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Pica8 Evaluation Guide | June 2022

Using AmpCon to Manage PicOS-V Switches – Evaluation Guide

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Pica8 Solution and AmpCon

Pica8's solution consists of two components. First is the AmpCon network controller, the automation command center for your enterprise network. Second is the PicOS switch software, which turns your bare metal into an enterprise switch, automated by AmpCon.

AmpCon is an application developed by Pica8 to automate the deployment, provisioning, and lifecycle management of switches, both physical and virtual. AmpCon can be installed on a physical server or a virtual machine (VM), although the preferred and most straightforward approach is to install the OVA provided by Pica8.

Overview of Using AmpCon to Automate PicOS-V Switches

PicOS-V is a free **Virtual Machine (VM)** from Pica8 that can help you get familiar with PicOS Software Switches. PicOS-V is used for validating the configuration of PicOS and testing L2 and L3 features at your own pace, with no costs associated. PicOS-V runs on VMware, GNS3 and VirtualBox hypervisors, without the need for a bare-metal switch or specialized hardware.

AmpCon universally manages and automates PicOS Software switches, both physical and virtual alike. All automation use cases are applicable to both PicOS and PicOS-V switches, except Zero Touch Provisioning (ZTP). AmpCon does not currently support ZTP of a PicOS-V (virtual) switch.

This document explains how to test the following major automation use cases of PicOS-V switches:

- 1. Import PicOS-V switches
- 2. Automate configuration of MLAG feature in PicOS-V switches
- 3. Use Ansible Playbooks to verify L2 or L3 functionality
- 4. Day-to-day Policy Enforcement
- 5. Configuration management
- 6. Audit and operation logs

Setup PicOS-V Testbed

Before you get started with AmpCon, setup a PicOS-V testbed following the steps given below:.

- 1. Download PicOS-V: Download PicOS-V using following link: <u>https://www.pica8.com/picos-v/</u>
- 2. Setup PicOS-V testbed in GNS3 environment: Download the following document: <u>https://www.pica8.com/wp-content/uploads/Pica8-PicOS-V-UserGuide.pdf</u> and follow *PicOS-V Installation, Setup and Testing* in the GNS3 section.

The following PicOS-V testbed topology was created in a GNS3 environment for testing and for the purpose of this use case. For more details on the GNS3 test environment setup, please refer to above PicOS-V User Guide.





Getting Started with AmpCon

Following are steps to install AmpCon:

- 1. Download the AmpCon image: <u>https://www.pica8.com/ampcon-network-controller/</u>
- **2. Review AmpCon VM requirements:** For AmpCon Virtual Machine (VM) requirements please refer to AmpCon VM Requirements document. You do not need License for using PicOS-V.
- 3. Install AmpCon: Follow the AmpCon installation Guide document to install the AmpCon server in your Datacenter or Campus. AmpCon installation Guide document to this URL

AmpCon Automation Major Use Cases and Benefits

Following are AmpCon Automation major use cases:

- 1. Switch Deployment: Automate deployment of bare-metal switches to reduce cost and complexity.
- Security and Network Compliance: Enforce day-to-day security and network compliance policies on groups of switches with ease.
- 3. Scheduled backups and upgrades: Leave long weeknight/weekend switch upgrades behind with automated upgrades and backups
- 4. Customize your automation: Use Ansible Playbooks to create custom workflows

AmpCon can be used to automate following business workflows to reduce operating expenses.



- ✓ Config Updates
- ✓ Config Backup/Rollback
- ✓ Compliance Management
- ✓ Scheduled Software Upgrades
- ✓ Switch Visibility (port stats, health check)
- ✓ Custom (user defined) Workflows
- ✓ RMA Replacements
- ✓ License Updates

AmpCon Architecture



AmpCon consists of the following components:

- · Front-end web server
- · Jinja2 point-and-click network template automation and creation
- · Ansible playbook engine, a de facto automation standard, and
- Maria DB database

AmpCon communicates with AmpCon Automation Agent software running in the switches located in a remote campus or remote datacenter using a VPN. All communications between the AmpCon server and AmpCon Agent running in the switch are encrypted. The AmpCon Agent is only functional during Zero Touch Provisioning and Import process of a switch.

AmpCon provides a simple UI driven application to automate initial configuration, provisioning and deployment, as well as ongoing lifecycle management functions. It has significant impact on reducing operating expenses.



Import PicOS-V Switches VIDEO GUIDE >

Import PicOS-V switch using following steps:

- 1. Setup System Configuration: Log into AmpCon UI using default credentials admin/admin. Select Settings > System Configuration as shown below:
 - **a.** Enter the login credentials for PicOS-V switch. Enter admin as the username and enter password you have setup for the PicOS-V switch (default is "pica8").
 - **b.** Enter License Portal related information: URL is <u>https://license.pica8.com</u>, username is test and password is test. Please note these credentials will not be used since we will not be testing any License Portal related use case.
 - c. Enter 100 for Config Backup number.
 - d. Click Save

AmpCon v1.7.1	
admin SuperAdmin	C System Configuration
🚯 Dashboard	System Management 💿
Deployment >	Device default login user @
	Device default password
⊡ Licenses >	License portal URL https://license.pica8.com %
📥 Lifecycle >	License portal user test
Operation Logs >	License portal password
■ Automation >	Oonfig Backup Number
¢¢ Settings ∨	Security config file Choose File No file chosen
Add Switch Model System Configuration	Allow Switch Source IP 1.1.1.0/2,2.2.0.0/16
Image Management	DEBUG ⑦ Disable
🐮 Users >	
SDN Applications >	Save Save Backup C Recover

2. Import a PicOS-V switch: Select Lifecycle > Import Switch and click Import as shown below. Enter the management IP of the first PicoS-V switch and click Save. It will take few minutes to import the switch.



≡ AmpC	on v1.7.1								₩ ₩	0
admin		🔁 Import Switch							*	Lifecycle
SuperAdmin							1			
🍰 Dashboard			Imported Switches () Build Import							
Deployment		Showing 1 to 1 of 1 entrie	s Show 10 v er	tries			Sea	rch:		
C Config/Templates		IP 14	Switch SN 11	Config Updated Time	Reachable Status 11	Upgrade Status 1	↓ Version/Revision ↑↓	Flag	Operati	on
Licenses			EC1529000733		unreachable			unknown	C Remove	
📥 Lifecycle								Previous	1 N	ext
Deployed Switch List										_
Map View										
Push Configuration										
Scheduling										
Import Switch										
Decommissioned Switch										

Verify whether the PicOS-V switch is successfully imported by selecting **Deployment > Switch List** menu. You will see the PicOS-V switch's Serial Number with Imported status.

3. Similarly import other two PicOS-V switches.

To look at the high-level health view of a specific imported switch, select Deployment > Switch List and click on the Serial Number of one of the switches we imported in this section as shown below.

AmpCon v1.7.1									🔅 🛓	0
admin SuperAdmin	t₃ Switch List								🎢 / Deg	ployment
2 Dashboard	Switch Name	Virtual Mgmt IP	Gro	IIA qu	Version	All V Model All	Status All	Search Rese	3	
Deployment ~	Showing 1 to 10 of 12 ent	tries Show 10 v en	tries							_
Global Configuration Switch Configuration Config Files View	Switch Name 1↓ P8-ACCESS-BR- 1-SW-2	SN / Service Tag ↑↓ TWOHKRTNDNT000480015	Model 11 N3248P-ON	Version 14 9.8.7/B43C9FCC27	Status 11	Virtual Mgmt IP 11	Operation	Clone 🖬 Log	@Address	
Switch List @ Config/Templates >	XORPLUS 6	52A544A8C508	AS5812_54X	4.2.2.2/A6E80F981C	IMPORTED	@10.8.0.70	■ Display ▼	Clone Log	Remove	G
Ilicenses >	XORPLUS	52A544A8C506	AS5812_54X	4.2.2.2/A6E80F981C	IMPORTED	©10.8.0.74	Display 🝷	Clone Log	Remove	G
Operation Logs Automation	XORPLUS 6	52A544A8C505	AS5812_54X	4.2.2.2/A6E80F981C	IMPORTED	©10.8.0.78	Display 💌	Clone Log	Remove	G

You will see details on ports active, software version, hardware model, resource utilization info on CPU, and RAM. It also shows temperature, power status and snapshot of traffic status on active ports at the time of UI invocation. All the above are high-level health details of the switch. It does not replace Network Management.



AmpCon v1.7.1								0
admin	📥 Network View Dev	ice Hostname:Xorpl	us, SN:62A544A8C	508			💣 / Netw	ork View
SuperAdmin	The link line The Link Deserver	blad						
26 Dashboard							122	
Deployment ~								
Global Configuration	Status and Operations							
Switch Configuration	Status and Operations O							
Switch List	4.2.2.2	as5812_54x	None		10.8.0.70			
⊒ Licenses →	🕼 Config 🔲 SSH	Push Config Q Location	🗭 Restore Port					
₼ Lifecycle >			_					
Operation Logs >	CPU/RAM/Temperature/Logs		Power Supply Status	Spanning Tree Status				
Automation	CPU Usage:	5004641 X2	: undefined	Enabled Protocol: MS Root ID: 32768.0c;72:	Enabled Protocel: MSTP Root ID: 32768.0c:72:1ccc:00:00			
¢ [©] Settings →	E Used RAM:	454896 X3 565555 X3			External Root Path Cost CIST Regional Root ID :	1: 0 32768.0c:72:1c:cc:00	H00	
😻 Lisers 🔹 🔾	Board Temperature: ASIC Temperature:	e*9			Root Port: ae1 CIST Internal Root Path Hello Time : 2	Cost: 10000		
		View Logs			Maximum Age: 20 Remaining Hops: 19			
SDN Applications >								
	Port Name	Port Desc	Packet Count	Drop Count	Link Status	Link Speed	LLDP Neighbo	
	te-1/1/1		25138	0	Up	10Gb		
	te-1/1/2		7578	0	Up	10Gb		
	te-1/1/3		40092	16	Up	10Gb		
	te-1/1/4		9340	0	Up	10Gb		

Automate Configuration of MLAG Feature in PicOS-V Switches VIDEO GUIDE >

We will use AmpCon to automate configuration of MLAG feature in a spine and leaf cluster of PicOS-V switches.

Automate Configuration of MLAG Feature in Spine Switches

We will use a Jinja2 Template to generate MLAG configuration for both spine switches. Jinja2 is one of the most used templating engines for Python. It is easy to use Jinja2 templates for config generation for a group of switches. We will examine the Jinja2 template mechanism more closely later in this section.

Automate configuring the first PicOS-V Spine switch with MLAG configuration by using the following steps:

1. Upload Template for MLAG configuration: Select Config Templates > Template List and click Upload Template as shown below:

AmpCon v1.7.1	
admin	I Template List
SuperAdmin	Upload Template 🖨 Export All Template 🛆 Update Pre-built Template
🚯 Dashboard	
Deployment	Showing 1 to 10 of 18 entries Show 10 v entries Show Pre-built Template
♂ Config/Templates ~	Template Name ↑↓ Platform ↑↓ Description ↑↓ Create Time ↑↓
New Template	BranchABCD- 3248P-ON- 2022-04-19
Template List	AccessSwitch BranchAYC 15:27:27
Configuration Files View	2002.04.07



Enter the *Name*, and *Description* as shown below. Select *MLAG-Push-Config.txt* Template file given in the Appendix A and click *Upload* as shown below.

Upload Template		×
Name: *	MLAG-Push-Config	
Description:	MLAG Push Config	
Template File: *	Choose File mlag_push_config_template_example.txt	L
	1	Upload

2. Select Config Templates > Template List > MLAG-Push-Config and click Create Config as shown below:

≡	AmpCon v1.7.1								9	149 🎝 🍐		Ð
adm	in	🕑 Template List								ñ	/ Ter	nplate
Super	2/CUS SuperAdmin Upload Template 🗘 Export All Template 🛆 Update Pre-built Template											
🚯 Dashboard	ı			_								
Deployment	nt >	Showing 1 to 10 of 19 entrie	s Show 10	✓ entries She	ow Pre-built Template			Search:				
Config/Ten	nplates ~	Template Name ↑↓	Platform ↑↓	Description ↑↓	Create Time ↑↓	Operation						
New Template Template List]	MLAG-Push-Config	AS5812_54X	MLAG Push Config	2022-06-09 12:16:35	∂ View Template	Create Config	Remove Template	Сору	🖨 Export		
Configuration F	Files View											

Enter the *Name*, *Description*, *parent*, *my mlag node num*, *my mlag ip*, *my mlag peer ip and hostname* fields as shown below and click *Create*:

AmpCon v1.7.1		
admin SuperAdmin		
🕸 Dashboard	Template MLAG-Push-Config Config	Back to Template List
Deployment >	name MLAG-Spine-1	
☑ Config/Templates ∽	description MLAG Configuration for Spine 1	
New Template	parent	
Template List Configuration Files View Template Verify	my mlag node num	
Config Snapshot Diff	my mlag ip 10.10.0.1	
⊡ Licenses >	my mlag peer ip 10.10.0.2	
🚠 Lifecycle >	hostname spine-01	
□ Operation Logs >		
▶ Automation >	Create C Reset	
© Settings →		



Review the config shown below and click Save.



Select Config/Templates > Configuration Files > MLAG-Spine-1 under configs and click Push Config.

AmpCon v1.7.1		🦉 🛔 😗
PICOS admin SuperAdmin	Configuration Files View	👫 / Template
 B Dashboard ▲ Deployment > 	Karch Name: MLAG Spice-1 Oracle Time: 2020 0-07 B Configs El Marchon agregate-etherne ad agregate-etherne addition and and a spice additional additional and additional additional agregate-etherne additional anne additional additextende additextende additionadditextende additional additextend	
Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Template Config/Te	Debete Van 40 set interface agregate ethernet at fanky ethernet enkilding van mehen 16 set interface agregate ethernet at fanky ethernet enkilding van mehen 16 set interface agregate ethernet at fanky ethernet enkilding van mehen 15 set interface agregate ethernet at fanky ethernet enkilding van mehen 15 set interface agregate ethernet at fanky ethernet enkilding van mehen 15 set interface agregate ethernet at fanky ethernet enkilding van mehen 15 set interface agregate ethernet at fanky ethernet enkilding van mehen 15 set interface agregate ethernet at fanky ethernet enkilding van mehen 15 set interface gigak ethernet te V12 ether options 802.3a fixe ² set interface gigak ethernet te V12 ether options 802.3a fixe ²	
⊡ Licenses >		
<	eet to insuffige enables thruse excel to institution with institution of the institution of the institution of the institution of the institution excel providencials lides enables thruse excel providencials (advection) (Totack) (In constraint and the institu- ent providencial (Totack) (In constraint and the institution)	
o°¢ Settings →	it is protocols Ring downlin 10 provide 10 50102 eXtgs	
SDN Applications	Edit Save Save As Public Config Distance	

Select the PicOS-V switch with **Serial Number** that corresponds to the first PicOS-V spine switch in your GNS3 environment and click **Push** as shown below. Now first PicOS-V switch is fully configured with the MLAG configuration.



Config Switches Config C	Groups							
	SN	†↓ Mgt IP	¢↓	Platform	¢↓	Version	t↓	Location
0	TW0HKRTNDNT000480015	€10.8.0.26		N3248P-ON		9.8.7/b43c9fcc27		Palo ALto
0	TW0F94Y7DNT0006J0003	Q 10.8.0.58		N3224F-ON		4.1.3/aad3336d85		Baltimore MD.
	TW000WH7DNT000490090	@10.8.0.18		N3248PXE-ON		3.8.0.1/69a3ddb323		Palo Alto
	PICOS-V	0192.168.122.45		N3248P-ON		/		VM
0	EC1815000432	2 10.8.0.54		as4610_30p		4.1.3/aad3336d85		Palo Alto, CA.
•	EC1529000733	Oundefined						
•	62A544A8C508	©10.8.0.70		as5812_54x		4.2.2.2/a6e80f981c		
0	62A544A8C506	©10.8.0.74		as5812_54x		4.2.2.2/a6e80f981c		
0	62A544A8C505	€10.8.0.78		as5812_54x		4.2.2.2/a6e80f981c		
						P	revious	1 N

Automate configuring the second PicOS-V Spine switch with MLAG configuration by using the following steps:

1. Select Config Templates > Template List > MLAG-Push-Config and click Create Config as shown below:

AmpCon v1.7.1		149 🕹 👗	0
admin	C Template List	😭 / Te	emplate
SuperAdmin	📳 Upload Template 🛛 🕀 Export All Template 🕰 Update Pre-built Template		
🚳 Dashboard			
Deployment >	Showing 1 to 10 of 19 entries Show 10 v entries Show Pre-built Template Search:		
Config/Templates	Template Name ↑↓ Platform ↑↓ Description ↑↓ Create Time ↑↓ Operation		
New Template Template List	MLAG-Push-Config A55812_54X MLAG Push Config 2022-06-09 12:16:35 // View Template @Create Config @Remove Template @Copy	🖨 Export	
Configuration Files View			-

Enter the name, description, parent, my mlag node num, my mlag ip, my mlag peer ip and hostname fields as shown below and click *Create*:



AmpCon	v1.7.1			
PICOS admin SuperAdmin		Create Cor	nfig	
🚯 Dashboard		Template MLAG-	Back to Template List	
Deployment	>	name	MLAG-Spine-02	
Config/Templates	~	description	MLAG configuration for Spine 2	
New Template		parent	configs	
Configuration Files View		my mlag node num	1	
Config Snapshot Diff		my mlag ip	10.10.0.2	
亘 Licenses	>	my mlag peer ip	10.10.0.1	
🚠 Lifecycle	>	hostname	spine-02	
Operation Logs	>		_	
Automation	>	Create	Reset	

Review the config shown below and click Save.



Select Config/Templates > Configuration Files > MLAG-Spine-2 under configs and click Push Config.





Select the PicOS-V switch with Serial Number that corresponds to the second PicOS-V spine switch in your GNS3 environment and click Push as shown below. Now second PicOS-V switch is fully configured with the MLAG configuration.

onfig Switches Config C	Groups							
	5N 11	Mgt IP	↑↓	Platform	¢↓	Version	¢↓	Location
	TW0HKRTNDNT000480015	©10.8.0.26		N3248P-ON		9.8.7/b43c9fcc27		Palo ALt
	TW0F94Y7DNT0006J0003	€10.8.0.58		N3224F-ON		4.1.3/aad3336d85		Baltimor MD.
	TW000WH7DNT000490090	©10.8.0.18		N3248PXE-ON		3.8.0.1/69a3ddb323		Palo Alt
	PICOS-V	0192.168.122.45		N3248P-ON		1		VM
	EC1815000432	010.8.0.54		as4610_30p		4.1.3/aad3336d85		Palo Alt CA.
	EC1529000733	Oundefined						
	62A544A8C508	©10.8.0.70		as5812_54x		4.2.2.2/a6e80f981c		
	62A544A8C506	©10.8.0.74		as5812_54x		4.2.2.2/a6e80f981c		
	62A544A8C505	©10.8.0.78		as5812_54x		4.2.2.2/a6e80f981c		
							Previous	1



Automate Configuration of MLAG Feature in Leaf Switch

Automate configuring the first PicOS-V Leaf switch with MLAG configuration by using the following steps:

1. Select Config Templates > Configuration Files View and right click configs and select Add node as shown below.



Enter Name, Description and select the Platform as as5812_54x as shown below and click Save.

Add Folder		×
Name *	MLAG-Leaf-01	
Description	MLAG Config for Leaf switches	
Platform	as5812_54x 🗸	
	Save	2



 Select Config Templates > Configuration Files View > MLAG-Leaf-01 and click Edit and paste the Leaf-01 PicOS-V switch configuration from PicOS-V User Guide and click Save.

Select Config Templates > Configuration Files View > MLAG-Leaf-01 click Push Config as shown below.

AmpCon v1.7.1	³³³ ± 0
PICOS admin SuperAdmin	sauch Name: MLAG-Leaf-01 Create Time: 2022-06-09
Dashboard Deployment >	MLAG-Spine-01 set interface agranget-ethernet set Tamily dement-setting via members 15 MLAG-Spine-02 set interface agranget-ethernet set Tamily dement-setting via members 16 MLAG-LaaF01 set interface gapah ethernet to VIX family of thermet methods with evalues 45 set interface gapah ethernet to VIX family of thermet setting via members 16 set interface gapah ethernet to VIX family of thermet setting via members 16 setting via members 16 setting via members 16 setting via members 17 setting via members 17 setting via members 16 setting via members 16 setting via members 16 setting via members 16
Config/Templates	Create Vian 40 rest produce make true
New remplate Template List	Landarda Vili
Template Verify Config Snapshot Diff	
□ Licenses >	
♣ Lifecycle >	
Operation Logs >	
©© Settings >	Edit Sive Sive As Publicarty Didets

Select the PicOS-V switch with *Serial Number* that corresponds to the PicOS-V leaf switch in your GNS3 environment and click *Push* as shown below. Now the PicOS-V leaf switch is fully configured with the MLAG configuration.

Config Switches Config G	roups							
	sn ↑↓	Mgt IP	†1	Platform	↑↓	Version	ţ↓	Location
0	TW0HKRTNDNT000480015	€10.8.0.26		N3248P-ON		9.8.7/b43c9fcc27		Palo ALto
	TW0F94Y7DNT0006J0003	010.8.0.58		N3224F-ON		4.1.3/aad3336d85		Baltimore, MD.
0	TW000WH7DNT000490090	@10.8.0.18		N3248PXE-ON		3.8.0.1/69a3ddb323		Palo Alto
0	PICOS-V	Q 192.168.122.45		N3248P-ON		1		VM
0	EC1815000432	2 10.8.0.54		as4610_30p		4.1.3/aad3336d85		Palo Alto, CA.
0	EC1529000733	Oundefined						
0	62A544A8C508	©10.8.0.70		as5812_54x		4.2.2.2/a6e80f981c		
0	62A544A8C506	@10.8.0.74		as5812_54x		4.2.2.2/a6e80f981c		
	62A544A8C505	©10.8.0.78		as5812_54x		4.2.2.2/a6e80f981c		
							Previous	1 Next

Use Ansible Playbooks to Verify L2 or L3 Functionality VIDEO GUIDE >

In this example we will verify MLAG functionality using Ansible Playbooks.

In AmpCon you can use the Ansible Playbook UI to create custom workflows. Following are some examples:

1. Security and Network Compliance: Enforce day-to-day security and network compliance policies on groups of switches with ease.



- 2. Customize your automation: Use Ansible Playbooks to create custom workflows. For example, using automation, you can check whether NAC policies are enforced on each access ports. If it detects NAC policies are not enforced on specific port, it will report and enable NAC policies back on the port.
- **3. Check real-time status of the network:** You can run Ansible Playbooks to get real-time status of the network using L2 or L3 CLI commands.

In the previous section we have configured MLAG in two spines and one leaf PicOS-V switches. Let us verify whether MLAG is setup correctly in the spine switches by using the Ansible Playbook mechanism in AmpCon.

Following are the steps to do this using the Ansible Playbook mechanism in AmpCon:

1. Create group of spine switches: Before running an Ansible Playbook, we need to create a group of switches against which we run the Ansible Playbook. In our example we have two Spine switches. Hence, we will create a group of switches called *Spine-Switches-Group* and include the two PicOS-V Spine switches.

From the UI do the following:

- Select Lifecycle > Group Management menu
- · Click Select all button on the top
- · Select both Spine Switches identified by the Serial Number of the switch
- and click Create Group as shown below

AmpCon v1.7.1							9	•	0
admin	👬 Group	p Management						* /	Lifecycle
28 Dashboard	Licer	rse audit 🗹 License action 🗹	Upgrading 🗹 Retrie	eve Config 🗳 Select All		`			
Deployment >	Showing	1 to 8 of 8 entries Show 10	\sim entries			+ Create Group	View Group -	T Filter	
Config/Templates		Switch SN 1	IP Address 1	Switch Name †↓	Deployed Location 1	Version/Revision ↑↓	License Expiry 1	Licens	4
E Licenses	D	EC1815000432	010.8.0.54	EVPN-ACC4	Palo Alto, CA.	4.1.3/aad3336d85	2021-12-31 00:00:00	Active	
Deployed Switch List	•	EC1529000733	Oundefined						
Map View Push Configuration	•	62A544A8C508	©10.8.0.70	Xorplus		4.2.2.2/a6e80f981c			
Upgrade Firmware	•	62A544A8C506	©10.8.0.74	Xorplus		4.2.2.2/a6e80f981c			
Import Switch	0	62A544A8C505	@10.8.0.78	Xorplus		4.2.2.2/a6e80f981c			
Decommissioned Switch Config Backup	-	1	1						
Group Management							Previous	1 Neo	t

Enter the values for Group Name and Description fields as shown below and click Create Group.





2. Create and run Ansible Playbook to verify MLAG functionality in Spine Switches: Following are steps:

To create an Ansible Playbook in AmpCon, select *Automation > Playbooks* and click + *Playbook* as shown below:

AmpCo	on v1.7.1						
PICOS admin SuperAdmin		Ansible Playboo	oks				
 Dashboard Deployment 	>	+ Playbook 1 Imp	rries Show	10 v entries	D Show Pr	re-built Playbook	
Config/Templates	>	Name	ţ↓	Description	ţ↑	Created By	ţ↑
Licenses	>	CheckAuthentication		Check Authentication		admin	
📥 Lifecycle	>	EnforceDot1X1				admin	
 Operation Logs Automation 	> ~	EnforceDot1X				admin	
Playbooks		Add_A_VLAN		Add_A_VLAN		admin	

Enter values from Name and Description fields as shown below and click Next.

Ansible Playboo	k	×
Name* :	Verify_MLAG	
Description :	Verify MLAG functionality	
		Next

Copy the Ansible Playbook given in Appendix B as shown below and click Save All.

Ansible Playbook		
Name: Verify_MLAG Description: Verify_MLAG	nctionali	
Verify, YLAG	<pre> name: Verify MLAG functionality in spine switches - name: Cather MLAG information for all the MLAG domains - picos_config: mode='cli_show' cmd='show mlag domain summary' register:exec_result - name: Show MLAG domain summary for spine switches - dobug:varexec_result.stdout_lines - name: Gather MLAG information for all the MLAG links - picos_config: mode='cli_show' cmd='show mlag link summary' register:exec_result.stdout_lines - name: Show MLAG information for all the MLAG links - name: Show MLAG information for all the MLAG links - name: Show MLAG information for all the MLAG links - name: Show MLAG information for all the MLAG links - name: Show MLAG information for all the MLAG links</pre>	



Select Automation > Playbooks menu and click Run icon associated with Verify_MLAG Ansible Playbook as shown below.

AmpCon v1.3	1			🦉 🛔 0			
admin	Ansible Playbooks			😤 / Playbook			
SuperAdmin	SuperAdmin						
🏂 Dashboard							
Deployment	Showing 1 to 10 of 44 entries Show 10	Showing 1 to 10 of 44 entries Show 10 v entries Show Pre-built Playbook Search:					
Config/Templates	Name 11 Descrip	tion 11 Created By	↑↓ Last Modified ↑↓	Operation			
I Licenses	Verify_MLAG Verify MI	AG functionality admin	2022-06-10 15:22:37	✓ Edit ☐ Save As Run ▲ Export Remove			
📥 Lifecycle	CheckAuthentication Check Au	thentication admin	2022-04-19 11:36:30	✓ Edit ☐ Save As ■ Run ▲ Export ■ Remove			
Operation Logs	EnforceDot1X1	ədmin	2022-03-21 14:01:37	✓ Edit □ Save As ■ Run ▲ Export ■ Remove			
Automation Playbooks	EnforceDot1X	ədmin	2022-02-02 16:15:12	 ✓ Edit ⓑ Save As ☑ Run ▲ Export 월 Remove 			

Select *playbook.yml* and click *Next* as shown below:

Run Playbook -> Select Playbook	×
Verify_MLAG	

Select Choose Groups tab on the top and select Spine-Switches-Group as shown below and click Next two times.

Run Playbook -> Select Switches						
Choose Switches Choose Groups						
Showing 1 to 10 of 28 entries Show 10 v entries Search:						
	Name †↓	Description				
0	Test-Demo	Test				
	Spine-Switches-Group	Group of Spine Switches				
	PA_Test1					
0	PA-Test					
0	PA-Group					
	PA-Branch-switches					
0	PA-Br-Switches					
	Mark-group					
0	Mani-PA-Demo					
0	Mani-group					
		Previous 1 2 3 Next				
		Previous Next				



Click *Run Playbook* as shown below:

Run Playbook		×
Playbook Name Description	Verify_MLAG Verify MLAG functionality	
Schedule Type	● Run Now ○ One Time ○ Scheduled	1
	Previous	Run Playbook

3. Verify MLAG functionality in Spine switches from the Ansible Playbook output: Select Automation > Ansible Jobs List menu and click Task Results corresponding to Verify_MLAG Ansible Playbook as shown below:

=	AmpCon v1.7.1							🥵 🛓 🚯	
admi	in	🗬 Ansible Jobs List						倄 / Ansible Jobs Li	st
SuperA	Admin								
🍰 Dashboard		Job View Switch View							
Deployment	nt >	Showing 1 to 10 of 148 entries Sho	w 10 v entries				Search:		
C Config/Tem	nplates >	Job Name 11	Playbook Name 1	Schedule Type 1	Job Creation Time 1	Created By (user) ↑↓	Status †↓	Operation	
Licenses		2022-06-10 15:42:58:::Verify_MLAG	Verify_MLAG	Run Now	2022-06-10 15:44:33	admin	EXECUTED	Task Results	
Lifecycle		2022-05-26 13:29:37:::Do1xNACCompliance	Do1xNACCompliance	Run Now	2022-05-26 13:29:51	admin	EXECUTED	Task Results	
Automation	n v	2022-05-26 10:57:53:::Do1xNACCompliance	Do1xNACCompliance	Run Now	2022-05-26 11:00:39	admin	EXECUTED	Task Results	
Playbooks		2022-04-25	CheckAuthentication	Run Now	2022-04-25 15:03:13	admin	EXECUTED	Task Results	
Ansible Jobs Lis	st	23.03.00CheckMuthentication						Contraction of the second seco	

Select **Result Output** tab at the top as shown below. Here you will see outputs for the MLAG Domain and Link summaries for both Spine-01 and Spine-02 PicOS-V switches.

Task Results	×
Result Table Result Output	
<pre>"invocation": { "modulc_args: { "</pre>	
"se2 10.10.0.1 4008 ESTABLISHED Yes Yes 1 ", "admin@spine-02> "]	
PLAY RECUP ====================================	



Verify MLAG Functionality with Traffic Test

Log into the console of the **Debian11.2-1** Server from the GNS3 client Application and execute the following Linux shell command to send **100 packets from** the **Debian11.2-1 Server** connected to the Spine-01 switch to the **Debian11.2-2 Server** connected to the Leaf-01 switch.

```
debian@debian:~$ ping -c 100 192.168.15.100
PING 192.168.15.100 (192.168.15.100) 56(84) bytes of data.
64 bytes from 192.168.15.100: icmp_seq=1 ttl=64 time=6.73 ms
64 bytes from 192.168.15.100: icmp_seq=2 ttl=64 time=40.9 ms
64 bytes from 192.168.15.100: icmp_seq=3 ttl=64 time=3.06 ms
```

When the ICMP traffic is flowing, right click on the link between the **Spine-01** and the **Leaf-01**. Select **Suspend** to stop the traffic flowing through that link as shown below. MLAG will make the traffic flow **from** the **Spine-01** switch to the **Leaf-01** switch via the **Spine-02** switch.



The output of ping traffic verifies that there is no packet loss when the link between Spine-01 and Leaf-01 goes down. This verifies MLAG functionality.

```
<... output suppressed ...>
64 bytes from 192.168.15.100: icmp_seq=97 ttl=64 time=4.52 ms
64 bytes from 192.168.15.100: icmp_seq=98 ttl=64 time=4.55 ms
64 bytes from 192.168.15.100: icmp_seq=99 ttl=64 time=4.14 ms 64 bytes from 192.168.15.100: icmp_
seq=100 ttl=64 time=4.22 ms
--- 192.168.15.100 ping statistics ---
100 packets transmitted, 100 received, 0% packet loss, time 99912ms
rtt min/avg/max/mdev = 2.761/4.428/40.906/3.756 ms
```



Day-to-day Policy Enforcement <u>VIDEO GUIDE</u> >

AmpCon can be used for automating day-to-day policy enforcement in a group of switches. As an example, let us say we need to integrate PicOS-V Spine switches with a Network Management server using SNMP v3. Following are steps to enable SNMPv3:

1. Log into AmpCon UI. Select Config Templates > Configuration Files View and right click on configs and select Add node as shown below:

AmpCon v1.7.1			0	
admin SuperAdmin	Configuration Files View	* /	Templ	ate
Agenomia Dashboard Deployment Orderplates Mew Template Template List Contegration Files View Template Viefly	Name: Configs Create Time: 2000/07/06 Image: Im			
Config Snapshot Diff				
Automation				
Q [©] Settings →				
SDN Applications	Edit Sove SoverAs Puth Confg Delete			

2. Enter Name, Description, and Platform as shown below and click Save.

Add Folder		×
Name *	SNMPv3-config	
Description	SNMP v3 configuration	
Platform	as5812_54x	~
		Save

3. Select Config/Templates > Configuration Files View > SNMPv3-config and click Edit. Copy the SNMP v3 configuration given in Appendix C and paste it to the right side window as shown below. Click Save as shown below. "Are you sure?" dialog box will appear. Click Yes.





4. Select Config/Templates > Configuration Files View > SNMPv3-config and click Push Config. Select Spine-Switches-Group as show below and click Push.

Choose Devices ×					
Config Switches Config Groups					
	Name †↓	Description			
	Test-Demo	Test			
	Spine-Switches-Group	Group of Spine Switches			
0	PA_Test1				
0	PA-Test				
0	PA-Group				
0	PA-Branch-switches				
0	PA-Br-Switches				
0	ND-Group				
0	Mark-group				
0	Mani-PA-Demo				
		P	revious 1 2	3 Next	
				Push	

5. Verify whether SNMP v3 configuration is properly configured in the spine switches by running the following Linux command in the Network Management Linux server. It queries the Spine-01 switch with management IP address 192.168.42.10 to provide its Hardware Model using the MIB 1.3.6.1.4.1.35098.1.13.0

root@zabbix-77:~# snmpwalk -v3 -u pica8test123 -l AuthPriv -a md5 -A P3Ca8536bl4 -x des -X
P3Ca8536bl8 192.168.42.10 1.3.6.1.4.1.35098.1.13.0
SNMPv2-SMI::enterprises.35098.1.13.0 = STRING: "AS5812_54X"

The above command output verifies PicOS-V switch is properly integrated with Network Management server using SNMP v3.



Configuration Management VIDEO GUIDE >

Following are four major Configuration management use cases in AmpCon.

- 1. Automatic backup of configuration of all switches
- 2. Manual backup of configuration of a PicOS switch
- 3. Restore configuration of a switch from backup
- 4. Compare two configurations and identify the difference between them

Automatic Backup of Configuration of all Switches

You can enable automatic backup of the configuration of all deployed switches at a specific interval.

Select Lifecycle -> Config Backup menu and do the following as shown below:

- 1. Enter *days* with a value, for example set it to value 1 for daily configuration backup.
- 2. Enter *Interval time* in hours in timezone set in the AmpCon server. Daily backup of configuration will be done at the specific time entered in this step. In this example daily backup will be done at 11 PM UTC time daily.
- 3. Click Save.

■ AmpCo	v1.7.1						😕 🔺 0
admin	Config Back	up					👫 / Lifecycle
SuperAdmin	interval* 1	days* 22	✓ time Save	Current auto backup	interval is: 1 da	ys at time 22:00	
n Dashboard	Group Name" :	Load *	Backup Config				View Report
Deployment	>						
Config/Templates	> Showing 1 to 8 of 8 e	ntries Show 10	✓ entries				Search:
Licenses	> Switch Name	†↓ IP address †↓	Switch SN 1	Version ↑↓	Flag ↑↓	Last Backup Time ↑↓	Operation
📥 Lifecycle	- Xorplus	@10.8.0.70	62A544A8C508	4.2.2.2/a6e80f981c	R	2022-06-13 19:24:34	🗘 Config 🔺 Backup Config 🛓 Upload Config 🖬 Snapshot List
Deployed Switch List Map View	Xorplus	@10.8.0.74	62A544A8C506	4.2.2.2/a6e80f981c	R	2022-06-13 19:24:42	♦ Config 📥 Backup Config ± Uplead Config 🖬 Snapshor Lie
Push Configuration Upgrade Firmware	Xorplus	@10.8.0.78	62A544A8C505	4.2.2.2/a6e80f981c	R	2022-06-09 20:11:54	🗢 Config 🖄 Backup Config 🕹 Uplead Config 🖬 Snapshot Lise
Scheduling Import Switch	P8-Access-BR-1-S	W-2 ©10.8.0.26	TW0HKRTNDNT000480015	9.8.7/b43c9fcc27	R	2022-05-26 13:43:58	🗢 Config 🖄 Backup Config 🛓 Upload Config 🖬 Snapshot Lise
Decommissioned Switch Config Backup							

In the above example, configuration of all switches will be backed up in AmpCon at 11 PM daily.

Manual Backup of Configuration of a PicOS Switch

A manual backup of a specific switch configuration can be initiated by the user at any time. Backup or snapshot of switch configurations is stored in the database.

To make a manual backup of a specific switch configuration, select Lifecycle > Config Backup, select the switch and click Backup Config as shown below.



■ AmpCon	v1.7.1						🥮 🛓 🖯
PICOS admin	🖭 Config Ba	ckup					😤 / Lifecycle
SuperAdmin	interval* 1	days* 2	2 v time Sav	Current auto backup	o interval is: 1 da	ys at time 22:00	
Dashboard	Group Name*:	Load *	Backup Config				View Report
Deployment	*						
Config/Templates	Showing 1 to 8	of 8 entries Show 10	✓ entries				Search:
Licenses	> Switch Nam	e ↑↓ IP address ↑↓	Switch SN ↑↓	Version ↑↓	Flag ↑↓	Last Backup Time ↑↓	Operation
A Lifecycle	- Xorplus	©10.8.0.70	62A544A8C508	4.2.2.2/a6e80f981c	R	2022-06-13 19:24:34	Config 📥 Backup Config 🛓 Uplead Centig 🖬 Snapshot Lis
Deployed Switch List Map View	Xorplus	@10.8.0.74	62A544A8C506	4.2.2.2/a6e80f981c	R	2022-06-13 19:24:42	🗘 Config 📥 Backup Config 🛓 Uplead Config 🖬 Snapshet Lie
Push Configuration Upgrade Firmware	Xorplus	@10.8.0.78	62A544A8C505	4.2.2.2/a6e80f981c	R	2022-06-09 20:11:54	🗢 Config 📥 Backup Config 🛓 Uplead Config 🖬 Snapshot Lise
Scheduling Import Switch	P8-Access-BF	e-1-SW-2 ©10.8.0.26	TWOHKRTNDNT000480015	9.8.7/b43c9fcc27	R	2022-05-26 13:43:58	🗢 Config 🛓 Backup Config 🛓 Uplead Config 🖬 Snapshot Lie
Decommissioned Switch							
Config Backup							

To view the manual snapshot of config, select *Lifecycle > Config Backup*, select the switch and click *Config* and click *Show SET-format* as shown below:



Restore Configuration of a PicOS Switch from Backup Saved in AmpCon

Log into the console of Spine-01 PicOS-V switch in GNS3 environment and execute the following:

admin@spine-01> show system name
spine-01
admin@spine-01> configure t
Entering configuration mode.
There are no other users in configuration mode.
admin@spine-01# set system hostname foobar
admin@spine-01# commit
Commit OK.
Save done.

In the above example we accidentally changed the host name from *spine-01* to *foobar*.

Select Lifecycle > Config Backup and select the row of PicOS-V switch with Serial Number that corresponds to spine-01 switch and click Snapshot List as shown below.



AmpCon v1.7.1				🥮 🛓 0
admin SuperAdmin	Config Backup			😤 / Lifecycle
Duthand	Interval* days* 00 V time	Current auto backup interval is: 1 days at t	time 22:00	
20 Dashboard	Group Name*: Load * Backup Config			✓ View Report
Deployment >				
Config/Templates	Showing 1 to 8 of 8 entries Show 10 v entries			Search:
ILicenses →	Switch Name 11 IP address 11 Switch SN 1	L Version ↑↓ Flag ↑↓ L	Last Backup Time 1	
🛧 Lifecycle 🗸 🗸	Xorplus ©10.8.0.70 62A544A8C508	4.2.2.2/a6e80f981c R 20	022-06-14 22:02:15 © Config 🛓	Backup Config 🛓 Upload Config 🖬 Snapshot List
Deployed Switch List Map View	Xorplus ©10.8.0.74 62A544A8C506	4.2.2.2/a6e80f981c R 20	022-06-14 22:02:19 O Config 🛓	Backup Config 🚨 Upload Config 🖬 Snapshot List
Push Configuration Upgrade Firmware	Xorplus @10.8.0.78 62A544A8C505	4.2.2.2/a6e80f981c R 20	022-06-09 20:11:54 O Config 🛓	Backup Config 🚨 Upload Config 🖬 Snapshot List
Scheduling Import Switch	P8-Access-BR-1-5W-2 @10.8.0.26 TW0HKRTNDNT00048001	9.8.7/b43c9fcc27 R 20	022-05-26 13:43:58 O Config 🛓	Backup Config 🚨 Upload Config 🖬 Snapshot List
Decommissioned Switch Config Backup				

Click Rollback Config as shown below and Rollback.

Archive Configuration ×							
Showing 1 to 3 of 3 entries Show 10	∽ en	tries					Search:
Snapshot Time	¢↓	Туре	↑↓	Tags	ţţ	Operation	
2022-06-15 05:02:15		L2/L3		None		🖸 Snapshot 🖺 Set Golden Config	Rollback Config 🛍 Delete
2022-06-14 02:24:34		L2/L3		None		🖸 Snapshot 🖺 Set Golden Config	Rollback Config 🛍 Delete
2022-06-09 22:23:30		L2/L3		None		🖸 Snapshot 🖺 Set Golden Config	Rollback Config 🛍 Delete
							Previous 1 Next

Check spine-01 PicOS-V console in GNS3 environment. You will see the following output.

```
admin@foobar# The configuration has been changed by user admin
DELTAS:
    system {
        hostname: "spine-01"
    }
```

Run the following CLI to verify hostname of the switch is restored to spine-01 from foobar.

```
admin@spine-01# run show system name
spine-01
```

Compare Two Configurations and Identify the Differences Between Them

Let us compare the configuration of PicOS-V *spine-01* switch before and after *SNMP v3* configuration is applied as performed in the earlier section.

Select Config Templates > Config Snapshot Diff as shown below.





In the left pane click Select SN and click Select that corresponds to the Serial Number of the spine-01 switch.

Select the switch A				×
Showing 1 to 8 of 8 entries Show 10	✓ entries		Search:	
Switch SN ↑↓	Host Name ↑↓	Mgt IP ↑↓	Model ↑↓	Operation
62A544A8C505	XORPLUS	10.8.0.78	as5812_54x	Select
62A544A8C506	XORPLUS	10.8.0.74	as5812_54x	Select
62A544A8C508	XORPLUS	10.8.0.70	as5812_54x	Select
EC1529000733	NONE	None	None	Select

Select the oldest *timestamp* from the list as shown below.

AmpCon v1.7.1	
admin	රු Config Snapshot Diff ®
SuperAdmin B Dashboard	Select Config:
Deployment >	2022-06-09 22:23:30; None 2022-06-14 02:24:34; None
☑ Config/Templates ∨	2022-06-16 06:02:15; None
New Template	
Template List	
Configuration Files View	
Template Verify	
Config Snapshot Diff	

In the right pane click **Select SN** and click **Select** that corresponds to the **Serial Number** of the spine-01 switch and select the **newest timestamp** from the list.



Scroll down the config on the right pane to see difference between these two configuration as highlighted in blue colors shown below.



Audit and Operation Logs VIDEO GUIDE >

Select Operation Logs > Alarms to view AmpCon operation errors and alerts. Alerts are color coded as follows:

- Red needs action
- Yellow you might to want to look at it
- Green good

=	AmpCon v1.7.1				🐯 🔺 o
admir	n	Alarms			🙀 / Operation Logs
SuperAd	imin	All Messages			
🍰 Dashboard		Showing 1 to 10 of 156 er	ntries Show 10	∼ entri	es Search:
Deployment		Last Time 1	Cudade Chi ti	Tree 11	
Config/Temp	olates >	Last time	Switch Six 1.	Type 1+	message
E Licenser		2022-06-13 19:24:42	62A544A8C506	info	apply config to switch 62A544A8C506 success, Config: set protocols snmp v3 mib-view readall subtree 1 mask "ff" set protocols snmp v3 gro
		2022-06-13 19:24:34	62A544A8C508	info	apply config to switch 62A544A8C508 success, Config: set protocols snmp v3 mib-view readall subtree 1 mask "ff" set protocols snmp v3 gro
📥 Lifecycle		2022-06-09 20:11:55	62A544A8C505	info	apply config to switch 62A544A8C505 success, Config: set interface aggregate-ethernet ae1 aggregated-ether-options lacp enable true set is
Operation Let	ogs v	2022-06-09 20:04:54	62A544A8C505	error	pvlan-host, pvlan-promiscuous, pvlan-promiscuous-trunk, pvlan-secondary-trunk and trunk, Config: set interface aggregate-ethernet ae1 ag
Alarms		2022-06-09 16:38:55	62A544A8C506	info	apply config to switch 62A544A8C506 success, Config: set Interface aggregate-ethernet ae1 aggregated-ether-options lacp enable true set in
System Logs		2022-06-09 15:23:31	62A544A8C508	info	apply config to switch 62A544A8C508 success, Config: set interface aggregate-ethernet ae1 aggregated-ether-options lacp enable true set in
Automation		2022-06-09 13:10:00	62A544A8C508	error	0.10.0.2 4088;ERROR: path "protocols mlag domain 10 peer-ip 10.10.0.2 4088" is not valid, Config: set interface aggregate-ethernet ae1 agg
O [®] Settings					
嶜 Users					Previous 1 2 3 4 5 16 Next

Select **Operation Logs > System Logs** to view AmpCon audit logs as shown below. Audit logs provide info on who did what and when.



≡	AmpCon v1.7.1						156	4 0		
admir	n	🖵 System Logs					* /	Operation Log		
Super/	fmin	Export System Logs								
🔹 Dashboard	Dashboard Showing 1 to 10 of 2,399 entries Show 10 🗸 entries Search:									
Deployment										
Config/Temp	olates >	Time	†↓ User	ţ↑	Function ↑↓	Content 11	Status			
		2022-06-15 09:33:25	admin		/rma/rollback_config	manual rollback switch config sn:62A544A8C508	success			
Licenses		2022-06-14 17:30:30	don		/login	User "don" success to login	success			
📥 Lifecycle		2022-06-14 17:30:03	admin		/user/add	add user don	success			
🖵 Operation Le	ogs 🗸 🗸	2022-06-14 17:28:47	admin		/login	User "admin" success to login	success			
Alarms		2022-06-14 15:01:44	admin		/login	User "admin" success to login	success			
System Logs		2022-06-14 09:56:45	admin		/login	User "admin" success to login	success			
Automation		2022-06-14 06:26:03	admin		/login	User "admin" success to login	success			
O ₀ Settings		2022-06-13 19:24:42	admin		/inventory/group/batch_apply_config	apply config "SNMP-V3-Config" to group [u'Spine-Switches-Group ']	success			

For troubleshooting purposes, the Backend Log will be very useful. To download Backend Log, click Export System Logs button in the above UI.

Reference

PicOS

The following are reference materials related to PicOS: • <u>PicOS Routing and Switching Configuration Guide</u>

PicOS-V

The following are reference materials related to PicOS-V: • <u>PicOS-V Eval Guide</u>

AmpCon

The following are reference materials related to AmpCon: • AmpCon Network Controller Deployment and User Guide



Appendix-A – Jinja2 Template to Configure MLAG in Spine PicOS-V Switches

The following is contents of Jinja2 Template with file name **MLAG-Push-Config.txt**. It is used for configuring the MLAG feature in spine switches.

```
name: MLAG-Push-Config
description: MLAG Push Config
platform: AS5812 54X
content start:
set interface aggregate-ethernet ael aggregated-ether-options lacp enable true
set interface aggregate-ethernet ael family ethernet-switching port-mode "trunk"
set interface aggregate-ethernet ael family ethernet-switching vlan members 15
set interface aggregate-ethernet ael family ethernet-switching vlan members 16
set interface aggregate-ethernet ae2 family ethernet-switching native-vlan-id 4088
set interface aggregate-ethernet ae2 family ethernet-switching port-mode "trunk"
set interface aggregate-ethernet ae2 family ethernet-switching vlan members 15
set interface aggregate-ethernet ae2 family ethernet-switching vlan members 16
set interface gigabit-ethernet te-1/1/1 ether-options 802.3ad "ae2"
set interface gigabit-ethernet te-1/1/2 ether-options 802.3ad "ae2"
set interface gigabit-ethernet te-1/1/3 ether-options 802.3ad "ae1"
{% if my mlag node num == "0" %}
set interface gigabit-ethernet te-1/1/4 family ethernet-switching native-vlan-id 15
{% endif %}
set ip routing enable true
set 13-interface vlan-interface vlan4088 address {{my_mlag_ip}} prefix-length 24
set protocols lldp enable true
set protocols mlag domain 10 node {{my_mlag_node_num}}
set protocols mlag domain 10 peer-ip {{my mlag peer ip}} peer-link "ae2"
set protocols mlag domain 10 peer-ip {{my mlag peer ip}} peer-vlan 4088
set protocols mlag domain 10 interface ael link 1
set system hostname {{hostname}}
set vlans vlan-id 15
set vlans vlan-id 16
set vlans vlan-id 4088 13-interface "vlan4088"
```



param_start:

```
{
"my_mlag_node_num": {
"param default": "",
"type": "uint",
"required": "required",
"description": "mlag-node-num [0,1]",
"param_check": ""
},
"my mlag ip": {
"param_default": "",
"type": "text",
"required": "required",
"description": "my_mlag_ip, e.g 192.168.42.1",
"param_check": ""
},
"my mlag peer ip": {
"param default": "",
"type": "text",
"required": "required",
"description": "my mlag peer ip, e.g 192.168.42.1",
"param check": ""
},
"hostname": {
"param_default": "",
"type": "text",
"required": "required",
"description": "hostname of switch, e.g. 10",
"param check": ""
}
}
```

```
param_end$
```

Appendix-B – Ansible Playbook for Verifying MLAG Functionality

Following is content for the Ansbile Playbook called Verify_MLAG.yml to verify the MLAG functionality.

```
----
name: Verify MLAG functionality in spine switches
hosts: all
tasks:

name: Gather MLAG information for all the MLAG domains
picos_config: mode='cli_show' cmd='show mlag domain summary'
register: exec_result
name: Show MLAG domain summary for spine switches
debug: var=exec_result.stdout_lines
name: Gather MLAG information for all the MLAG links
picos_config: mode='cli_show' cmd='show mlag link summary'
```



register: exec1_result

- name: Show MLAG information for all the MLAG links
debug: var=exec1_result.stdout_lines

Appendix-C – SNMP v3 Configuration

Following is SNMP v3 related configuration for PicOS-V switch:

```
set protocols snmp v3 mib-view readall subtree 1 mask "ff"
set protocols snmp v3 group Pica8 security-level "AuthPriv"
set protocols snmp v3 group Pica8 read-view "readall"
set protocols snmp v3 usm-user pica8test123 group "Pica8"
set protocols snmp v3 usm-user pica8test123 authentication-mode "md5"
set protocols snmp v3 usm-user pica8test123 authentication-key "P3Ca8536bl4"
set protocols snmp v3 usm-user pica8test123 privacy-mode "des"
set protocols snmp v3 usm-user pica8test123 privacy-key "P3Ca8536bl8"
```