

ARUBAOS-CX OVA NETWORK SETUP IN ESXI

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REQUIREMENTS

- ESXI 6.0 and above (Deployed on a device with 32 gigs of RAM or more)
- PC
- ArubaOS-CX OVA
- Client OS (Windows 10, Fedora)
- Server (Win 2012, Ubuntu)

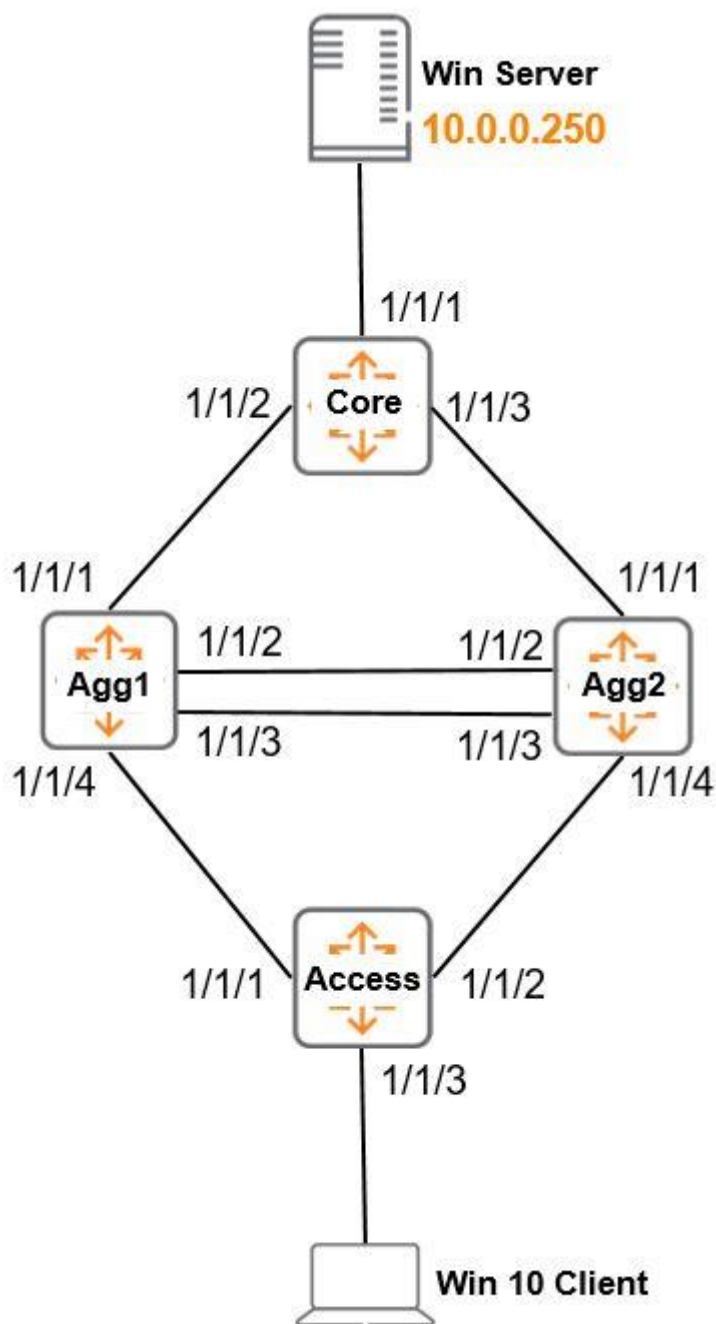
PREREQUISITES

- Existing knowledge of Creating VMs
- Basic vSwitch knowledge

GUIDE SCOPE

This guide will walk thorough how to set up the ArubaOS-CX OVA in an ESXI environment. This guide will also cover how to connect the ArubaOS-CX OVA to other devices in the ESXI environment. To demonstrate this a diamond topology the OVA will represent 1 core Switch, 2 Distribution switches and one access switch (In this guide the OVA will be used as an access switch this does not reflect where it would be placed in the real world). This guide will not cover the CLI configuration of the ArubaOS-CX OVA nor the implementation of the client and server, it will cover only verification of connectivity. Below is a diagram of what will be setup in this guide.

TOPOLOGY



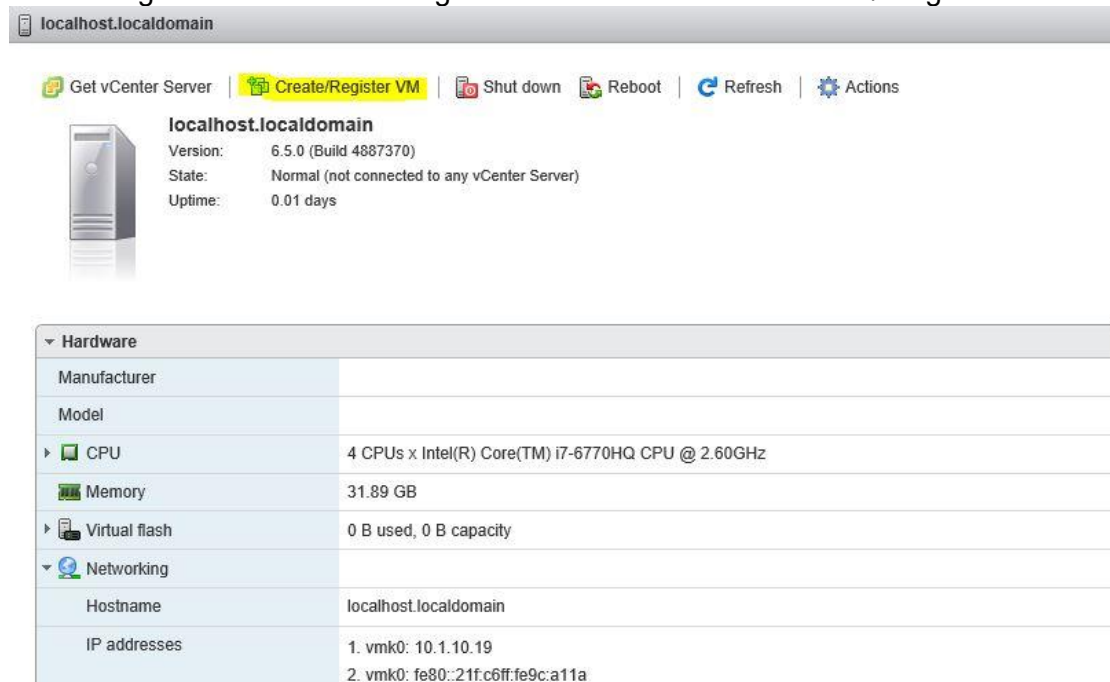
DEPLOYING THE OVA

Description

This setup will be a 4 switch diamond topology. This means that this process needs to be repeated three additional times in order to have 4 switches in your environment.

Loading the Ova

- Log into ESXI Web management console and click “create / Register VM”



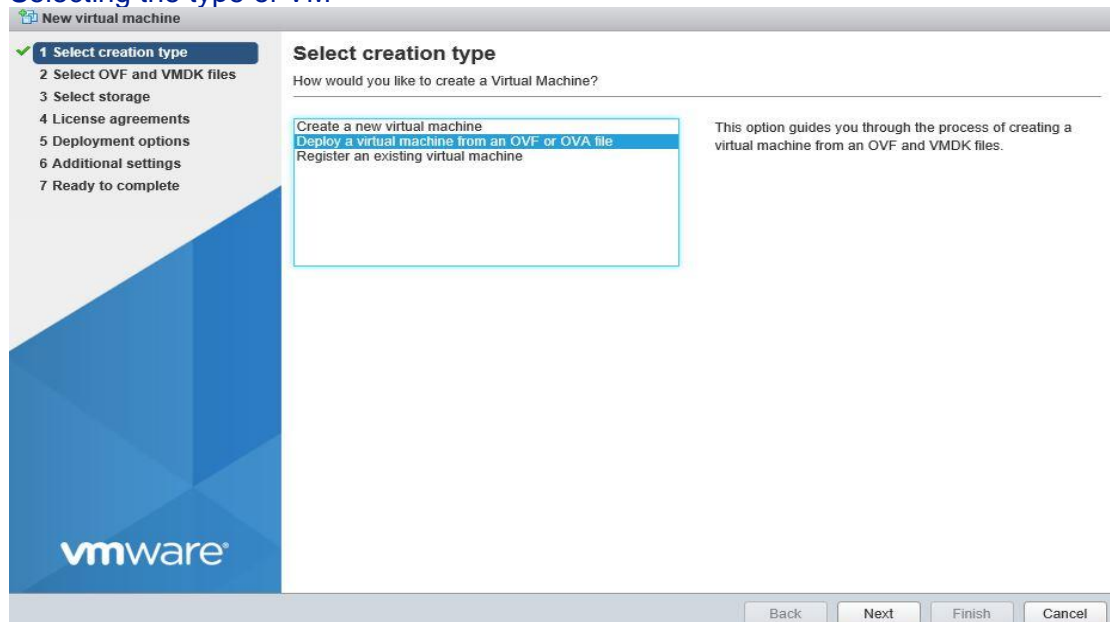
localhost.localdomain

Get vCenter Server | Create/Register VM | Shut down | Reboot | Refresh | Actions

localhost.localdomain
Version: 6.5.0 (Build 4887370)
State: Normal (not connected to any vCenter Server)
Uptime: 0.01 days

Hardware	
Manufacturer	
Model	
CPU	4 CPUs x Intel(R) Core(TM) i7-6770HQ CPU @ 2.60GHz
Memory	31.89 GB
Virtual flash	0 B used, 0 B capacity
Networking	
Hostname	localhost.localdomain
IP addresses	1. vmk0: 10.1.10.19 2. vmk0: fe80::21f:c6ff:fe9c:a11a

Selecting the type of VM



New virtual machine

1 Select creation type
2 Select OVF and VMDK files
3 Select storage
4 License agreements
5 Deployment options
6 Additional settings
7 Ready to complete

Select creation type
How would you like to create a Virtual Machine?

- Create a new virtual machine
- Deploy a virtual machine from an OVF or OVA file**
- Register an existing virtual machine

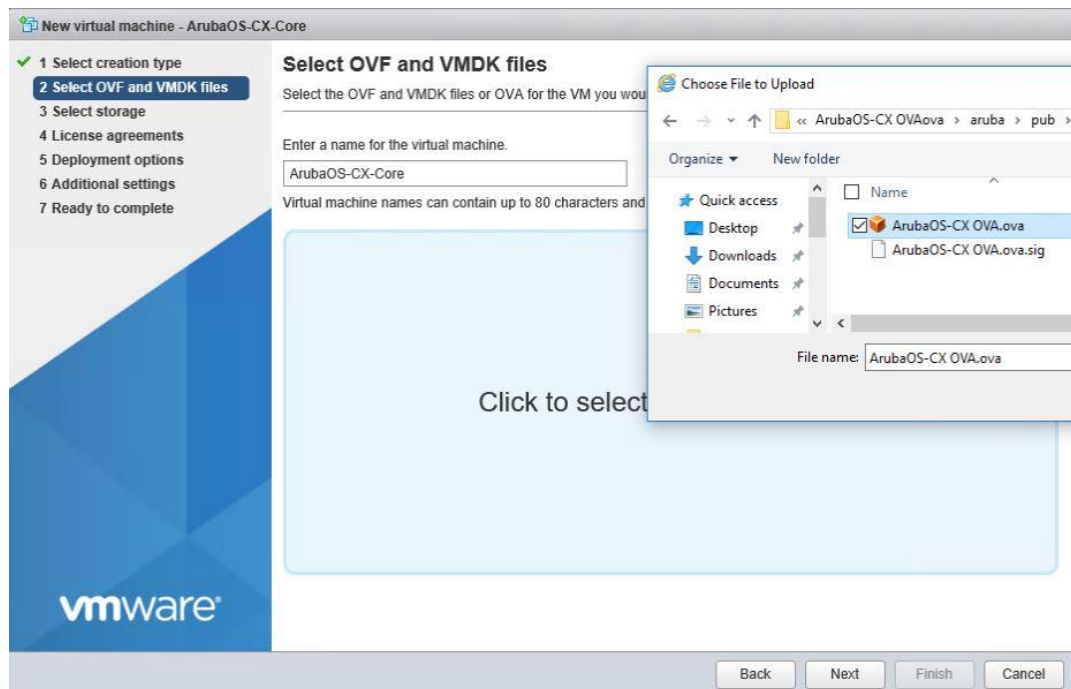
This option guides you through the process of creating a virtual machine from an OVF and VMDK files.

vmware

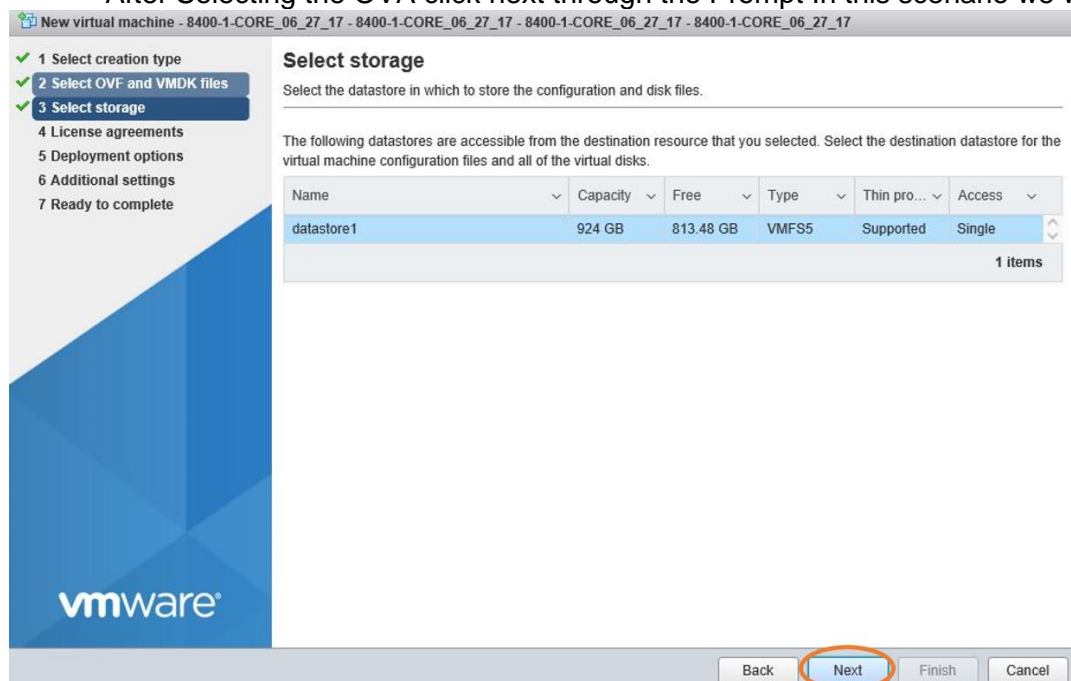
Back Next Finish Cancel

Selecting the ArubaOS-CX OVA

Note: the Ova download name can be changed to a friendly name



- At this point in the prompt click the blue area “Click to select Files Or drag/Drop”. After clicking this area it will bring up File explorer where you have to navigate to the OVA in our case the ArubaOS-CX Ova.
- After Selecting the OVA click next through the Prompt In this scenario we will use the defaults.



New virtual machine - 8400-1-CORE_06_27_17 - 8400-1-CORE_06_27_17 - 8400-1-CORE_06_27_17 - 8400-1-CORE_06_27_17

- 1 Select creation type
- 2 Select OVF and VMDK files
- 3 Select storage
- 4 Deployment options**
- 5 Ready to complete

Deployment options

Select deployment options

Network mappings	NAT	VM Network
Disk provisioning	<input checked="" type="radio"/> Thin <input type="radio"/> Thick	


New virtual machine - ArubaOS-CX-Core

- 1 Select creation type
- 2 Select OVF and VMDK files
- 3 Select storage
- 4 Deployment options
- 5 Ready to complete**

Ready to complete

Review your settings selection before finishing the wizard

Product	Unknown
VM Name	ArubaOS-CX-Core
Disks	P4_10_00_0006Q-disk1.vmdk
Datastore	datastore1
Provisioning type	Thin
Network mappings	Null: Client enviroment
Guest OS Name	Ubuntu_64



Do not refresh your browser while this VM is being deployed.

After selecting Finish the OVA will be imported.

This step will have to be Repeated 3 more times to have 4 switches in total.

This environment already has a client and a server deployed. Their deploying these will not be covered here.

This is what the environment should look like after everything is all imported

<input type="checkbox"/>	ArubaOS-CX-Access	✓ Normal	5.48 GB
<input type="checkbox"/>	ArubaOS-CX-Core	✓ Normal	5.48 GB
<input type="checkbox"/>	ArubaOS-CX-Distro-1	✓ Normal	5.48 GB
<input type="checkbox"/>	ArubaOS-CX-Distro-2	✓ Normal	5.48 GB
<input type="checkbox"/>	Win10	✓ Normal	63.62 GB
<input type="checkbox"/>	Win2012	✓ Normal	18.29 GB

Note: the windows server and client were pre-installed

MAPPING SERIAL CONNECTIONS TO ARUBAOS-CX OVA (OPTIONAL)

Description

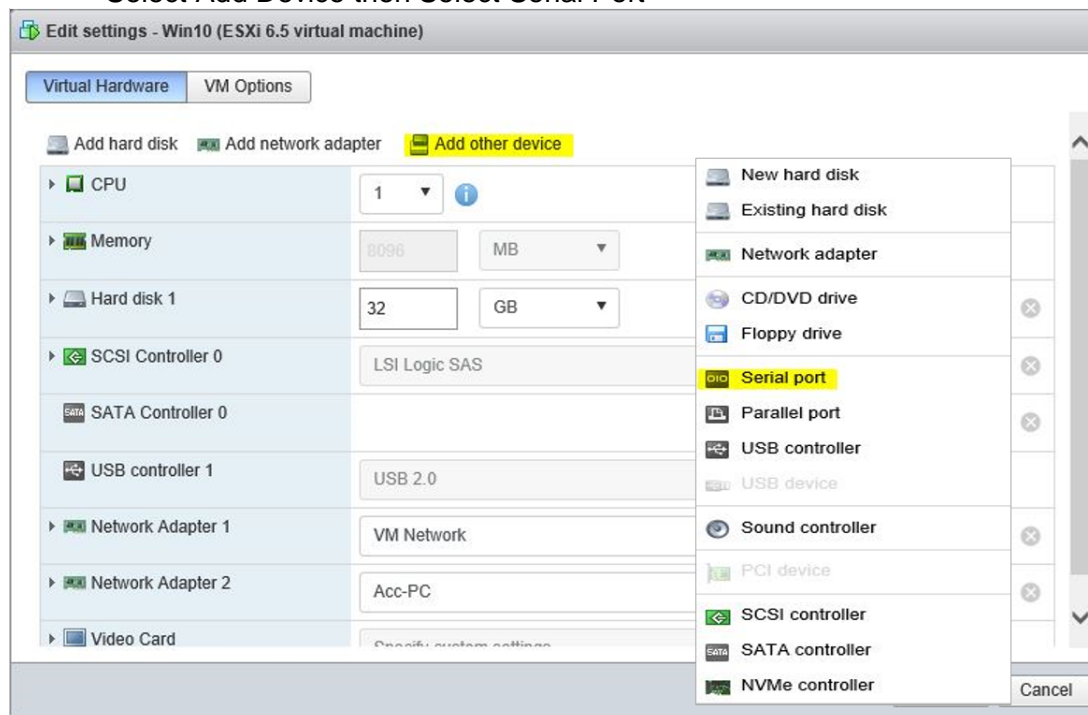
This step is optional. It is possible to configure the switches using the console connection on the ESXI server. This allows the Windows 10 client to have a putty session connected to the Switches.

<input type="checkbox"/>	ArubaOS-CX-Access	✓ Normal	1.38 GB
<input type="checkbox"/>	ArubaOS-CX-Core	✓ Normal	1.38 GB
<input type="checkbox"/>	ArubaOS-CX-Distro-1	✓ Normal	1.38 GB
<input type="checkbox"/>	ArubaOS-CX-Distro-2	✓ Normal	1.38 GB
<input type="checkbox"/>	Win10	✓ Normal	63.62 GB

First shut everything down. This should be the end result.

Configure the Windows 10 Client

- First Right Click Edit Settings
- Select Add Device then Select Serial Port



- Now Click the Drop Down and select "Use Name Pipe"

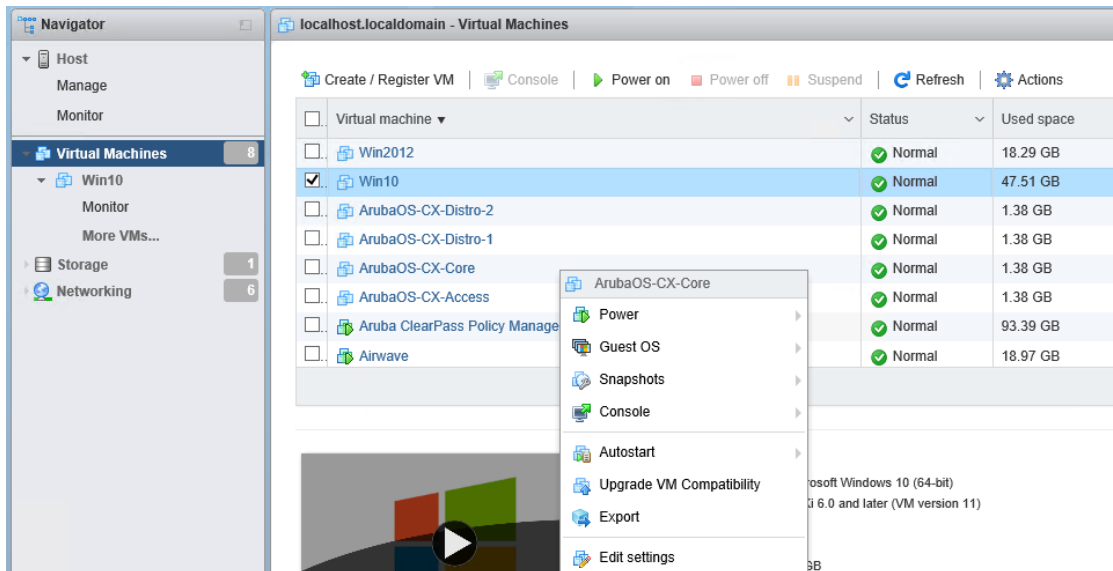
- Edit the name in “pipe name”.using this format to identify each device uniquely “\\.\pipe\Name”.
- This “name” has to be unique to each switch. Each switch can be named the Switches after there position, in this example “\\.\pipe\core”. This name will have to match the serial on the 8400 switch designated as a core device.

Serial Port 1	Use named pipe
Status	<input checked="" type="checkbox"/> Connect at power on
Connection	Pipe name: <input type="text" value="\\.\pipe\core"/> ✕ Near End: <input type="text" value="Client"/> Far End: <input type="text" value="A virtual machine"/>

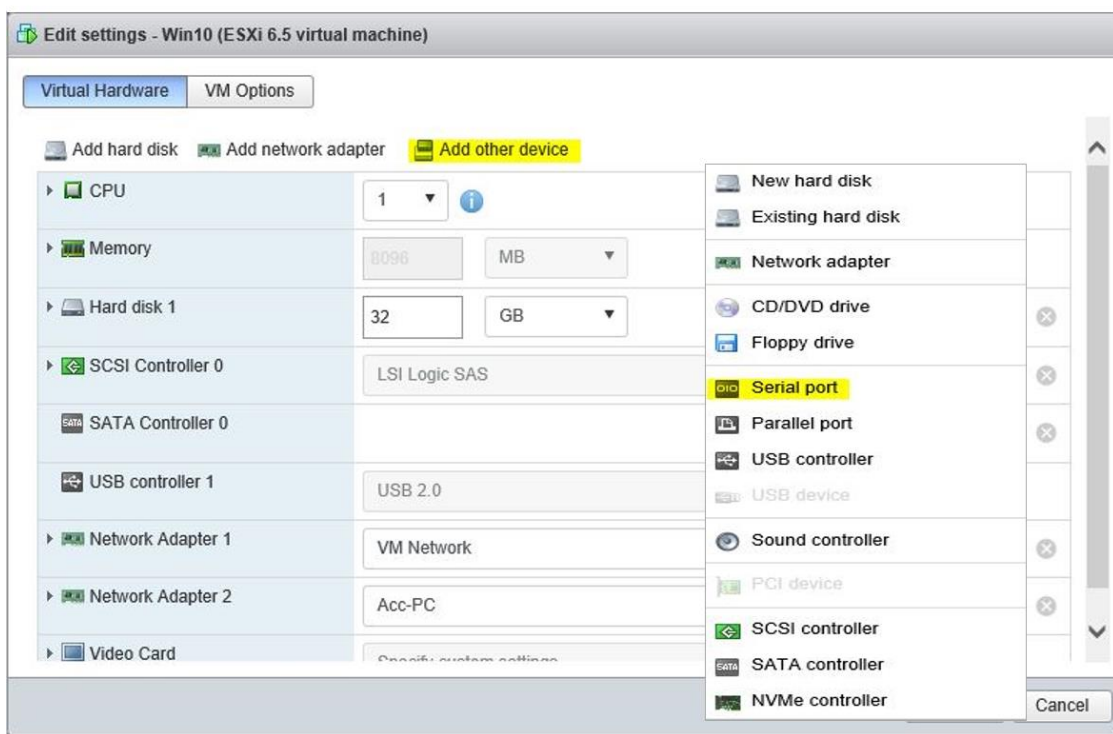
- Repeat this 4 more times with a unique name for each switch the end result should look similar to this

Connection	Pipe name: <input type="text" value="\\.\pipe\dis_1"/> Near End: <input type="text" value="Client"/> Far End: <input type="text" value="A virtual machine"/>
Serial Port 3	Use named pipe
Status	<input checked="" type="checkbox"/> Connect at power on
Connection	Pipe name: <input type="text" value="\\.\pipe\dis_2"/> Near End: <input type="text" value="Client"/> Far End: <input type="text" value="A virtual machine"/>
Serial Port 4	Use named pipe
Status	<input checked="" type="checkbox"/> Connect at power on
Connection	Pipe name: <input type="text" value="\\.\pipe\acc_1"/> Near End: <input type="text" value="Client"/> Far End: <input type="text" value="A virtual machine"/>

- Now we will have to add a serial port to each switch.
- The Switch will be configured as a server going to a process. The reason this setting is a process is because putty will be used to access the switch. This name should correlate to the names used before
In this case “\\.\pipe\core” was used. So Re-Use the same name and change the “Near End” to Server and “Far end” to a process First: Right Click Edit the Setting for one of the instances



- To add another Device, select Serial Port, after that enter the matching named piped.



Edit settings - ArubaOS-CX-Core (ESXi 5.5 virtual machine)

Virtual Hardware VM Options

Add hard disk Add network adapter Add other device

CPU 2

Memory 4096 MB

Hard disk 1 22.199218 GB

SCSI Controller 0 LSI Logic Parallel

New Serial Port Use named pipe

Status ☒ Connect at power on

Connection

Pipe name \\.\pipe\core

Near End Server

Far End A process

Save Cancel

- Now this has to be repeated for each device (adding the correlating name just like and changing the "Near End" to server and "Far End" to A process).
- Ones that's done Power on all the machines

<input type="checkbox"/>	ArubaOS-CX-Access	✓ Normal	1.38 GB
<input type="checkbox"/>	ArubaOS-CX-Core	✓ Normal	1.38 GB
<input type="checkbox"/>	ArubaOS-CX-Distro-1	✓ Normal	1.38 GB
<input type="checkbox"/>	ArubaOS-CX-Distro-2	✓ Normal	1.38 GB
<input type="checkbox"/>	Win10	✓ Normal	63.62 GB

Once the same process that was done for the Core Device has been done to all the switches Log into the Windows 10 Client and connect to the COM ports using putty, ones that's done it should look like this

Note: Sometimes the console port hangs for a minute then loads if it doesn't load rebooting the switch will fix hanging.

```

COM1 - PuTTY
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switch login:
Login timed out after 60 seconds.

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switch login:

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switch login:

COM3 - PuTTY
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switch login:

COM4 - PuTTY
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switch login:
Login timed out after 60 seconds.

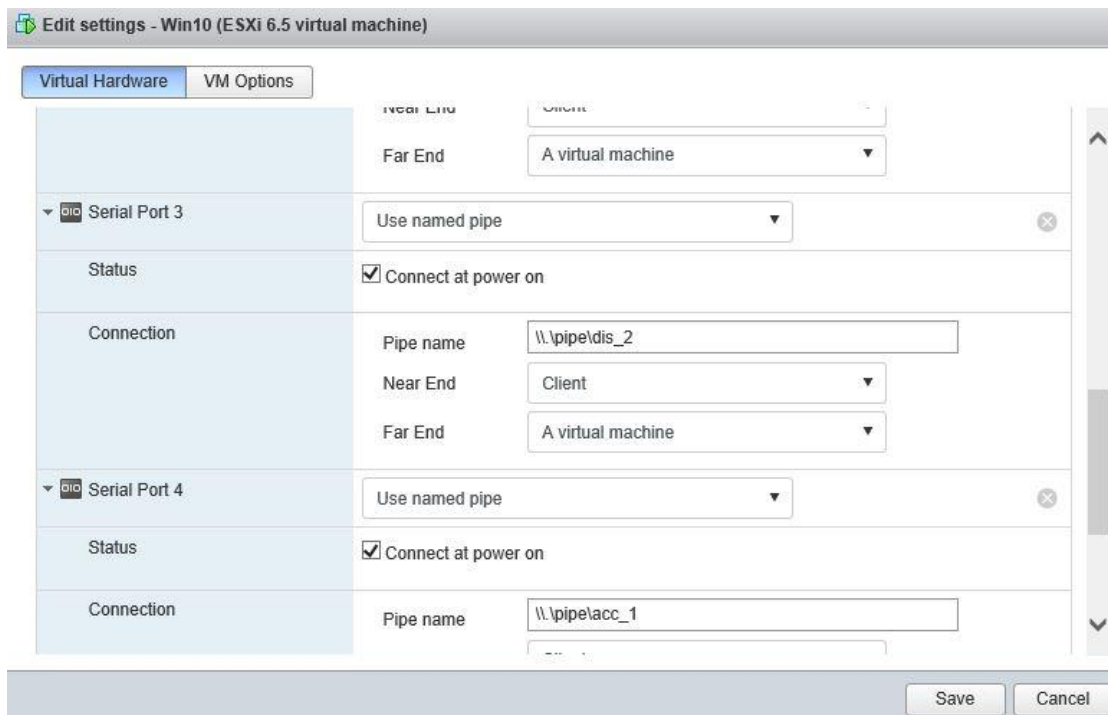
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(ALA) documents are available at the following URL:
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switch login:

```



- Now renaming the Switches to the correct names using the console Connections port number and name. Here on the Windows 10 client it shows that serial port 1 mapped to Core which means COM1 is Core a Switch.

```
COM1 - PuTTY
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switch login: admin
Password:

switch# configure
switch(config)# hostname Core
Core(config)#
```

- To reduce confusion on the switch, connect to COM1 and give it the host name of Core to log into the switch use "admin" with no password.

****Don't Forget to Save****

In Configuration mode "copy running configuration Startup-Configuration" will save the configuration

NETWORK INTERFACES

Each Switch has 8 network interfaces

Note: Two of the network Interfaces are reserved, one is for the services the second interfaces is reserved for the management interface which leaves 6 Usable Interfaces.

ESXI Network interface	OVA Equivalent
Network adapter 1	MGMT Interface
Network adapter 2	1/1/1
Network adapter 3	1/1/2
Network adapter 4	1/1/3
Network adapter 5	1/1/4
Network adapter 6	1/1/5
Network adapter 7	1/1/6
Network adapter 8	Service interface (Not Usable)

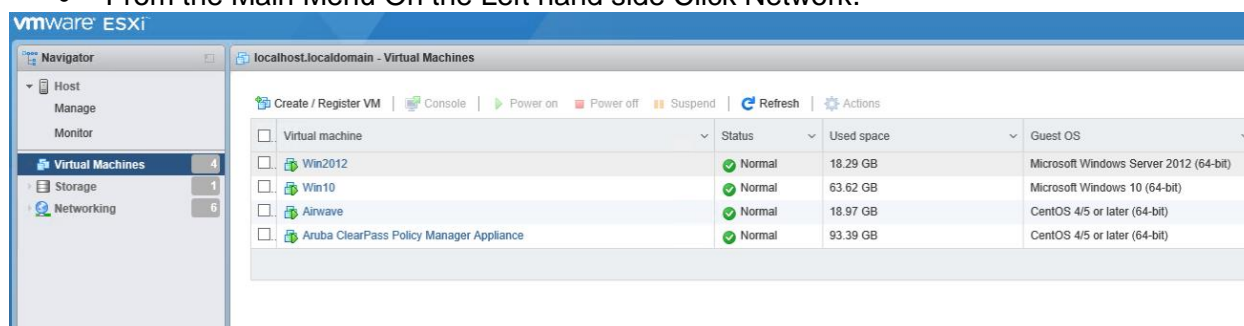
CONNECTING TO OTHER DEVICES

Description

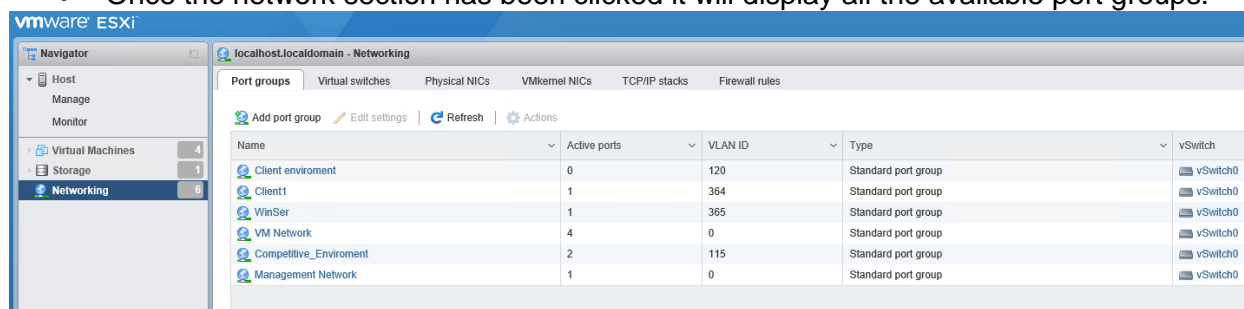
- Before connecting to other devices in ESXI it is recommended to create a second vSwitch that has no connections to the outside network because other devices from the external network can interfere with the OVA and cause unexpected behavior.
- In addition to creating a second vSwitch, port groups will needed to be created these port groups will act as links from one OVA to another.

Navigating to vSwitch

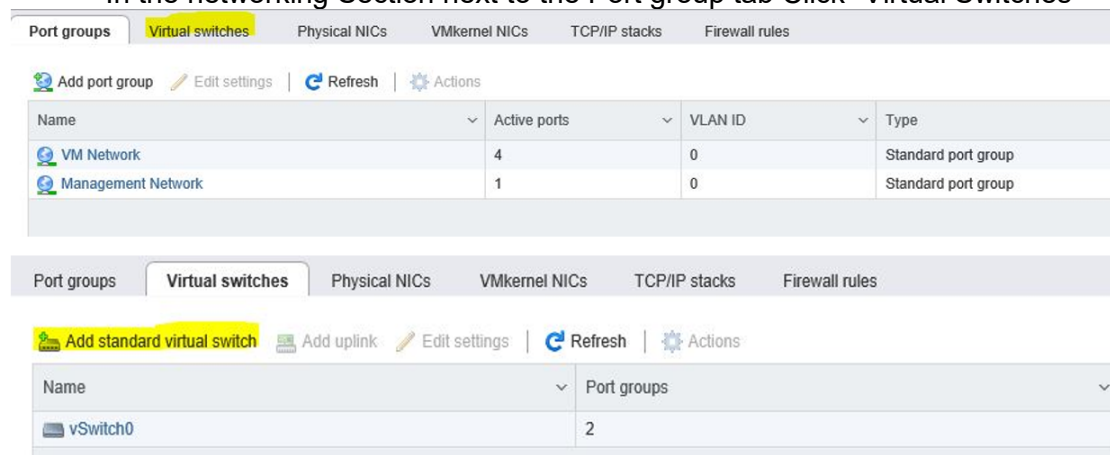
- From the Main Menu On the Left hand side Click Network.



- Once the network section has been clicked it will display all the available port groups.





- In the networking Section next to the Port group tab Click "Virtual Switches"



- Click "Add Standard Virtual Switch" After clicking "Add Standard Virtual Switch" A display Box will pop up.

- The Display Box will Request a Name. In this case it will be named Internal. In addition to this the security settings will need to be edited to match the photo below.

 Add standard virtual switch - Internal



 Add uplink

vSwitch Name	Internal
MTU	1500
▶ Link discovery	Click to expand
▼ Security	
Promiscuous mode	<input checked="" type="radio"/> Accept <input type="radio"/> Reject
MAC address changes	<input checked="" type="radio"/> Accept <input type="radio"/> Reject
Forged transmits	<input checked="" type="radio"/> Accept <input type="radio"/> Reject

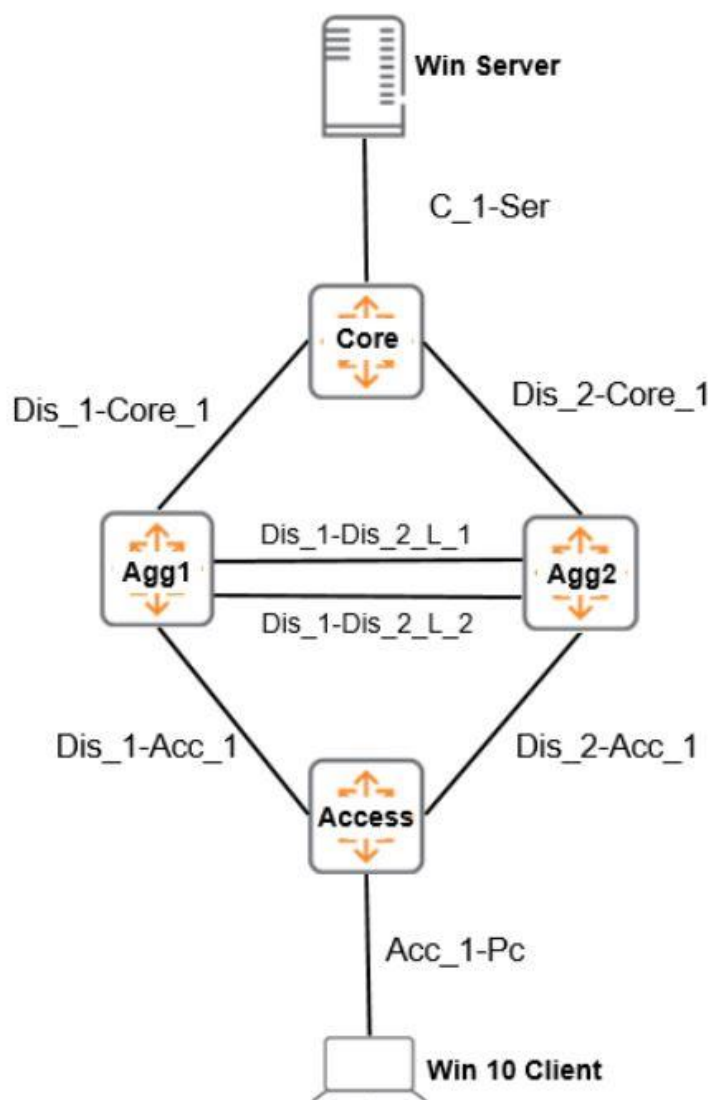
Add Cancel

- After Clicking Add there should be two Virtual switches the internal Switch that was just created and the Native vSwitch.

Name ▼

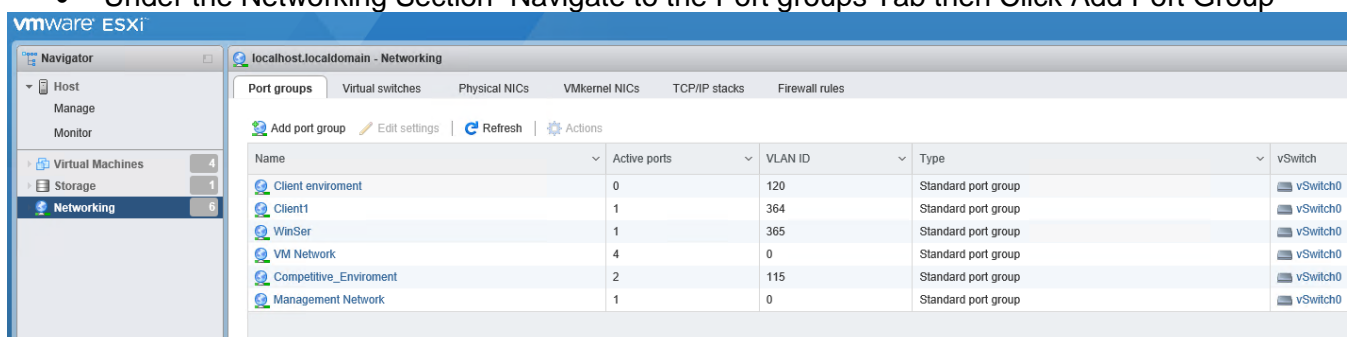
 vSwitch0
 Internal

Creating Port Groups

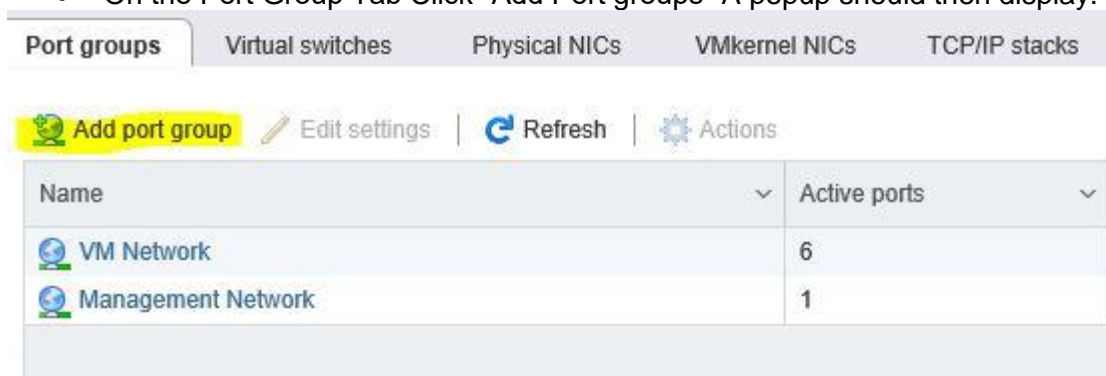


Each Link in the topology will have to be its own port group so it can act as a point to point Link. So that means there will need to be 8 port groups Configured For the topology displayed here. Giving the ports Friendly names will help when assigning the interfaces to a port group.

- Under the Networking Section Navigate to the Port groups Tab then Click Add Port Group



- On the Port Group Tab Click “Add Port groups” A popup should then display.



- The Pop up should look like this. In this pop the Port group will need to be named Given a Vlan ID and Linked to the “internal” vSwitch that was Earlier in this section.

The screenshot shows the 'Add port group - C1-Dis1' dialog box. It contains fields for Name, VLAN ID, and Virtual switch, with a 'Security' section that is currently collapsed.

Name	C1-Dis1
VLAN ID	106
Virtual switch	Internal
Security	Click to expand

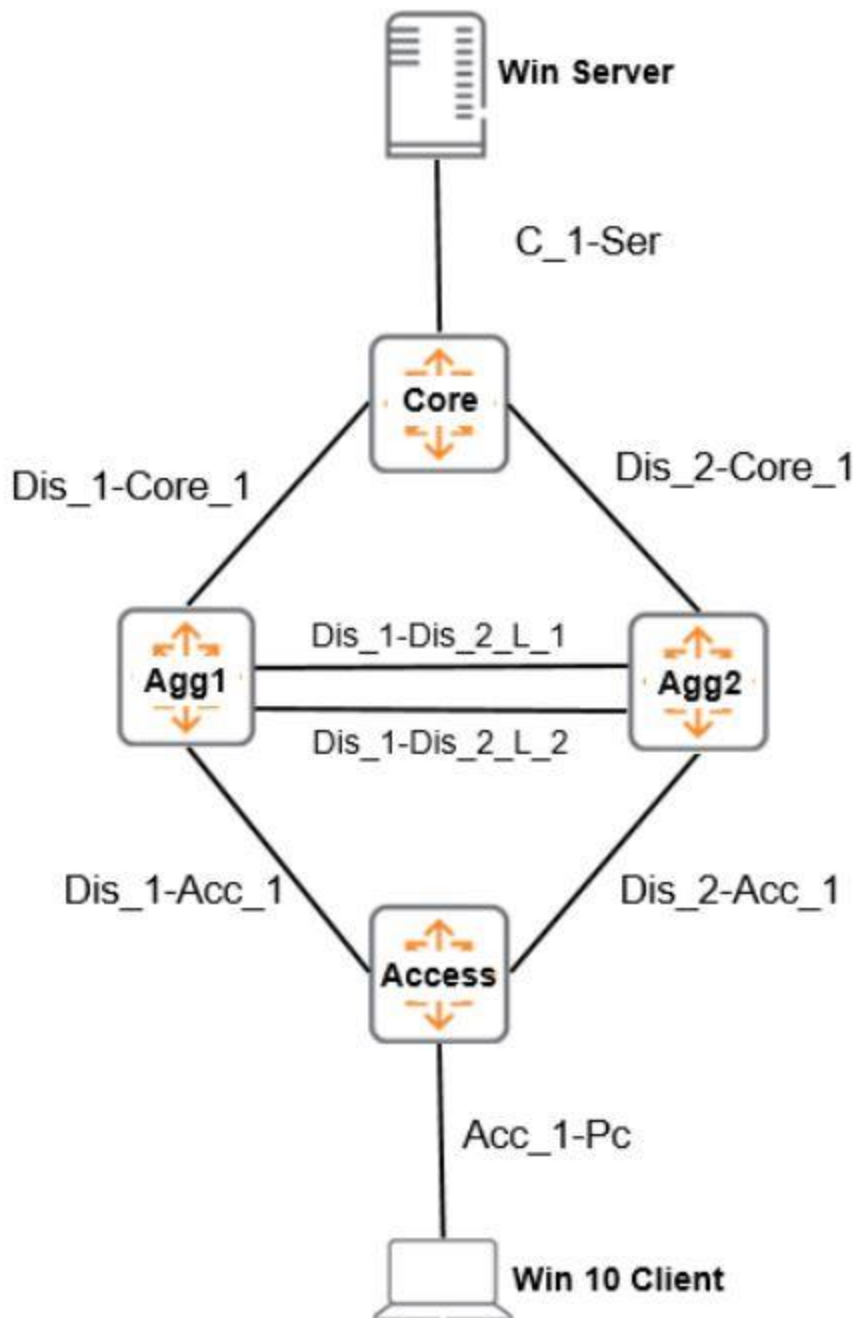
At the bottom right of the dialog are 'Add' and 'Cancel' buttons.

This will have to be repeated for each link. For this topology there should be 8 port groups after Creating All the port groups it should look Similar to this

Name	Active ports	VLAN ID	Type	vSwitch
VM Network	0	0	Standard port group	vSwitch0
Management Network	1	0	Standard port group	vSwitch0
Dis1-Acc1	0	103	Standard port group	Internal
Dis1-Dis2-L2	0	101	Standard port group	Internal
Dis1-Dis2-L1	0	102	Standard port group	Internal
Dis2-Acc1	0	104	Standard port group	Internal
C1-Dis1	0	106	Standard port group	Internal
Core-Ser	0	105	Standard port group	Internal
C1-Dis2	0	107	Standard port group	Internal
Acc-PC	0	100	Standard port group	Internal

Port Group Topology

Here is what the port Groups will look like when they are assigned to the correct ports.



CONNECTING THE PORT GROUPS TO THE NETWORK ADAPTERS

Now That the Port groups are created and the vSwitch is created now the each ArubaOS-CX OVA network adapter will need to be assigned to the correct port group. So to do this, Navigate to the main Menu with all the VMs.

- Start the all the VMs

<input type="checkbox"/> Virtual machine	Status	Used space	Guest OS
<input type="checkbox"/> Win2012	✓ Normal	18.29 GB	Microsoft Windows Server 2012 (64-bit)
<input type="checkbox"/> Win10	✓ Normal	63.62 GB	Microsoft Windows 10 (64-bit)
<input type="checkbox"/> ArubaOS-CX-Distro-2	✓ Normal	5.48 GB	Ubuntu Linux (64-bit)
<input type="checkbox"/> ArubaOS-CX-Distro-1	✓ Normal	5.48 GB	Ubuntu Linux (64-bit)
<input type="checkbox"/> ArubaOS-CX-Core	✓ Normal	5.48 GB	Ubuntu Linux (64-bit)
<input type="checkbox"/> ArubaOS-CX-Access	✓ Normal	5.48 GB	Ubuntu Linux (64-bit)

- Now place each Link has to be in the appropriate port group (each port group should only have 2 VMs included)
- Right Click on one of the VMs and Select Edit settings

localhost.localdomain - Virtual Machines

Create / Register VM | Console | Power on | Shut down | Suspend | Refresh | Actions

Virtual machine	Status	Used space
Win2012	✓ Normal	18.29 GB
Win10	✓ Normal	63.62 GB
Airwave	✓ Normal	18.97 GB
Aruba ClearPass Policy Manager Appliance	✓ Normal	93.39 GB
ArubaOS-CX-Core	✓ Normal	5.48 GB
ArubaOS-CX-Distro-1	✓ Normal	5.48 GB
ArubaOS-CX-Distro-2	✓ Normal	5.48 GB
ArubaOS-CX-Access	✓ Normal	1.98 KB

ArubaOS-CX-Core

- Power
- Guest OS
- Snapshots
- Console
- Autostart
- Upgrade VM Compatibility
- Export
- Edit settings

- (VM Core Settings) This Should Display the current settings for the VM. Click the Network Adapter and from here select the appropriate port groups. This will need to be repeated for all 4 ArubaOS-CX Devices.

Edit settings - ArubaOS-CX-Core (ESXi 5.5 virtual machine)

Virtual Hardware VM Options

Hard disk 1	22.199218	GB	
SCSI Controller 0	LSI Logic Parallel		
Serial Port 1	Use named pipe	<input checked="" type="checkbox"/> Connect	
Network Adapter 1	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 2	C1-Dis1	<input checked="" type="checkbox"/> Connect	
Network Adapter 3	C1-Dis2	<input checked="" type="checkbox"/> Connect	
Network Adapter 4	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 5	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 6	Client enviroment	<input checked="" type="checkbox"/> Connect	

Save Cancel

Distribution 1

Edit settings - ArubaOS-CX-Distro-1 (ESXi 5.5 virtual machine)

Virtual Hardware VM Options

SCSI Controller 0	LSI Logic Parallel		
Serial Port 1	Use named pipe	<input checked="" type="checkbox"/> Connect	
Network Adapter 1	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 2	C1-Dis1	<input checked="" type="checkbox"/> Connect	
Network Adapter 3	Dis1-Dis2-L1	<input checked="" type="checkbox"/> Connect	
Network Adapter 4	Dis1-Dis2-L2	<input checked="" type="checkbox"/> Connect	
Network Adapter 5	Dis1-Acc1	<input checked="" type="checkbox"/> Connect	
Network Adapter 6	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 7	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 8	Client enviroment	<input checked="" type="checkbox"/> Connect	

Save Cancel

Distribution 2

Edit settings - ArubaOS-CX-Access (ESXi 5.5 virtual machine)

Virtual Hardware VM Options

SCSI Controller 0	LSI Logic Parallel		
Serial Port 1	Use named pipe	<input checked="" type="checkbox"/> Connect	
Network Adapter 1	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 2	Dis1-Acc1	<input checked="" type="checkbox"/> Connect	
Network Adapter 3	Dis2-Acc1	<input checked="" type="checkbox"/> Connect	
Network Adapter 4	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 5	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 6	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 7	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 8	Client enviroment	<input checked="" type="checkbox"/> Connect	

Save Cancel

Access Switch

Edit settings - ArubaOS-CX-Distro-2 (ESXi 5.5 virtual machine)

Virtual Hardware VM Options

Hard disk 1	22.199218	GB	
SCSI Controller 0	LSI Logic Parallel		
Serial Port 1	Use named pipe	<input checked="" type="checkbox"/> Connect	
Network Adapter 1	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 2	C1-Dis2	<input checked="" type="checkbox"/> Connect	
Network Adapter 3	Dis1-Dis2-L1	<input checked="" type="checkbox"/> Connect	
Network Adapter 4	Dis1-Dis2-L2	<input checked="" type="checkbox"/> Connect	
Network Adapter 5	Dis2-Acc1	<input checked="" type="checkbox"/> Connect	
Network Adapter 6	Client enviroment	<input checked="" type="checkbox"/> Connect	
Network Adapter 7			

Save Cancel

Verification

In Order to verify the connections the ports on the switch can be turned on and a ping test can be done and LLDP can be used to see neighbors.

First the interfaces have to be turned on this is done by doing a no Shutdown on all used interfaces on each Instance.

```
COM2 - PuTTY
Last login: Thu Jan  4 03:16:44 UTC 2018 on UNKNOWN

Distro-1#
Distro-1#
Distro-1# conf t
Distro-1(config)#
Distro-1(config)#
Distro-1(config)#
Distro-1(config)# int 1/1/1
Distro-1(config-if)# no shut
Distro-1(config-if)#
Distro-1(config-if)# int 1/1/2
Distro-1(config-if)# no shut
Distro-1(config-if)#
Distro-1(config-if)# int 1/1/3
Distro-1(config-if)# no shut
Distro-1(config-if)#
Distro-1(config-if)# int 1/1/4
Distro-1(config-if)# no shut
Distro-1(config-if)#
Distro-1(config-if)#
```

Once all the ports are to verify the ports are properly connected do a “show LLDP Neighbors”

COM1 - PuTTY

```
Development LP required for possession, use or copying. Consistent with FAR
12.211 and 12.212, Commercial Computer Software, Computer Software
Documentation, and Technical Data for Commercial Items are licensed to the
U.S. Government under vendor's standard commercial license.

Core login: admin
Password:
Last login: Thu Jan  4 04:07:53 UTC 2018 on UNKNOWN

Core# show lldp neighbor-info

LLDP Neighbor Information
=====
Total Neighbor Entries      : 2
Total Neighbor Entries Deleted : 0
Total Neighbor Entries Dropped : 0
Total Neighbor Entries Aged-Out : 0

LOCAL-PORT  CHASSIS-ID      PORT-ID  PORT-DESC  TTL  SYS-NAME
-----
1/1/1       70:72:cf:6a:e0:56  1/1/1    1/1/1      120  Distro-1
1/1/2       70:72:cf:58:bd:16  1/1/1    1/1/1      120  Distro-2
Core#
```

COM2 - PuTTY

```
Distro-1 login: admin
Password:
Last login: Thu Jan  4 04:07:57 UTC 2018 on UNKNOWN

Distro-1#
Distro-1# show lldp neighbor-info

LLDP Neighbor Information
=====
Total Neighbor Entries      : 4
Total Neighbor Entries Deleted : 0
Total Neighbor Entries Dropped : 0
Total Neighbor Entries Aged-Out : 0

LOCAL-PORT  CHASSIS-ID      PORT-ID  PORT-DESC  TTL  SYS-NAME
-----
1/1/1       70:72:cf:d9:0b:68  1/1/1    1/1/1      120  Core
1/1/2       70:72:cf:58:bd:16  1/1/2    1/1/2      120  Distro-2
1/1/3       70:72:cf:58:bd:16  1/1/3    1/1/3      120  Distro-2
1/1/4       70:72:cf:0f:0b:d5  1/1/1    1/1/1      120  Access
Distro-1#
```

COM3 - PuTTY

```
Distro-2 login: admin
Password:
Last login: Thu Jan  4 04:08:00 UTC 2018 on UNKNOWN

Distro-2#
Distro-2# show lldp neighbor-info

LLDP Neighbor Information
=====
Total Neighbor Entries      : 4
Total Neighbor Entries Deleted : 0
Total Neighbor Entries Dropped : 0
Total Neighbor Entries Aged-Out : 0

LOCAL-PORT  CHASSIS-ID      PORT-ID  PORT-DESC  TTL  SYS-NAME
-----
1/1/1       70:72:cf:d9:0b:68  1/1/2    1/1/2      120  Core
1/1/2       70:72:cf:6a:e0:56  1/1/2    1/1/2      120  Distro-1
1/1/3       70:72:cf:6a:e0:56  1/1/3    1/1/3      120  Distro-1
1/1/4       70:72:cf:0f:0b:d5  1/1/2    1/1/2      120  Access
Distro-2#
```

COM4 - PuTTY

```
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U.S. Government under vendor's standard commercial license.

Access login: admin
Password:
Last login: Thu Jan  4 04:08:04 UTC 2018 on UNKNOWN

Access#
Access# show lldp neighbor-info

LLDP Neighbor Information
=====
Total Neighbor Entries      : 2
Total Neighbor Entries Deleted : 0
Total Neighbor Entries Dropped : 0
Total Neighbor Entries Aged-Out : 0

LOCAL-PORT  CHASSIS-ID      PORT-ID  PORT-DESC  TTL  SYS-NAME
-----
1/1/1       70:72:cf:6a:e0:56  1/1/4    1/1/4      120  Distro-1
1/1/2       70:72:cf:58:bd:16  1/1/4    1/1/4      120  Distro-2
Access#
```


A ping can also be done from switch to switch An IP address has it be assigned to the interfaces

COM1 - PuTTY

```
Total Neighbor Entries Dropped : 0
Total Neighbor Entries Aged-Out : 0

LOCAL-PORT  CHASSIS-ID      PORT-ID  PORT-DESC  TTL
-----
1/1/1       70:72:cf:6a:e0:56  1/1/1    1/1/1      120
1/1/2       70:72:cf:58:bd:16  1/1/1    1/1/1      120

Core# conf t
Core(config)#
Core(config)#
Core(config)# int 1/1/1
Core(config-if)# ip address 10.1.1.1/30
Core(config-if)# do ping 10.1.1.2
PING 10.1.1.2 (10.1.1.2) 100(128) bytes of data.
108 bytes from 10.1.1.2: icmp_seq=1 ttl=64 time=1.47 ms
108 bytes from 10.1.1.2: icmp_seq=2 ttl=64 time=1.38 ms
108 bytes from 10.1.1.2: icmp_seq=3 ttl=64 time=1.62 ms
108 bytes from 10.1.1.2: icmp_seq=4 ttl=64 time=1.38 ms
108 bytes from 10.1.1.2: icmp_seq=5 ttl=64 time=1.47 ms

--- 10.1.1.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4004ms
rtt min/avg/max/mdev = 1.384/1.471/1.629/0.098 ms
Core(config-if)#
```

COM2 - PuTTY

```
Distro-1(config-if)# int 1/1/1
Distro-1(config-if)#
Distro-1(config-if)#
Distro-1(config-if)#
Distro-1(config-if)#
Distro-1(config-if)#
Distro-1(config-if)#
Distro-1(config-if)#
Distro-1(config-if)#
Distro-1(config-if)#
Distro-1(config-if)# int 1/1/1
Distro-1(config-if)# ip address 10.1.1.2/30
Distro-1(config-if)# do ping 10.1.1.1
PING 10.1.1.1 (10.1.1.1) 100(128) bytes of data.
108 bytes from 10.1.1.1: icmp_seq=1 ttl=64 time=2.33 ms
108 bytes from 10.1.1.1: icmp_seq=2 ttl=64 time=1.81 ms
108 bytes from 10.1.1.1: icmp_seq=3 ttl=64 time=1.59 ms
108 bytes from 10.1.1.1: icmp_seq=4 ttl=64 time=1.47 ms
108 bytes from 10.1.1.1: icmp_seq=5 ttl=64 time=1.30 ms

--- 10.1.1.1 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4004ms
rtt min/avg/max/mdev = 1.305/1.704/2.338/0.357 ms
Distro-1(config-if)#
```

ACCESSING THE WEB UI

Description

The Web UI can also be accessed by remote device this can be done either by using the built in VM environment or another port group.

For this example the built in Port group will be used.

Navigate to the Networking section then Port groups.

Navigator

- Host
 - Manage
 - Monitor
- Virtual Machines 8
- Storage 1
- Networking 14**


localhost.localdomain - Networking

Port groups Virtual switches Physical NICs VMkernel NICs TCP/IP stacks

Add port group
 Edit settings
 Refresh
 Actions

Name	Active ports
Client1	1
Client enviroment	20
WinSer	1
VM Network	4


Select the VM Network and Edit the Security Settings

 Edit port group - VM Network

Name	VM Network
VLAN ID	0
Virtual switch	vSwitch0
▼ Security	
Promiscuous mode	<input checked="" type="radio"/> Accept <input type="radio"/> Reject <input type="radio"/> Inherit from vSwitch
MAC address changes	<input checked="" type="radio"/> Accept <input type="radio"/> Reject <input type="radio"/> Inherit from vSwitch
Forged transmits	<input checked="" type="radio"/> Accept <input type="radio"/> Reject <input type="radio"/> Inherit from vSwitch
▶ NIC teaming	Click to expand
▶ Traffic shaping	Click to expand

Save Cancel

To continue this example the Core switch will be used. Edit the Settings of the Switch, and change Network adapter 1 to the VM network.

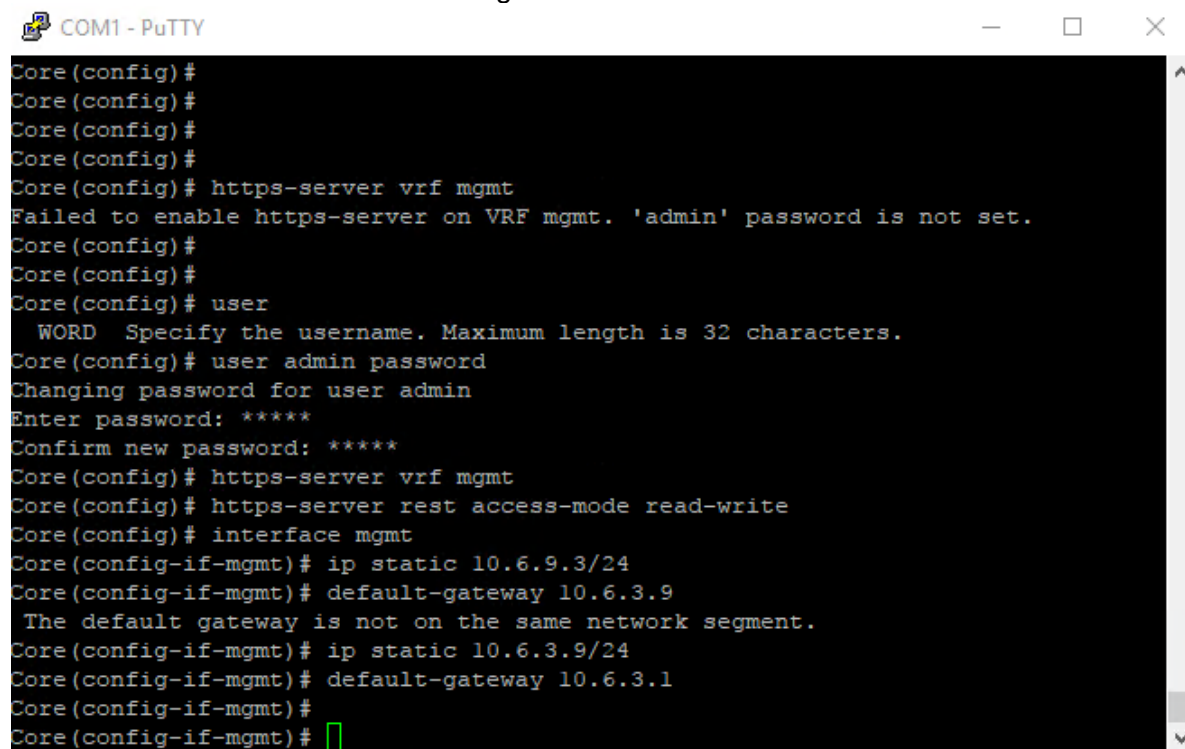
 Edit settings - ArubaOS-CX-Core (ESXi 5.5 virtual machine)

Virtual Hardware VM Options

▶ Hard disk 1	22.199218	GB	×
▶ SCSI Controller 0	LSI Logic Parallel	×	
▶ Serial Port 1	Use named pipe	<input checked="" type="checkbox"/> Connect	×
▶ Network Adapter 1	VM Network	<input checked="" type="checkbox"/> Connect	×
▶ Network Adapter 2	C1-Dis1	<input checked="" type="checkbox"/> Connect	×
▶ Network Adapter 3	C1-Dis2	<input checked="" type="checkbox"/> Connect	×
▶ Network Adapter 4	Client enviroment	<input checked="" type="checkbox"/> Connect	×
▶ Network Adapter 5	Client enviroment	<input checked="" type="checkbox"/> Connect	×
▶ Network Adapter 6	Client enviroment	<input checked="" type="checkbox"/> Connect	×

Save Cancel

Now Connect to the Switch now configure the switch to turn on the Web UI



```

Core(config)#
Core(config)#
Core(config)#
Core(config)#
Core(config)# https-server vrf mgmt
Failed to enable https-server on VRF mgmt. 'admin' password is not set.
Core(config)#
Core(config)#
Core(config)# user
WORD Specify the username. Maximum length is 32 characters.
Core(config)# user admin password
Changing password for user admin
Enter password: *****
Confirm new password: *****
Core(config)# https-server vrf mgmt
Core(config)# https-server rest access-mode read-write
Core(config)# interface mgmt
Core(config-if-mgmt)# ip static 10.6.9.3/24
Core(config-if-mgmt)# default-gateway 10.6.3.9
The default gateway is not on the same network segment.
Core(config-if-mgmt)# ip static 10.6.3.9/24
Core(config-if-mgmt)# default-gateway 10.6.3.1
Core(config-if-mgmt)#
Core(config-if-mgmt)#

```

```

interface mgmt
    no shutdown
    ip static <IP Address>
    default-gateway <IP Address>

https-server rest access-mode read-write
https-server vrf mgmt
user <name> password

```

Verification

Now web browse to the configured IP and login

The image shows two screenshots of the Aruba Web UI. The top screenshot is the login page, and the bottom screenshot is the Overview dashboard.

Top Screenshot: Login Page

The login page is titled "ArubaOS-CX" and features the Aruba logo. It includes fields for "Username" and "Password", and a "LOGIN" button. The background is dark with a large warning icon.

Bottom Screenshot: Overview Dashboard

The Overview dashboard provides a comprehensive view of the system's health and configuration. It includes a sidebar menu with options like Overview, Analytics, Interfaces, VLANs, LAGs, Users, System, and Diagnostics. The main content area is divided into several sections:

- Analytics:** Shows 0 Critical, 0 Major, and 0 Minor issues. Out of a total of 1 agents.
- Firmware:** Displays the current version (Virtual: 10.00.0000Q), primary version (Not Available), and secondary version (Not Available).
- Config:** Shows the most recent checkpoint (01/03/2018 21:30:57) and a total of 6 checkpoints.
- Management Modules:** Indicates that no modules were detected.
- Log:** Shows 0 Critical and 0 Warning issues. New log entries over the last 15 seconds.
- CPU:** Displays the management module base's utilization (5%) and the average across all CPUs of the module.
- Memory:** Shows the management module base's memory usage (23%) and the memory usage of the module.
- System Info:** Provides details such as Base MAC (70:72:cf:a9:0b:58), Serial # (base X8664001), Product (X86-64), and Available Interfaces (52).
- Power Supplies:** Shows 0 Faults and 0 Warnings. Out of a total of 0 power supplies.
- Thermals:** Shows 0 Critical issues. Out of a total of 0 sensors.
- Fans:** Shows 0 Critical and 0 Warning issues. Out of a total of 0 fans.

The dashboard also includes a "Link Up" and "Link Down" status indicator for the available interfaces.