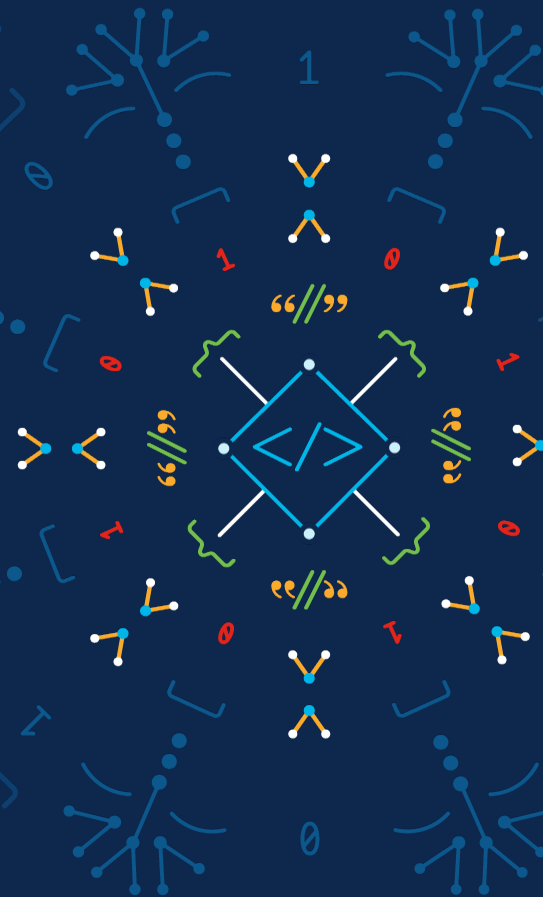


NSO Device Statistics Utility

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12th May 2022



Work Smarter
Rather Harder

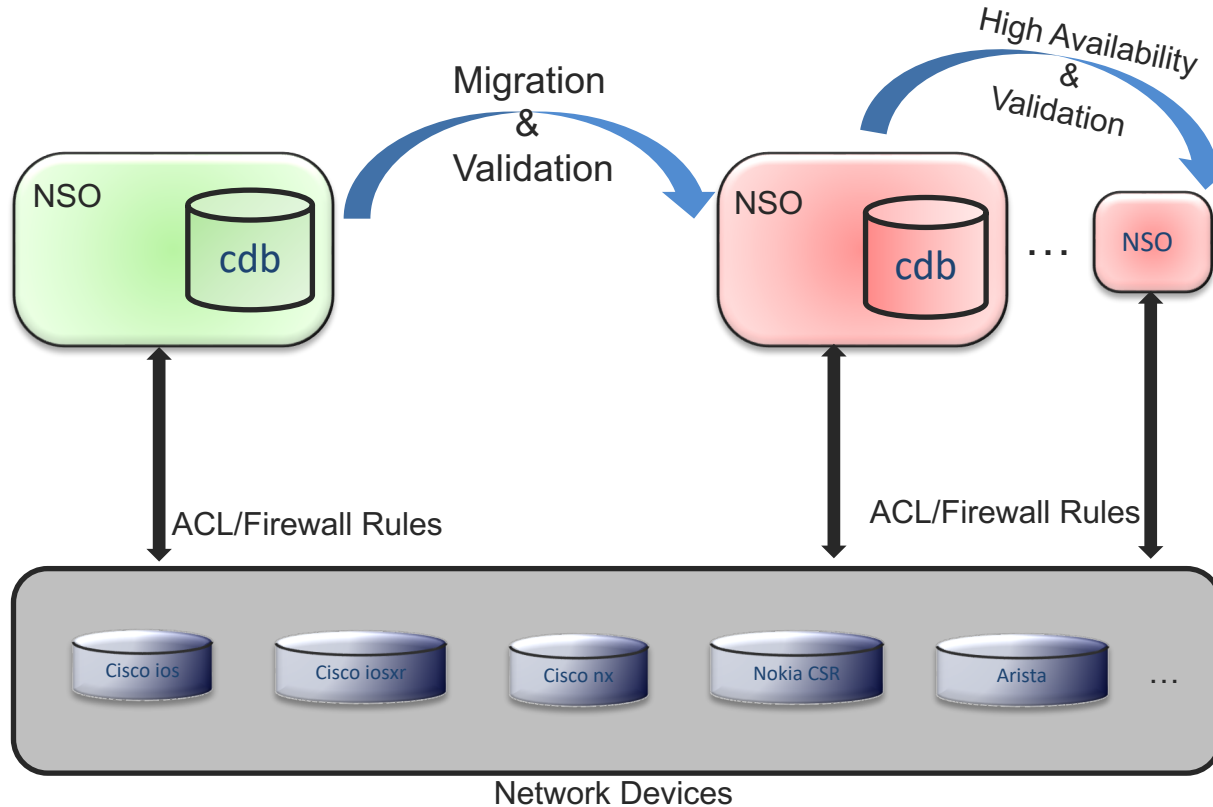


Agenda

- ❖ Why Device Statistics?
- ❖ Device Statistics Information
- ❖ Server Details for Device Statistics Report
- ❖ Command Line Arguments Info
- ❖ Demo & Overview of Reports
- ❖ SP Case Study
- ❖ Questions/Comments/Suggestions

Overview

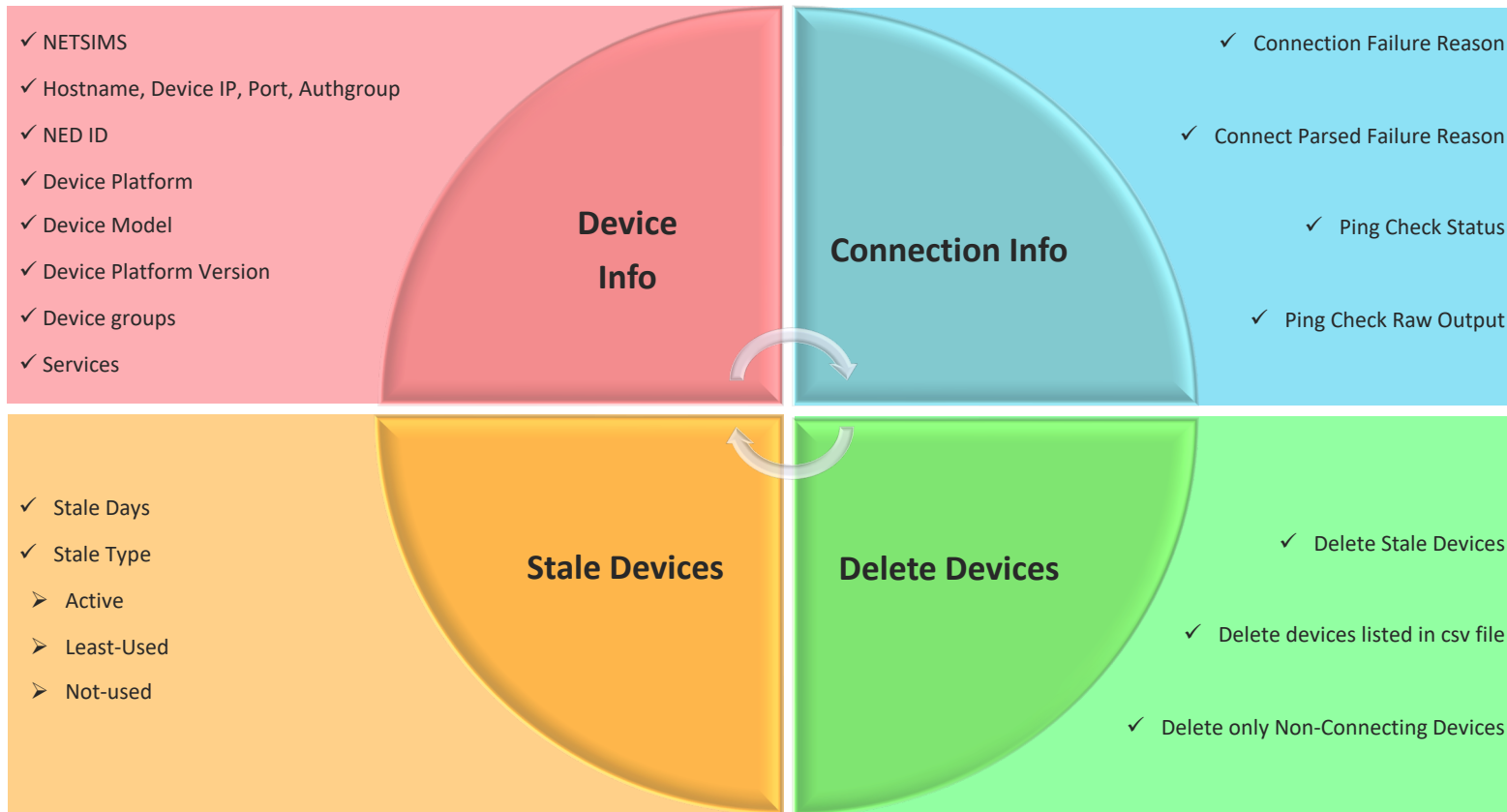
Why Device Statistics?



In NSO: ~25000 devices

- How many devices are connecting/not connecting? (ACL/Firewall rules impl..)
- How many devices are active/stale?
- Each device belongs to how many device groups?
- Each device services?

Device Statistics Information



Command Line Options

Parallel Processing

- Enable/Disable
- Max Parallel Threads
- Max Pool Usage Threshold

Device Source

- Directly gather from NSO
- NED based Filter
- Pass Device List as input parameter
- Pass Devices List via CSV
- Option to start from particular Device
- Group name lookup from CSV Input

Devices Housekeeping

- Delete Devices
 - Stale
 - Non-Connecting Devices
- Dry Run
- Deletion Confirmation
- Skip Deletion for devices with Services

Other Options

- Define Stale Days Threshold
- Ignore NETSIM
- Option to Skip Collecting Params
 - Device Group
 - Dependant Services
 - Platform Details
 - Auth Group
- Environment Selection
- Primary & Secondary Server Selections

Scenario A: Standalone Node Analysis

Server Details

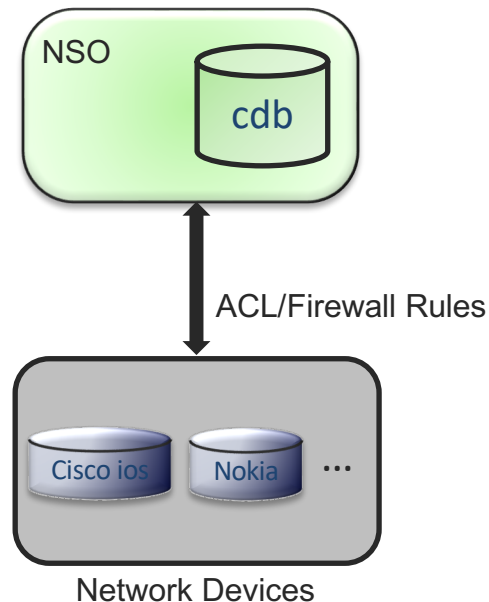
```
{
  "cisco-dev": [
    {
      "server1": {
        "ip": "10.122.5.222",
        "port": "8080",
        "protocol": "http",
        "role": "standalone"
      }
    }
  ]
},
```

Command line options

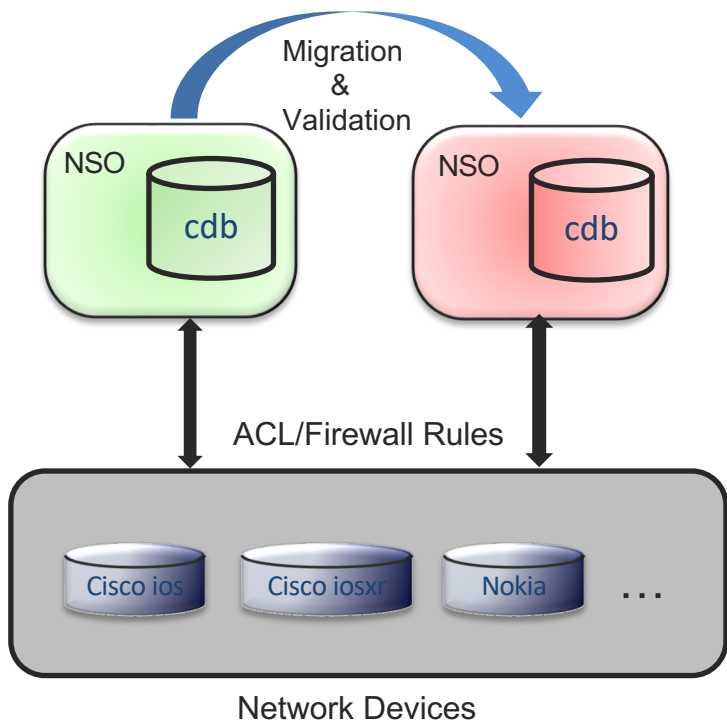
```
"cmd-options":{
  "selected-environment":"cisco-dev",
  "primary-server":"server1",
  "secondary-servers":""
}
```

Running the script:

```
$ python2 Compare_Devices_Parallel_Processing.py
```



Scenario B: Migration Analysis



Server Details

```
{
  "cisco-dev": [
    {
      "server1": {
        "ip": "10.122.5.222",
        "port": "8080",
        "protocol": "http",
        "role": "standalone"
      }
    },
    {
      "server2": {
        "ip": "100.126.240.87",
        "port": "8080",
        "protocol": "http",
        "role": "standalone"
      }
    }
  ]
},
```

Command line options

```
"cmd-options":{
  "selected-environment": "cisco-dev",
  "primary-server": "server1",
  "secondary-servers": "server2"
}
```

Running the script:

```
$ python2 Compare_Devices_Parallel_Processing.py
```

Scenario C: HA Nodes Analysis

Server Details

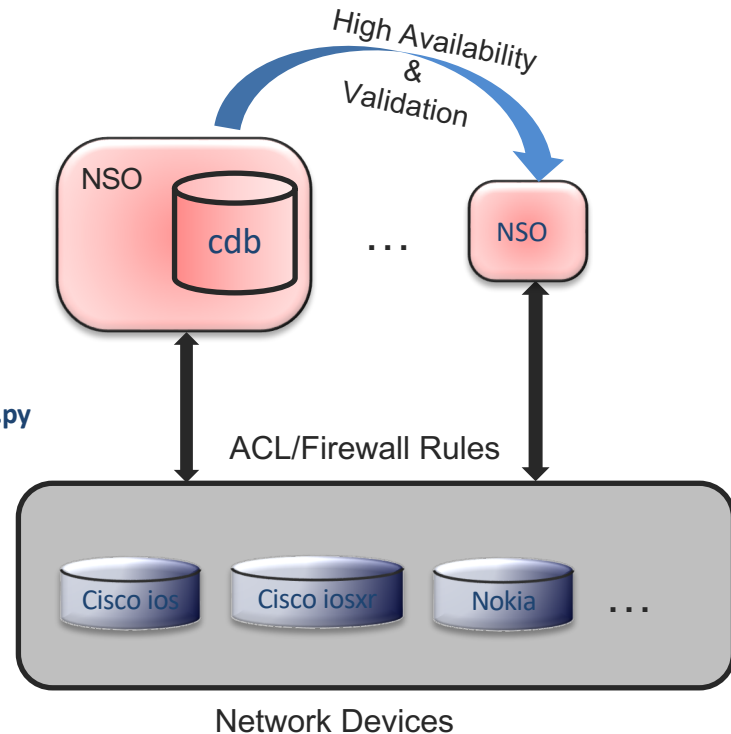
```
{
  "cisco-dev": [
    {
      "server1": {
        "ip": "10.122.5.222",
        "port": "8080",
        "protocol": "http",
        "role": "master"
      }
    },
    {
      "server2": {
        "ip": "100.126.240.87",
        "port": "8080",
        "protocol": "http",
        "role": "slave"
      }
    }
  ]
},
```

Command line options

```
"cmd-options":{
  "selected-environment":"cisco-dev",
  "primary-server":"server1",
  "secondary-servers": "server2"
}
```

Running the script:

```
$ python2 Compare_Devices_Parallel_Processing.py
```



Demo

mnannapa — nsoadmin@nsonode1:~ — ssh nsonode1@52.170.81.0 — 79×16

[nsoadmin@nsonode1 ~]\$

mnannapa — nsoadmin@nsonode2:~ — ssh nsonode2@40.71.114.95 — 79×17

[nsoadmin@nsonode2 ~]\$

mnannapa — root@nsonode1:/home/nsonode1/device-statistics-utility — ssh nsonode1@52.170.81.0 — 196×33

[root@nsonode1 device-statistics-utility]#

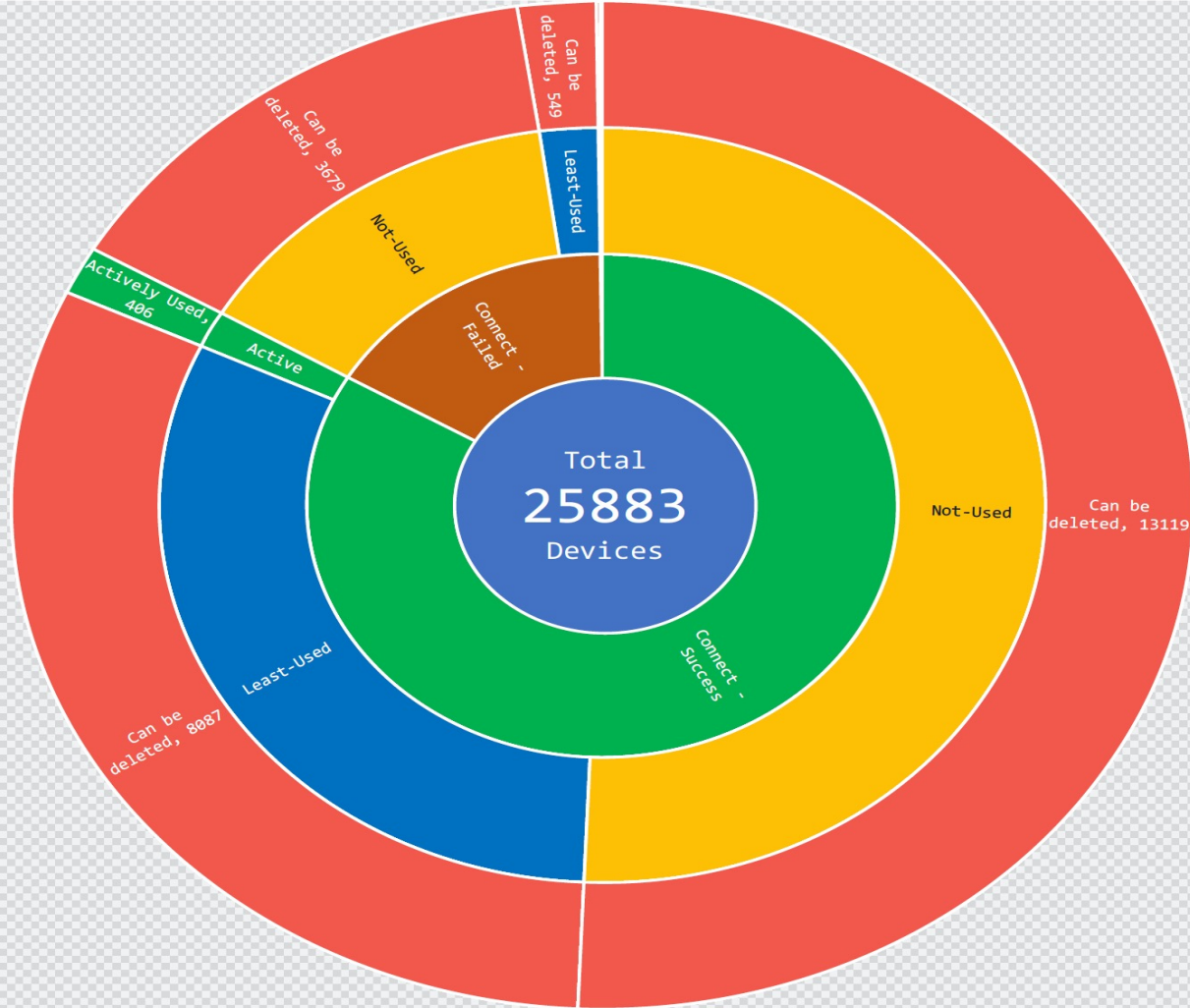


	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Device	server1_device_exist	server1_address_port	server1_auth_group	server1_is_netsim	server1_connect_status	server1_network_id	server1_platform_name	server1_platform_version	server1_platform_model	server1_connect_from	server1_connect_port	server1_os_reachability
2	DEVICE1	TRUE	10.10.10.1	default	FALSE	Failed	cisco-ios-xr	ios-xr	6.3.3	NCS-5500	Failed to connect to device DEVICE1: connection refused: NEDCOM CONNECT: Connection refused (Connection refused) in new state	Connection refused	PING 10.10.10.1 (10.10.10.1) 56(84) bytes of data. 64 bytes from 10.10.10.1: icmp_seq=1 ttl=247 time=15.1 ms --- 10.10.10.1 ping statistics --- 1 packets transmitted, 1 received, 0% packet loss, time 0ms rtt min/avg/max/mdev = 15.164/15.164/15.164/0.000 ms
3	DEVICE2	TRUE	10.10.10.2	default	FALSE	Success	cisco-ios	ios-xe	16.10.1d	cBR-8	NA	NA	NA
4	DEVICE3	TRUE	10.10.10.3	default	FALSE	Success	cisco-ios	ios-xe	16.10.1d	cBR-8	NA	NA	NA
5	DEVICE4	TRUE	10.10.10.4	default	FALSE	Success	cisco-ios	ios-xe	16.10.1d	cBR-8	NA	NA	NA

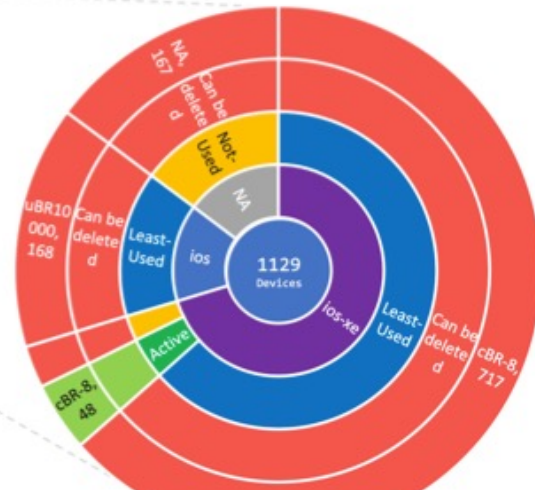
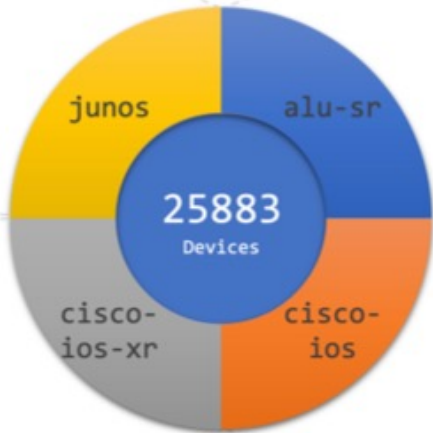
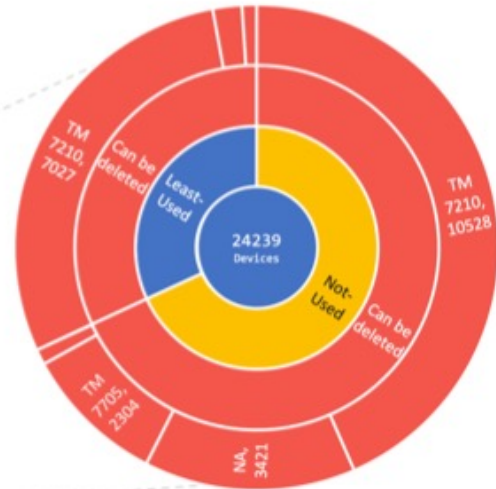
[illegible]

	A	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Device	server2_connect_status	server2_ne_d_id	server2_pla_tform_name	server2_pla_tform_version	server2_pla_tform_model	server2_connect_fr	server2_connect_pfr	server2_os_reachability	server2_os_rp	server2_dep_device_groups	server2_dep_service_list	server2_stale_days	server2_stale_type	server2_deletion_status	server2_deletion_status_description	Tumaround time(Seconds)
2	DEVICE1	Failed	cisco-ios-xr	ios-xr	6.3.3	NCS-5500	Failed to connect to device DEVICE1: connection refused: NEDCOM CONNECT: Connection refused (Connection refused) in new state	Connection refused	PING 10.10.10.1 (10.10.10.1) 56(84) bytes of data. 64 bytes from 10.10.10.1: icmp_seq=1 ttl=247 time=15.1 ms --- 10.10.10.1 ping statistics --- 1 packets transmitted, 1 received, 0% packet loss, time 0ms rtt min/avg/max/mdev = 15.164/15.164/15.164/0.000 ms	Success	GROUP1		172	Active	Can be deleted	NA	8.258873
3	DEVICE2	Success	cisco-ios	ios-xe	16.10.1d	cBR-8	NA	NA	NA	NA	GROUP1, GROUP2		25	Active	NA	NA	10.860312
4	DEVICE3	Success	cisco-ios	ios-xe	16.10.1d	cBR-8	NA	NA	NA	NA	GROUP1, GROUP2		25	Active	NA	NA	11.612515
5	DEVICE4	Success	cisco-ios	ios-xe	16.10.1d	cBR-8	NA	NA	NA	NA	GROUP1		25	Active	NA	NA	11.69391
							Failed to connect to device DEVICES: connection refused:	Connection	PING 10.10.10.5 (10.10.10.5) 56(84) bytes of data. 64 bytes from 10.10.10.5: icmp_seq=1 ttl=247 time=14.5 ms						Can be		

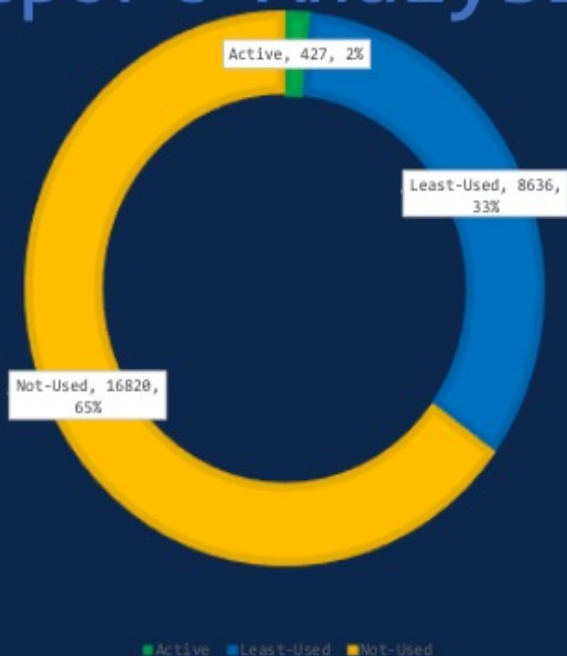
Case Study of Large SP



Platform wise



Report Analysis

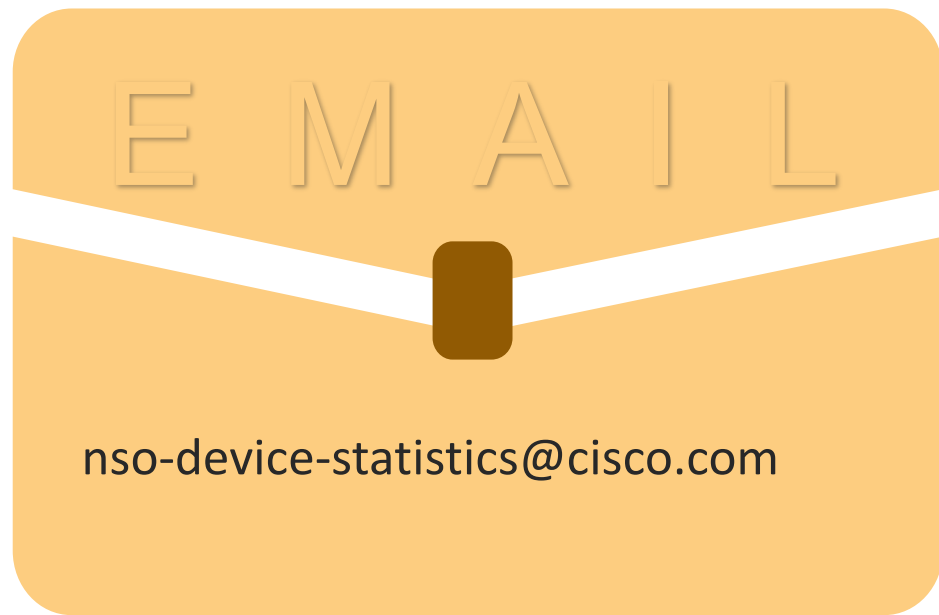


- 16820 Devices can be removed directly without any impact
- 8636 Devices were not used/touched for more than 200 days
- Only 427 Devices are actively used
- Removing *Least-used* and *not-used* devices will improve the NSO Performance Drastically

Row Labels	Failed	Retry Failed - Unable to fetch ssh keys	Success	Grand Total
Active	21		406	427
Least-Used	549		8087	8636
Not-Used	3679	22	13119	16820
Grand Total	4249	22	21612	25883



- Want to know more ?





The bridge to possible