

NetConsole

APNIC60

Open-source tool
to configure multiple switches

DA NANG, 2025

PRESENTED BY

THANG PHAN

Table of Contents

1. PROBLEM

2. NETCONSOLE

3. KEY FEATURES

4. ARTITECTURE

5. PYTHON LIBRARIES

6. FUTURE WORK

Problems

- Many old network devices still exists: Cisco IOS, Cisco Nexus, Juniper EX,...
- Many daily tasks related to switch configuration
- Human errors in manual configuration
- Finding an IP or MAC address is simple, but process of actually time-consuming

NetConsole

04

- Open-source, centralized solution for network devices console
- Focus on “Level 1” network operations
- Reduced permissions can do on devices
- Decreased human errors in manual configuration
- Configure multiple switches

Key Features

05



Dashboard

Groups

Credentials

Switches

Interfaces

MAC

ARP

IP Intf

Group Config

Logs

User Settings

Admin

- Switches Management: System info, switches group
- Interfaces config: change VLAN access/trunk, show running-config, shutdown
- Collect information: MAC Address, ARP, IP Interface and tracking online duration with First Seen, Last Seen
- Multiple switches config

Key Features

Switches Management

Search

+ Add Switch

ID	HOSTNAME	IP ADDRESS	MODEL	VERSION
40		10.1	Nexus3000 C3132...	9.3(12)
45		10.1	Nexus3000 C3132...	9.3(12)
39		10.1	Nexus 3048 Chas...	9.3(13)
25		10.1	Nexus 3048 Chas...	7.0(3)I7(9)
26		10.1	WS-C3750G-48TS	C3750 Software ...
38		10.1	Nexus 3048 Chas...	9.3(13)
22		10.1	Nexus 3048 Chas...	7.0(3)I7(10)
18		10.1	Nexus 3048 Chas...	9.3(10)

Key Features

Interfaces Management								
10.14.1.		U43 - NEXUS 3048 CHAS...		Sync Switch Running Config		Search		
ID	INTERFACE	DESCRIPTION	STATUS	VLAN	MODE	SPEED	ACTIONS	
2486	Ethernet1/1	ID -1	connected	1403	access	1000	Show run-config	Actions
2495	Ethernet1/10	LA R	connected	1402	access	1000	Show run-config	Actions
2496	Ethernet1/11	ID ES	connected	1403	access	1000	Show run-config	Actions
2497	Ethernet1/12	LA	connected	1402	access	1000	Show run-config	Actions
2498	Ethernet1/13	iLO d	connected	1480	access	1000	Show run-config	Actions
2499	Ethernet1/14	La sd	connected	1480	access	1000	Show run-config	Actions
2500	Ethernet1/15	iLO yme	connected	1480	access	1000	Show run-config	Actions
2501	Ethernet1/16	La yme	connected	1480	access	1000	Show run-config	Actions

Key Features

MAC Addresses Management

SELECT SWITCH...			▼	🔍 Search				
ID	MAC ADDRESS	INTERFACE	VLAN	STATIC	ACTION	SWITCH	LAST SEEN	
8369	00000000003d	Ethernet1/16	1480	false	Actions ▼		3048TP_U42	2025-06-05T04:13:00.611717
10891	00000000003d	Po45	1480	false	Actions ▼		3750G_U40	2025-01-20T01:00:16.751117
48630	00000000003d	Port-channel42	1480	false	Actions ▼		_U47_E12	2025-01-22T10:29:52.195662
48710	00000000003d	Port-channel42	1480	false	Actions ▼		3048TP_U42	2025-03-14T15:47:56.489013
48916	00000000003d	Port-channel42	1480	false	Actions ▼		_U45_E12	2025-03-26T10:12:10.310824
27060	000000000315	Port-channel3	805	false	Actions ▼		1_U29	2024-10-16T01:06:11.586626
27445	000000000315	Port-channel3	805	false	Actions ▼		2_U27	2024-10-16T01:06:21.871650
26780	000000000315	Port-channel15	805	false	Actions ▼		Route	2024-10-16T01:06:37.851326

Key Features

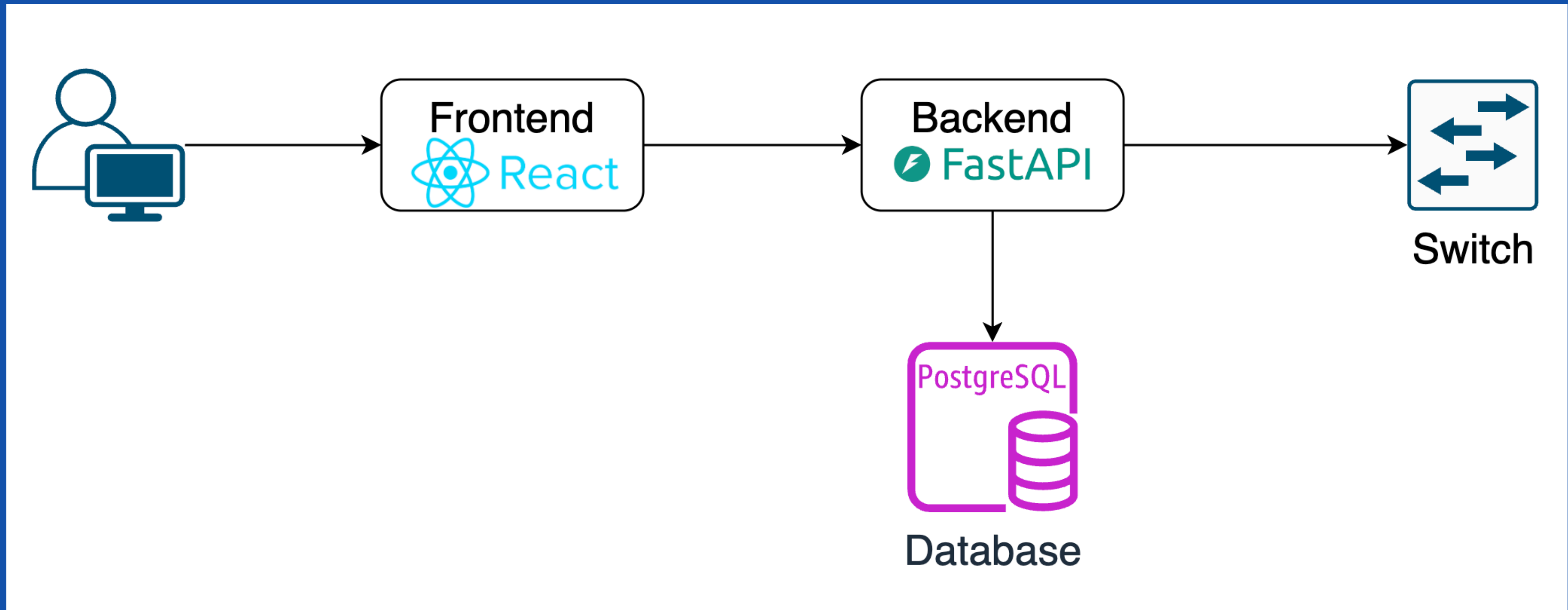
IP Interfaces Management						
10.1 - NEXUS3000 C3132Q CHASSIS			Search			
ID	INTERFACE	IPV4	HOSTNAME	ACTION	LAST SEEN	
459	Vlan1400	10.1.1.9		Actions ▾	2025-01-22T10:29:52.243539	
454	Vlan1401	10.1.1.24		Actions ▾	2025-01-22T10:29:52.243539	
460	Vlan1401	10.1.1.4		Actions ▾	2025-01-22T10:29:52.243539	
455	mgmt0	10.1.1.24		Actions ▾	2025-03-13T03:12:46.007884	
461	Vlan1402	10.1.1.4		Actions ▾	2025-01-22T10:29:52.243539	
462	Vlan1403	10.1.1.4		Actions ▾	2025-01-22T10:29:52.243539	
463	Vlan1404	10.1.1.4		Actions ▾	2025-01-22T10:29:52.243539	
464	Vlan1407	10.1.1.4		Actions ▾	2025-01-22T10:29:52.243539	
457	Vlan1481	10.1.1.136/25		Actions ▾	2025-01-22T10:29:52.243539	

Key Features

Arps Management								
SELECT SWITCH...				Search				
ID	IP ADDRESS	MAC ADDRESS	INTERFACE	SWITCH	ACTION	FIRST SEEN	LAST SEEN	
47	10.1.1.39	0050.56.80.05	Vlan1130	Vlan1130	Actions	2024-06-02T15:52:22.666322	2024-09-26T00:00:00.000000	
52	10.1.1.44	0050.56.80.09	Vlan1130	Vlan1130	Actions	2024-06-02T15:52:22.666322	2024-09-26T00:00:00.000000	
53	10.1.1.45	0050.56.80.08	Vlan1130	Vlan1130	Actions	2024-06-02T15:52:22.666322	2024-09-26T00:00:00.000000	
3045	10.1.1.243	5040.00.00.0d	vlan.1492	Fabric	Actions	2024-07-04T10:03:46.999224	2024-08-15T00:00:00.000000	
60	10.1.1.53	0050.56.80.03	Vlan1130	Vlan1130	Actions	2024-06-02T15:52:22.666322	2024-09-26T00:00:00.000000	
75	10.1.1.71	0050.56.80.0a	Vlan1130	Vlan1130	Actions	2024-06-02T15:52:22.666322	2024-09-26T00:00:00.000000	
76	10.1.1.72	0050.56.80.04	Vlan1130	Vlan1130	Actions	2024-06-02T15:52:22.666322	2024-09-26T00:00:00.000000	
77	10.1.1.73	0050.56.80.02	Vlan1130	Vlan1130	Actions	2024-06-02T15:52:22.666322	2024-09-26T00:00:00.000000	
79	10.1.1.75	0050.56.80.04	Vlan1130	Vlan1130	Actions	2024-06-02T15:52:22.666322	2024-09-26T00:00:00.000000	

Architecture

11



Python libs

12

- nornir-netmiko: access switches and configure multiple switches
- napalm: get switches information in json data
- ttp - Template Text Parser: parse configuration

Future work

- Interfaces mode: layer 2 security features
- Dashboard management: DHCP Snooping
- Source of truth: netbox
- Configuration revision number

Thank you

- Contact: Thang Phan
- Email: thangphan205@gmail.com
- Linkedin: [linkedin.com/in/thang-phan-vietnam](https://www.linkedin.com/in/thang-phan-vietnam)
- NetConsole: <https://github.com/thangphan205/netconsole>
- NetConsole Video demo: <https://www.youtube.com/watch?v=HtHIZleYdnw>
- My Youtube Channel (Vietnamese): @NetworkThucChien