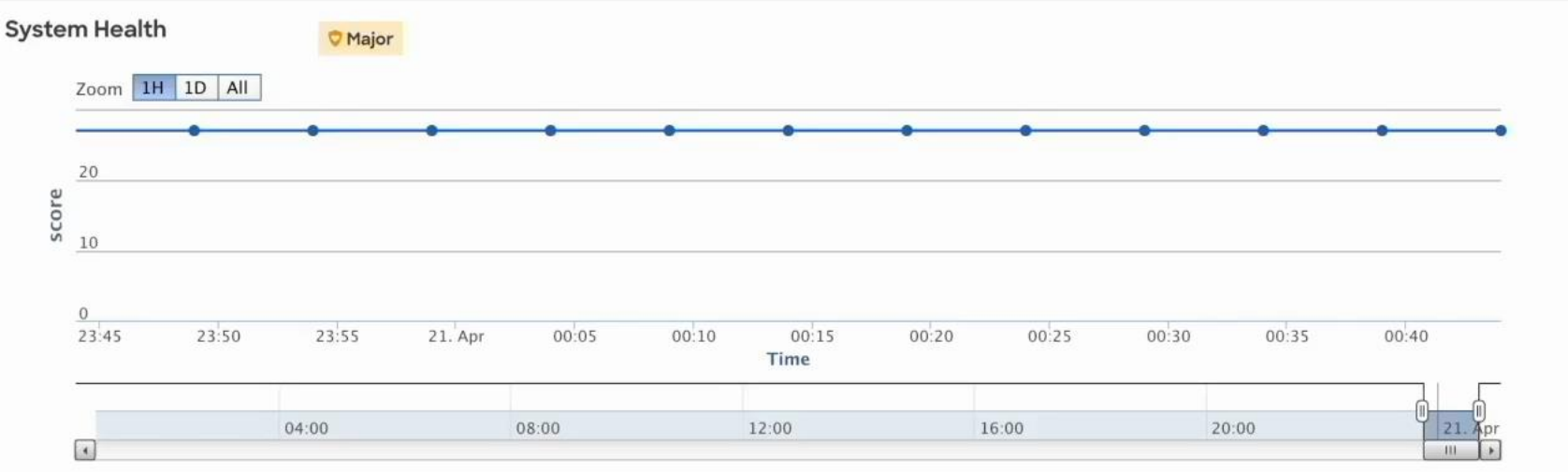
0%

b) Observer

0%





c) Vmmmgr

0%



Fault Counts by Domain

Hide Acknowledged Faults Hide Delegated Faults

				
SYSTEM WIDE	16	17	1442	275
Access	4	0	0	4
External	0	0	0	0
Framework	0	2	0	0
Infra	10	4	100	200
Management	0	0	20	0
Security	0	0	0	0
Tenant	0	0	1007	0
Apps	0	0	0	0





Nodes with Health ≤ 99

99

Name	Pod ID	Node Type	Health Score
MXS2-LF101	1	leaf	Minor
MXS2-LF102	1	leaf	Healthy
MXS2-LF104	1	leaf	Healthy
MXS2-SP1002	1	spine	Healthy

Fault Counts by Type

Hide Acknowledged Faults Hide Delegated Faults

				
Communications	4	0	0	0
Config	0	4	1000	200
Environmental	0	0	4	0
Operational	0	0	10	10

Tenants with Health ≤ 99

99

Name	Health Score
ar	Critical
av	Critical
egomezsa02	Major
Produccion	Healthy
SCGTenant	Critical

Controller Status

ID	Name	IP	Admin State	Operational State	Health State
1	MXS2-AP001	10.2.0.1	In Service	Available	Fully Fit
2	MXS2-AP002	10.2.0.2	In Service	Available	Fully Fit

- Datacenter_Community_Live
 - Lab-NexusDashboard
 - Vm1_Community_Live
 - Vm2_Community_Live
 - VMware vCenter Server
- DatacenterMXC

Datacenter_Community_Live

Summary Monitor Configure Permissions **Hosts & Clusters** VMs Datastores Networks Updates

Hosts Clusters Resource Pools Host Folders

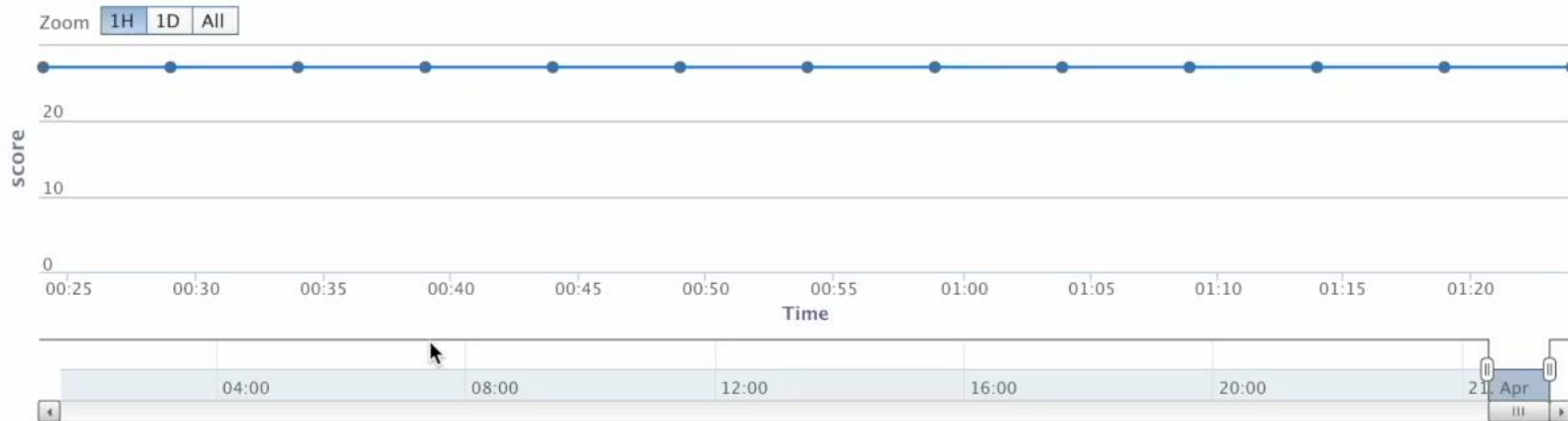
<input type="checkbox"/>	Name	State	Status	Cluster	Consumed CPU %	Consumed Memory %	HA State
<input type="checkbox"/>		Connected	✓ Normal		<div style="width: 24%;"></div> 24%	<div style="width: 34%;"></div> 34%	? N/A

[EXPORT](#) Items per page 35

Task Name	Target	Status	Details	Initiator	Queued For	Start Time	Completion Time	Server
-----------	--------	--------	---------	-----------	------------	------------	-----------------	--------



System Health

Major


Nodes with Health ≤ 99

99

Name	Pod ID	Node Type	Health Score
MXS2-LF101	1	leaf	Minor
MXS2-LF102	1	leaf	Healthy
MXS2-LF104	1	leaf	Healthy
MXS2-SP1002	1	spine	Healthy

Tenants with Health ≤ 99

99

Name	Health Score

Fault Counts by Domain

 Hide Acknowledged Faults

 Hide Delegated Faults

SYSTEM WIDE	16	17	1942	273
Access	4	5	5	4
External	0	0	0	4
Framework	0	2	0	0
Infra	10	8	10	200
Management	0	0	20	0
Security	0	0	0	0
Tenant	0	0	1947	0
Apps	0	0	0	0

Fault Counts by Type

 Hide Acknowledged Faults

 Hide Delegated Faults

Communications	4	5	0	0
Config	0	4	1000	200
Environmental	0	0	4	0
Operational	0	0	0	10

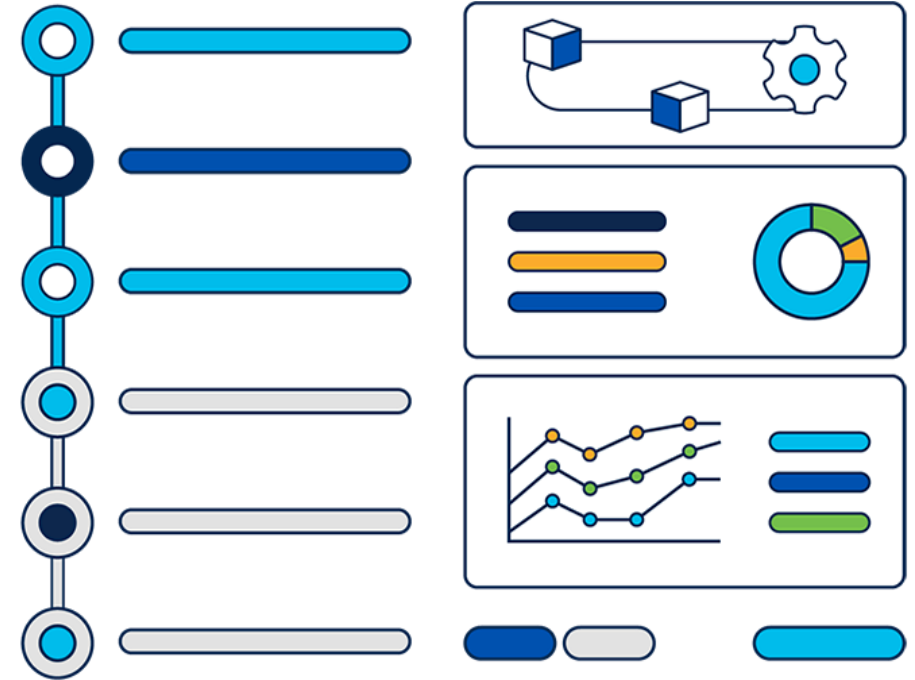
Controller Status

ID	Name	IP	Admin State	Operational State	Health State

Guía de Configuración de Dominio



[Cisco ACI Virtualization Guide, Release 6.0\(x\)](#)





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¿Cuáles son los parámetros necesarios que deben coincidir para poder establecer conectividad con el vCenter al momento de configurar un dominio virtualizado?

a) DVS, Credentials

0%

b) IP, Port Group

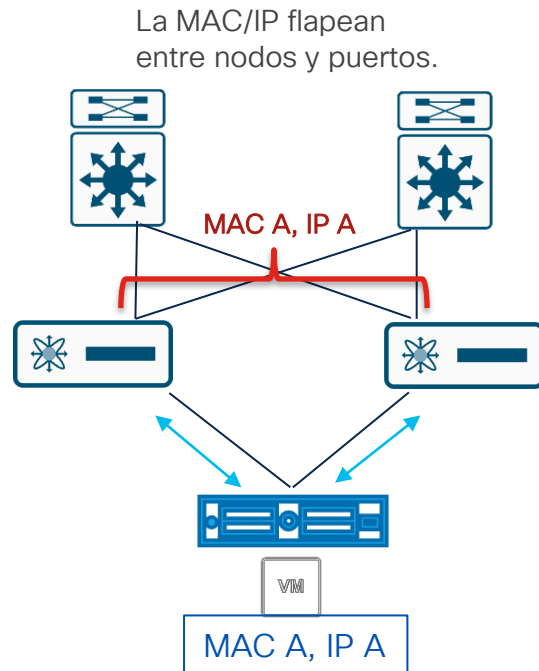
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c) Data Center Name, IP, Credentials

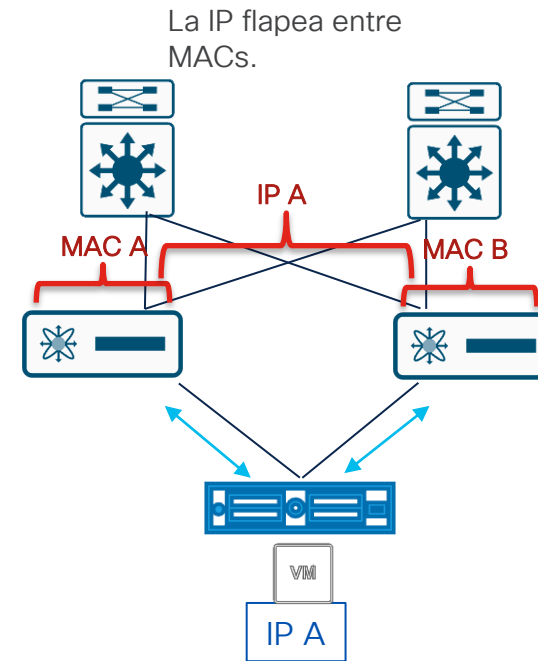
0%

Problemas de NIC Teaming en ACI

Nic teaming es el proceso de combinar múltiples puertos con el propósito **mejorar el desempeño**, controlar el **balanceo de cargas** además de obtener **redundancia** ante eventos inesperados de las interfaces.



Mismo problema que un switch normal.

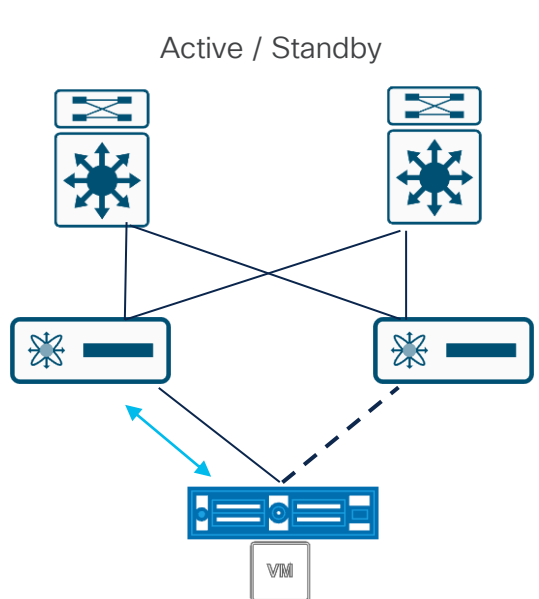


Comportamiento específico a ACI debido al data-plane learning.

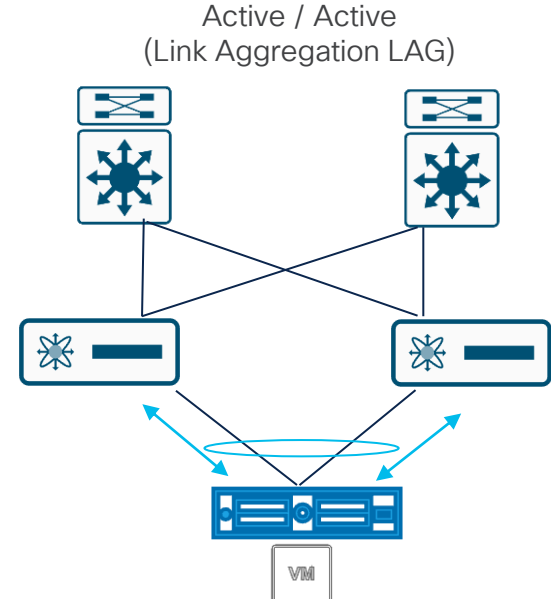
Tipos de NIC Teaming

Compatibles con ACI

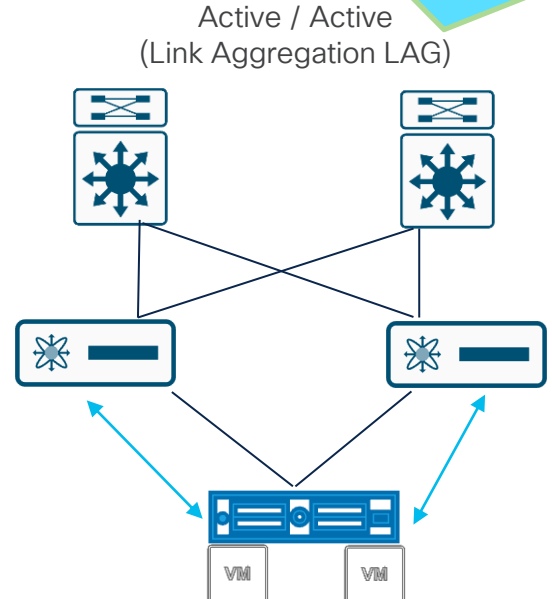
Microsoft - Switch Independent Hyper-V
VMware - Route Based on Originating Port ID



Un Uplink es usado para el tráfico de VMs, el otro es para failover.



El tráfico de VMs utiliza ambos uplinks que trabajan lógicamente como un uplink.

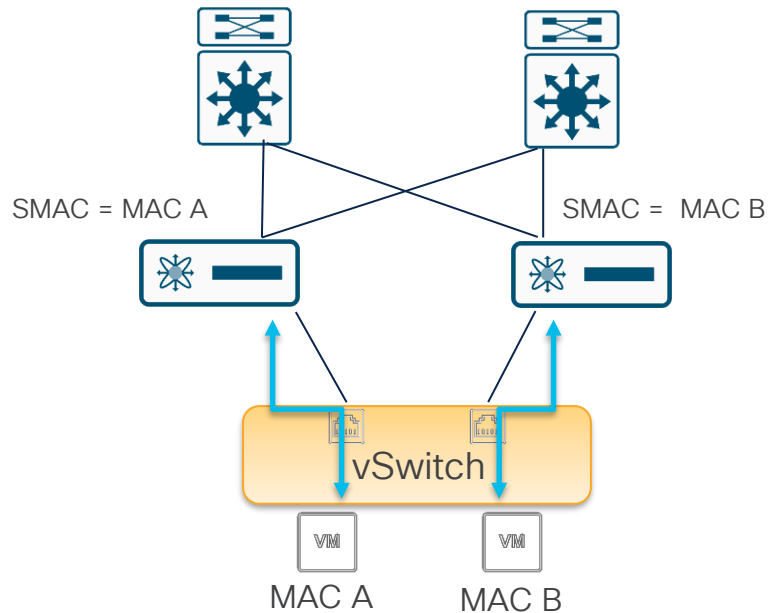


A cada VM se le asigna un uplink

NIC Teaming de Otros Vendors

Configuración especial en uso con ACI.

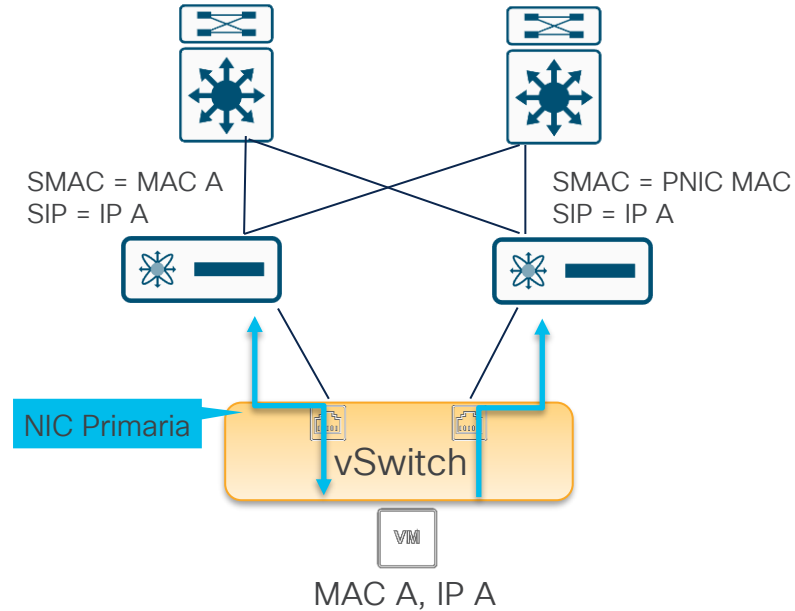
Active / Active
(VMware Load Based Teaming)



Solución:

LAG como LACP o port-channel estático.

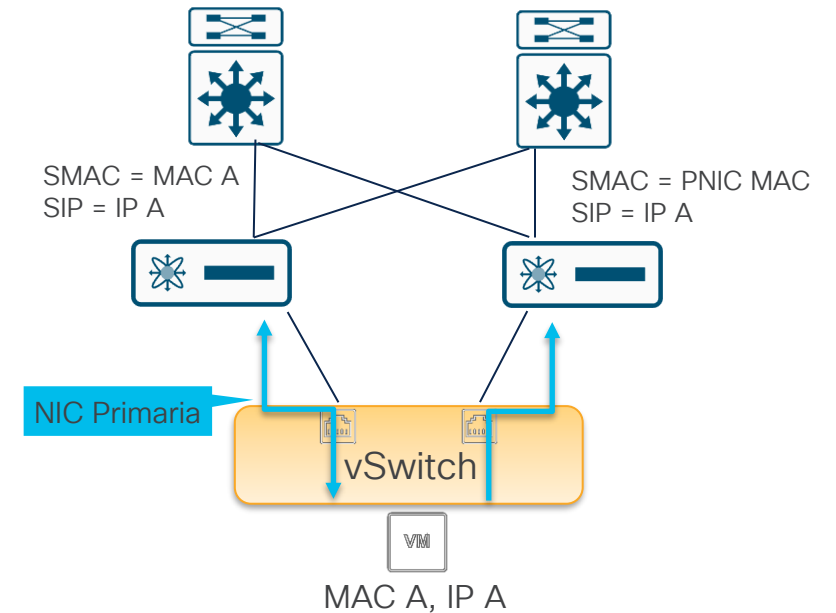
Active / Active
(Microsoft - Switch Independent)



Solución:

LAG como LACP o port-channel estático,
Switch Independent with Hyper-V,
Deshabilitar IP data-plane learning a nivel de VRF en ACI.

Active / Active
(HP - Transmit Load Balancing Teaming)



Solución:

LAG como LACP o port-channel estático.
Active / Standby
Deshabilitar IP data-plane learning a nivel de VRF en ACI.

Enhanced LACP

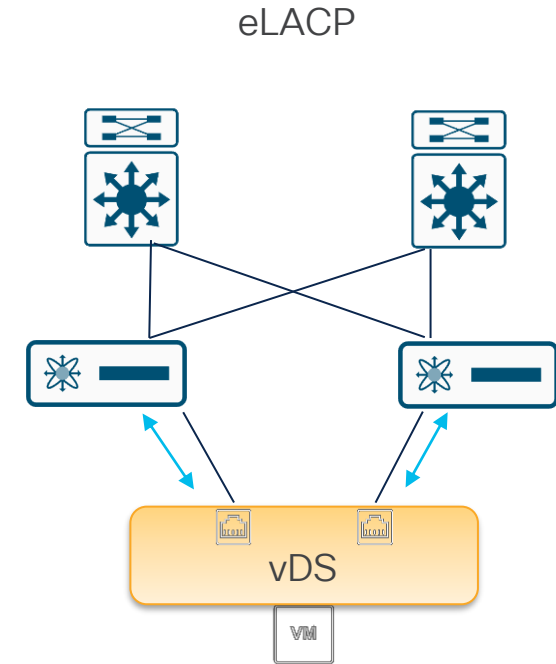
Nos Permite la creación de múltiples grupos “Lag” y tomar ventaja de sus características.

LACP Básico ha sido eliminado gradualmente en vSphere desde la versión 5.1 de VDS.

LACP Básico (LACPv1) soportado hasta vSphere v6.5.

vSphere v6.7 únicamente soporta LACP V2.

: El vDS debe ser convertido a Enhanced LACP a partir v6.7.



[Tabla de Compatibilidad](#)

Enhanced LACP

Características

Enhanced Lag Policy

Name	Mode	Load Balancing Mode	Number of Links
Elag_Comm_Live	LACP Active	Source and Destination IP Address	2

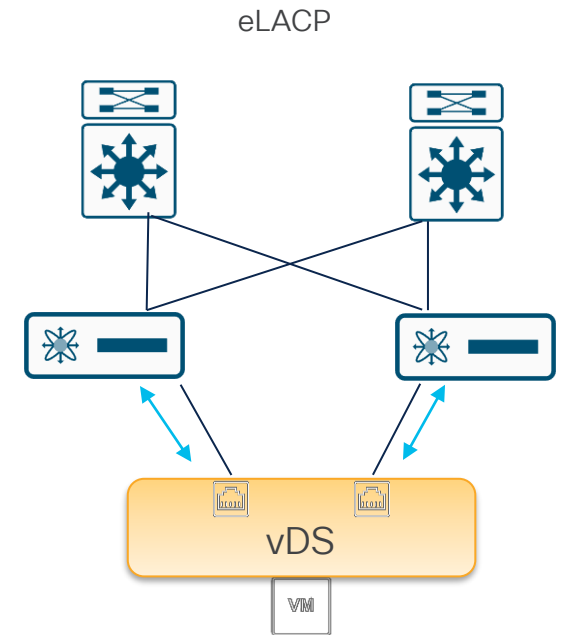
Update Cancel

Enhanced Lag Policy

Name	Mode	Load Balancing Mode	Number of Links
Elag_Comm_Live	LACP Active	Source and Destination IP Address	2

- Destination IP Address
- Destination IP Address and TCP/UDP Port
- Destination IP Address, TCP/UDP Port and VLAN
- Destination IP Address and VLAN
- Destination TCP/UDP Port
- Destination MAC Address
- Source and Destination IP Address
- Source and Destination IP Address and TCP/UDP Port
- Source and Destination IP Address, TCP/UDP Port and VLAN
- Source and Destination IP Address and VLAN

Reset Submit



[eLACP Configuración.](#)



System Health

Zoom **1H** 1D All



Fault Counts by Domain

Hide Acknowledged Faults Hide Delegated Faults

SYSTEM WIDE	0	0	0	0
Access	0	0	0	0
External	0	0	0	0
Framework	0	0	0	0
Infra	0	0	0	0
Management	0	0	0	0
Security	0	0	0	0
Tenant	0	0	0	0
Apps	0	0	0	0

Nodes with Health ≤ 99

99

Name	Pod ID	Node Type	Health Score
MXS2-LF101	1	leaf	Minor
MXS2-LF104	1	leaf	Healthy
MXS2-SP1002	1	spine	Critical

Tenants with Health ≤ 99

99

Name	Health Score

Fault Counts by Type

Hide Acknowledged Faults Hide Delegated Faults

Communications	0	0	0	0
Config	0	0	0	0
Environmental	0	0	0	0
Operational	0	0	0	0

Controller Status

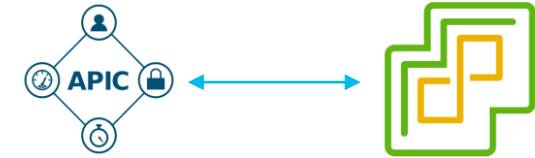
ID	Name	IP	Admin State	Operational State	Health State
1	MXS2-AP001	10.2.0.1	In Service	Available	Fully Fit
2	MXS2-AP002	10.2.0.2	In Service	Available	Fully Fit

Validación

- Introducción
- Integración
- Validación
- Troubleshooting

Verificando vCenter Estatus

Virtual Networking > Vmware > Domain > Controllers > Operational




The screenshot shows the Cisco APIC (DC2) interface. The top navigation bar includes 'System', 'Tenants', 'Fabric', 'Virtual Networking', 'Admin', 'Operations', 'Apps', and 'Integrations'. Under 'Virtual Networking', there are options for 'Kubernetes', 'Rancher RKE', 'OpenShift', 'OpenStack', 'Microsoft', 'Red Hat', 'Nutanix', 'VMware', and 'VMware SDN'. The 'VMware' section is expanded, showing 'Domain_Community_Live' > 'Controllers' > 'Controller_Community_Live'. The main panel displays the 'Controller - Controller_Community_Live' details, including 'Policy' (Operational) and 'General' information: Name: Controller_Community_Live, State: Online, Address: 10.31.125.231, Model: VMware vCenter Server 7.0.3.

```

MXS2-AP001# show vmware domain name Domain_Community_Live vcenter 10.31.125.231
Name                : Controller_Community_Live
Type                : vCenter
Hostname or IP      : 10.31.125.231
Datacenter          : Datacenter_Community_Live
DVS Version         : unmanaged
Status              : online
Last Inventory Sync : 2024-04-22 14:46:47
Last Event Seen     : 1970-01-01 00:00:00
Username            : administrator@leviatan.aci
Number of ESX Servers : 1
Number of VMs       : 4
Faults by Severity   : 0, 1, 0, 0
Leader              : MXS2-AP002

Managed Hosts:
ESX      VMs  Adjacency  Interfaces
-----
10.31.125.167  4    Direct    leaf-101-102 eth1/27
    
```

TAC Tip  moquery -c compCtrlr -f 'comp.Ctrlr.hostOrIp=="<Controller-IP>"'

Verificando Conectividad al vCenter

Validar el DNS del VC

```
MXS2-AP001# nslookup community_live-vcenter  
  
Server:          171.70.168.183  
Address:         171.70.168.183#53  
  
Name:   community_live-vcenter  
Address: 10.31.125.231
```

Lanzar ping al vCenter

```
MXS2-AP001# ping 10.31.125.231  
PING 10.31.125.231 (10.31.125.231) 56(84) bytes of data.  
64 bytes from 10.31.125.231: icmp_seq=1 ttl=64 time=0.358 ms  
64 bytes from 10.31.125.231: icmp_seq=2 ttl=64 time=0.273 ms  
64 bytes from 10.31.125.231: icmp_seq=3 ttl=64 time=0.310 ms  
64 bytes from 10.31.125.231: icmp_seq=4 ttl=64 time=0.312 ms  
  
--- 10.31.125.231 ping statistics ---  
4 packets transmitted, 4 received, 0% packet loss, time 3083ms  
rtt min/avg/max/mdev = 0.273/0.313/0.358/0.030 ms
```

Verificar las rutas de OOB /INB hacia la subnet del vCenter

```
MXS2-AP001# bash  
admin@MXS2-AP001:~> route  
Kernel IP routing table
```

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
default	10.31.125.129	0.0.0.0	UG	16	0	0	oobmgmt
10.2.0.0	10.2.0.30	255.255.0.0	UG	0	0	0	bond0.3967
10.2.0.30	0.0.0.0	255.255.255.255	UH	0	0	0	bond0.3967



Verificando ESXi

Virtual Networking > Vmware > Domain > Controllers > Hypervisors



moquery -c compHv -f 'comp.Hv.oid=="Host OID"'

```

MXS2-AP001# show vmware domain name Domain_Community_Live esx 10.31.125.167
Name : 10.31.125.167
vCenter : 10.31.125.231
Host OID : host-52
Host GUID : 8e1df94d-306d-0742-a5d2-d0fb4d6f8604
Power State : poweredOn
Number of VMs : 4

Physical NICs:
VMNic MAC Speed Duplex State DVS Adjacency
-----
vmnic0 18:80:90:5A:1A:7C 10000 Mb True up Domain_Community_Live leaf101-102 VPC_Policy_G_Community_Live
vmnic1 18:80:90:5A:1A:7D 10000 Mb True up Domain_Community_Live leaf101-102 VPC_Policy_G_Community_Live
...
Skip
    
```


Verificando Port-Groups

Virtual Networking > Vmware > Domain > Controllers > DVS > Portgroups

```

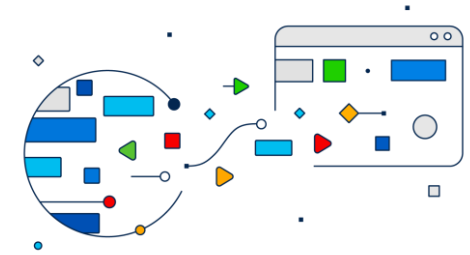
MXS2-AP001# show vmware domain name Domain_Community_Live port-group
vCenter 10.31.125.231:
Encap: (P):Primary VLAN, (S):Secondary VLAN
OID          Name
-----
dvportgroup-4022  Domain_Community- DVUplinks-4021
dvportgroup-4023  quarantine
dvportgroup-4026  Tenant_Community_Live|AP_Community_Live|EPG_Community_Live
    
```

OID	Name	Type	Encap
dvportgroup-4022	Domain_Community- DVUplinks-4021	pnic	vlan 1-4094
dvportgroup-4023	quarantine	vnic	vlan-1
dvportgroup-4026	Tenant_Community_Live AP_Community_Live EPG_Community_Live	vnic	vlan-820

Verificando LLDP

The screenshot shows the Cisco APIC (DC2) interface. The user is logged in as 'admin'. The navigation menu includes System, Tenants, Fabric, Virtual Networking, Admin, Operations, Apps, and Integrations. Under Virtual Networking, there are options for Kubernetes, Rancher RKE, OpenShift, OpenStack, Microsoft, Red Hat, Nutanix, VMware, and VMware SDN. The left sidebar shows a tree view: VMware > VMware > Domain_Community_Live > Controllers > Controller_Community_Live > Tags > Hypervisors > 10.31.125.167 > DVS - Domain_Comm... The main content area shows the configuration for 'Hypervisor - 10.31.125.167' in the 'General' tab. The 'Neighbors' section shows a table with one entry: Pod-1/Node-101-102/VPC_Policy_G_Community_Live with LLDP protocol. The 'Management Network Adapters' section shows a table with one entry: vmk0 with MAC address 00:6B:F1:CD:..., State Up, and IP Address 10.31.125.167.

Virtual Networking > Vmware > Domain > Controllers > Hypervisors > General



Verificar que LLDP esté habilitado

```
MXS2-LF101# show lldp interface eth1/27
Interface Information:
Enable (tx/rx/dcbx): Y/Y/N   Port Mac address: 28:6f:7f:eb:03:2b
```

Verificar trafico LLDP en la interface

```
MXS2-LF101# show lldp traffic interface eth1/27
LLDP interface traffic statistics:

Total frames transmitted: 8935
Total entries aged: 0
Total frames received: 8743
Total frames received in error: 0
Total frames discarded: 0
Total unrecognized TLVs: 0
```

Validar que el host vecino sea correcto

```
MXS2-LF101# show lldp neighbors interface eth1/27
Capability codes:
(R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device
(W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other
Device ID      Local Intf  Hold-time  Capability  Port ID
localhost     Eth1/27    180       B           1880.905a.1a7c
Total entries displayed:
```

Verificando CDP

The screenshot shows the Cisco APIC (DC2) interface. The user is logged in as 'admin'. The navigation menu includes System, Tenants, Fabric, Virtual Networking (selected), Admin, Operations, Apps, and Integrations. Under Virtual Networking, there are options for Kubernetes, Rancher RKE, OpenShift, OpenStack, Microsoft, Red Hat, Nutanix, VMware (selected), and VMware SDN. The VMware section is expanded to show Domain_Community_Live, Controllers, and Hypervisors. The Hypervisors section is further expanded to show a specific hypervisor at IP 10.31.125.167, with a sub-entry for 'DVS - Domain Commu...'. The main content area shows the configuration for 'Hypervisor - 10.31.125.167' with tabs for Topology, General (selected), Stats, Faults, and History. The General tab shows properties and a table of neighbors.

Neighbors:	Interface Name	Proto
	Pod-1/Node-101-102/VPC_Policy_G_Community_Live	CDP

Management Network Adapters:			
Name	MAC	State	IP Address
vmk0	00:6B:F1:CD:...	Up	10.31.125.167

Virtual Networking > Vmware > Domain > Controllers > Hypervisors > General

TAC Tip Verificar Access Policy / Vswitch Policy

Verificar protocolo CDP

```
MXS2-LF101# show cdp interface eth1/27
Ethernet1/27 is
  CDP enabled on interface
  Refresh time is 60 seconds
  Hold time is 180 seconds
```

Verificar trafico en la interface

```
MXS2-LF101# show cdp traffic interface eth1/27
-----
Traffic statistics for Ethernet1/27
Input Statistics:
  Total Packets: 3
  Valid CDP Packets: 3
    CDP v1 Packets: 0
    CDP v2 Packets: 3
  Invalid CDP Packets: 0
  Unsupported Version: 0
  Checksum Errors: 0
  Malformed Packets: 0
Output Statistics:
  Total Packets: 4
    CDP v1 Packets: 0
    CDP v2 Packets: 4
  Send Errors: 0
```

Validar que el host vecino sea correcto

```
MXS2-LF101# show cdp neighbors
Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater,
                  V - VoIP-Phone, D - Remotely-Managed-Device,
                  s - Supports-STP-Dispute

Device-ID          Local Infrfce  Hldtme  Capability  Platform  Port ID
localhost          Eth1/27       140     S           VMware   ESXi    vmnic0
```

Endpoint Learning

Tenants > Tenant > App Profile > EPG > Operational > Client Endpoints

APIC (DC2) admin

System Tenants Fabric Virtual Networking Admin Operations Apps Integrations

ALL TENANTS | Add Tenant | Tenant Search: name or descr | common | av | Tenant_Community_Live | lvid | mgmt

Tenant_Community

- Tenant_Community_Live
 - Application Profiles
 - AP_Community_Live
 - Application EPGs
 - EPG_Community_Live
 - uSeg EPGs
 - Endpoint Security Groups
 - Networking
 - Contracts
 - Policies
 - Services
 - Security
 - Quick Start

EPG - EPG_Community_Live

Summary Policy **Operational** Stats Health Faults History

Client Endpoints Configured Access Policies Contracts Controller End-Points Deployed Leaves

Healthy

MAC/IP	Endpoint Name	Learning Source	Interface (learned)	Encap
00:0C:29:B4:C9:5A 10.31.125.134	Vm1_Community_Live	learned vmm	Pod-1/Node-101-102/VPC_Policy_G_Comm...	vlan-820
00:50:56:88:09:5F 10.31.125.135	Vm2_Community_Live	learned vmm	Pod-1/Node-101-102/VPC_Policy_G_Comm...	vlan-820

Page 1 Of 1 | Objects Per Page: 100 | Displaying Objects 1 - 2 Of 2

- “vmm” : El vCenter informó al APIC de su existencia en el Port Group
- “learned” : La VM ha enviado tráfico al leaf



No VMM : Verificar Port Group
No Learned: Verificar VLANs


EPG Members

Tenants > Tenant > App Profile > EPG > EPG Members > Dynamic EPG Members

The screenshot shows the Cisco APIC (DC2) interface. The top navigation bar includes 'System', 'Tenants', 'Fabric', 'Virtual Networking', 'Admin', 'Operations', 'Apps', and 'Integrations'. The 'Tenants' tab is active, and the breadcrumb path is 'Tenant > App Profile > EPG > EPG Members > Dynamic EPG Members'. The left sidebar shows a tree view of the configuration, with 'Dynamic EPG Members' selected. The main content area displays a table of 'Dynamic Epg Members' with two entries:

Dynamic Epg Members
node-101-[VPC_Policy_G_Community_Live]-[vlan-820]
node-102-[VPC_Policy_G_Community_Live]-[vlan-820]

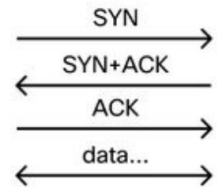
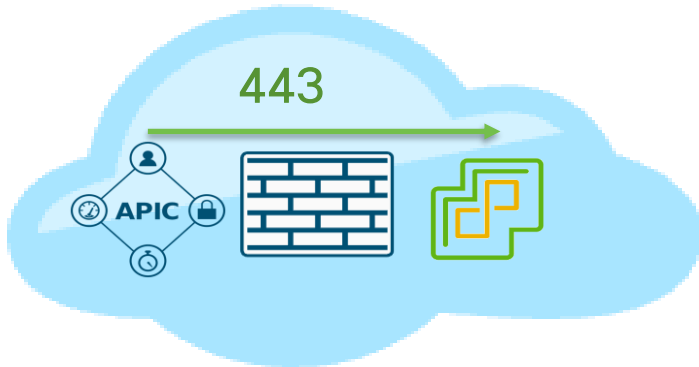
Nos indica que los parámetros de conectividad en una interface están correctamente configurados.

TAC Tip  `moquery -c fvIfConn -f 'fv.IfConn.encap=="vlan-<encap>"'`

Troubleshooting

- Introducción
- Integración
- Validación
- Troubleshooting**

Conectividad entre el APIC y el vCenter



Si entre el APIC y el vCenter existe algún firewall, validar que el **puerto 443** sea permitido.

Controller - Controller_Community_Live

The screenshot shows the vCenter inventory page for the controller 'Controller_Community_Live'. The page is titled 'Controller - Controller_Community_Live' and has tabs for 'Policy' and 'Operational'. The 'Operational' tab is selected, and there are sub-tabs for 'General', 'History', and 'Faults'. The 'General' tab is active, showing the following properties:

Name:	Controller_Community_Live
State:	Offline
Address:	10.31.125.231
Model:	VMware vCenter Server 7.0.3 build-22837322
Vendor:	VMware, Inc.
Revision:	7.0.3
Serial:	c75a11f3-1d58-44f5-a422-5664a1a919f4
Inventory Trigger State:	untriggered
Latest Inventory Completion Time:	2024-04-24T14:48:02.061+00:00

A blue callout box highlights the Name, State, and Address fields.

Name: Controller_Community_Live
State: Offline
Address: 10.31.125.231

Fault Code: F0132

Severity: major

Last Transition: 2024-04-24T17:40:39.330+00:00

Lifecycle: Soaking

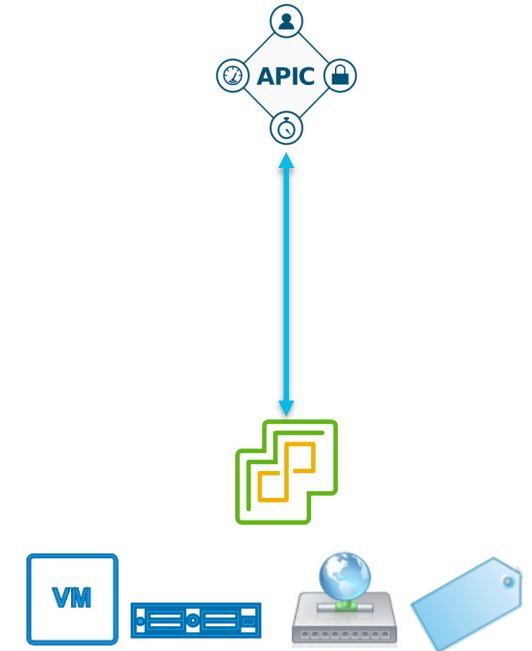
Affected Object: **comp/prov-VMware/ctrlr-[Domain_Community_Live]-Controller_Community_Live**

Description: Operational issues detected for VMM controller: 10.31.125.231 with name Controller_Community_Live in datacenter Datacenter_Community_Live in domain: Domain_Community_Live due to error: Connection to external VMM controller is down.,Event channel from external VMM controller is down.

Sincronización de Inventario

Virtual Networking > VMware > Domain > Controller > Operational > General

The screenshot shows the Cisco APIC (DC2) interface. The top navigation bar includes 'System', 'Tenants', 'Fabric', 'Virtual Networking', 'Admin', 'Operations', 'Apps', and 'Integrations'. The 'Virtual Networking' section is expanded to show 'VMware', 'Rancher RKE', 'OpenShift', 'OpenStack', 'Microsoft', 'Red Hat', 'Nutanix', 'VMware', and 'VMware SDN'. The left sidebar shows the navigation tree: 'VMware' > 'Domain_Community_Live' > 'Controllers' > 'Controller_Community_Live'. The main content area displays the configuration for 'Controller - Controller_Community_Live' with tabs for 'Policy' and 'Operational'. Under 'Operational', there are sub-tabs for 'General', 'History', and 'Faults'. The 'General' sub-tab is active, showing properties: Name: Controller_Community_Live, State: Online, Address: 10.31.125.231, and Model: VMware vCenter Server 7.0.3 build-22837322. A red box highlights the 'Trigger Inventory Sync' button in the top right corner of the configuration area.



Adyacencia del Host Errónea

Virtual Networking > Vmware > Domain > Policy > Faults



Fault Code: F1313
Severity: major
Last Transition: 2024-04-22T03:06:48.726+00:00
Lifecycle: Soaking
Affected Object: [comp/prov-VMware/ctrlr-\[Domain_Community_Live\]-Controller_Community_Live/hv-host-52/hpnic-vmnic1](#)
Description: Fault delegate: Operational issues detected on Host: 10.31.125.167 for controller: 10.31.125.231 with name Controller_Community_Live in datacenter Datacenter_Community_Live in domain Domain_Community_Live HpNic: 18:80:90:5A:1A:7D, error: [Could not find adjacency for NIC.]

Networking > vDS > Configure



Domain_Community_Live | ACTIONS

Summary Monitor **Configure** Permissions Ports Hosts VMs Networks

Settings ▾ Properties EDIT...

Properties

- Topology
- LACP
- Private VLAN
- NetFlow
- Port Mirroring
- Health Check
- Resource Allocation ▾
 - System traffic
 - Network resource pools
 - Alarm Definitions

Properties

- General
 - Name: Domain_Community_Live
 - Manufacturer: VMware, Inc.
 - Version: 7.0.3
 - Number of uplinks: 8
 - Number of ports: 16
 - Network I/O Control: Disabled
- Advanced
 - MTU: 9000 Bytes
 - Multicast filtering mode: Basic
- Discovery protocol
 - Type: Cisco Discovery Protocol
 - Operation: Both
- Administrator contact

Discovery protocol

Type: Cisco Discovery Protocol

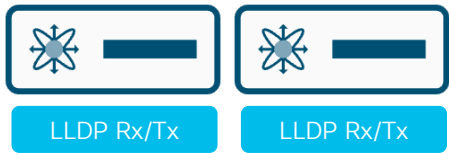
Operation: Both

LLDP Rx/Tx

LLDP Rx/Tx



Adyacencia del Host Correcta



Networking > vDS > Configure

Domain_Community_Live | ACTIONS

Summary Monitor **Configure** Permissions Ports Hosts VMs Networks

Settings Properties EDIT...

- Properties
 - Topology
 - LACP
 - Private VLAN
 - NetFlow
 - Port Mirroring
 - Health Check
- Resource Allocation
 - System traffic
 - Network resource pools
 - Alarm Definitions

Properties

- General
 - Name: Domain_Community_Live
 - Manufacturer: VMware, Inc.
 - Version: 7.0.3
 - Number of uplinks: 8
 - Number of ports: 16
 - Network I/O Control: Disabled
- Advanced
 - MTU: 9000 Bytes
 - Multicast filtering mode: Basic
- Discovery protocol
 - Type: Link Layer Discovery Protocol
 - Operation: Both
- Administrator contact

Discovery protocol

Type	Link Layer Discovery Protocol
Operation	Both

Properties

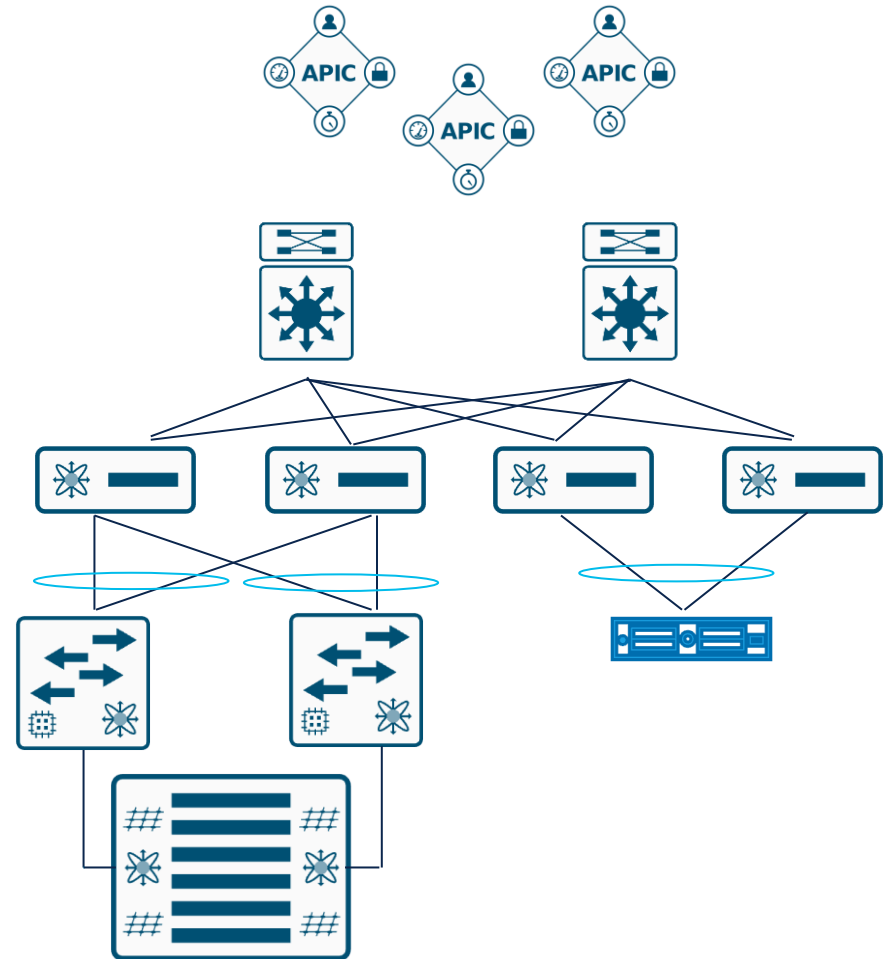
Port Channel Policy:	Domain_Community_Live_lacp	▼	🔗
LLDP Policy:	system-lldp-enabled	▼	🔗
CDP Policy:	system-cdp-disabled	▼	🔗
MTU Policy:	select an option	▼	
NetFlow Exporter Policy:	select an option	▼	

Virtual Networking > VMware > Domain > Policy > Vswitch Policy



Problemas comunes de los Blade Switches

- CDP / LLDP no habilitado en los blade switches.
- Cambiar la IP de administración del UCSM romperá la comunicación entre ACI y el UCS-B-Fls.
- Vlans que no se encuentren configuradas en los uplinks del blade switch.



Q&A



¿Aún tiene dudas?

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<https://bit.ly/CLama-may24>



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