

LAB GUIDE


Monitoring CX Devices

IMPORTANT! THIS GUIDE ASSUMES THAT THE AOS-CX OVA HAS BEEN INSTALLED AND WORKS IN GNS3 OR EVE-NG. PLEASE REFER TO GNS3/EVE-NG INITIAL SETUP LABS IF REQUIRED.

AT THIS TIME, EVE-NG DOES NOT SUPPORT EXPORTING/IMPORTING AOS-CX STARTUP-CONFIG. THE LAB USER SHOULD COPY/PASTE THE AOS-CX NODE CONFIGURATION FROM THE LAB GUIDE AS DESCRIBED IN THE LAB GUIDE IF REQUIRED.


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


Aruba Virtual Enablement Center


Starting the lab

- On the left-hand menu, click on the  icon
- Select **▶ Start all nodes**
- Wait until all nodes show as running **▶ Node** and their icon changed from grey to color
Note: the start process may take a few minutes


Accessing the consoles

- On the left-hand menu, click on the  icon
- Select **▶ Console To All Nodes**
- Optional: to expand each console window to a full web page, click on the arrow icon  at its top left


When finished

- Save the configuration on each console
- Close all console (windows and or browser tabs)
- On the left-hand menu, click on the  icon
- Select **■ Stop all nodes**

Returning to Lab Menu

- 

Monitoring CX Switches



SwitchA

- Objective
At the end of this workshop, you should be able to understand how to monitor basic resources for Aruba CX system level events. The main goal is to ensure users understand how to monitor Aruba CX devices for system level events.

Important
Monitoring discussed here is available on Aruba CX 8400 8360,8325,8320,6400,6300,6200,6100 Switches.

Resources

- Aruba CX 8400 Datasheet
- Aruba CX 8360 Datasheet
- Aruba CX 8325 Datasheet
- Aruba CX 8320 Datasheet
- Aruba CX 6400 Datasheet
- Aruba CX 6300 Datasheet
- Aruba CX 6200 Datasheet
- Aruba CX 6100 Datasheet
- Aruba CX Diagnostics and Usability Guide (8320,8325,8360)

Lab Overview

At the end of this workshop, you should be able to understand how to monitor resources for Aruba CX system level events.

The main goal is to ensure users understand how to monitor CX devices for system level events.

This lab guide will discuss the various ways users can monitor CX resources as well as the switch operating environment.

Examples of the types of monitoring discussed in this guide are as follows:

- Monitoring CPU/memory usage
 - Top CPU
 - Top Memory

- Show system resource-utilization
- Monitoring the environment
 - Show boot-history
 - Show events ?
 - Show capacities
 - Show capacities-status
 - Show environment (Fan / Temp / Power-Supply)
 - Show tech

Lab Tasks

Task 1 – Lab setup

- Change hostname as desired:
hostname ...

Task 2 – Monitoring CPU and memory usage

For this task use the Top and Show commands to monitor and review CPU, memory, and system resource utilization.

Log into the console and run the following commands:

- To view CPU utilization type:
 - top cpu

```
switch# top cpu
top - 20:43:01 up 2:03, 1 user, load average: 0.09, 0.14, 0.11
Tasks: 175 total, 2 running, 144 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.0 us, 10.0 sy, 0.0 ni, 90.0 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 2045580 total, 626864 free, 928284 used, 490432 buff/cache
KiB Swap: 0 total, 0 free, 0 used. 1008200 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM     TIME+ COMMAND
 579 root        20   0 126772 17140 7140 S  9.1  0.8   0:14.58 /usr/bin/hpe-mvrpd --detach --pidfile -vS+
18864 admin      20   0  15616  2196 1764 R  9.1  0.1   0:00.02 /usr/bin/top -b -n 2 -c -o %CPU -w 110 -d+
   1 root        20   0  31192  5872 3400 S  0.0  0.3   0:05.68 /sbin/init
   2 root        20   0     0     0     0 S  0.0  0.0   0:00.00 [kthreadd]
   4 root         0 -20     0     0     0 I  0.0  0.0   0:00.00 [kworker/0:0H]
   6 root         0 -20     0     0     0 I  0.0  0.0   0:00.00 [mm_percpu_wq]
   7 root        20   0     0     0     0 S  0.0  0.0   0:01.08 [ksoftirqd/0]
   8 root        20   0     0     0     0 R  0.0  0.0   0:32.08 [rcu_preempt]
   9 root        20   0     0     0     0 I  0.0  0.0   0:00.17 [rcu_sched]
  10 root        20   0     0     0     0 I  0.0  0.0   0:00.00 [rcu_bh]
  11 root        rt    0     0     0     0 S  0.0  0.0   0:00.00 [migration/0]
  12 root        rt    0     0     0     0 S  0.0  0.0   0:00.01 [watchdog/0]
  13 root        20   0     0     0     0 S  0.0  0.0   0:00.00 [cpuhp/0]
  14 root        20   0     0     0     0 S  0.0  0.0   0:00.00 [kdevtmpfs]
  15 root         0 -20     0     0     0 I  0.0  0.0   0:00.00 [netns]
  17 root        20   0     0     0     0 S  0.0  0.0   0:00.00 [khungtaskd]

-- MORE --, next page: Space, next line: Enter, quit: q
switch#
```

- To view Memory utilization type:
 - top memory

```
switch# top memory
top - 20:48:48 up 2:09, 1 user, load average: 0.10, 0.13, 0.10
Tasks: 175 total, 1 running, 144 sleeping, 0 stopped, 0 zombie
%Cpu(s): 9.1 us, 9.1 sy, 0.0 ni, 81.8 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 2045580 total, 624964 free, 928468 used, 492148 buff/cache
KiB Swap: 0 total, 0 free, 0 used. 1006948 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR S  %CPU  %MEM    TIME+  COMMAND
  1018 root        20   0  431540 80196 33148 S   0.0   3.9   0:24.45 /usr/bin/prometheus --storage.tsdb.retent+
    569 root        20   0  547344 79708 19656 S   0.0   3.9   0:06.73 /usr/bin/hpe-restd
  6672 root        20   0  772700 59708  8036 S   0.0   2.9   0:11.46 /usr/sbin/simple_switch -i 64@veth250 --t+
  6975 root        20   0  631236 57312 30488 S   0.0   2.8   0:53.36 /usr/bin/hpe-routing --detach --pidfile --+
  6664 root        20   0  540420 53376 37220 S   0.0   2.6   0:32.69 /usr/sbin/ops-switchd --no-chdir --pidfil+
  8449 admin       20   0  462696 48904 25092 S   0.0   2.4   0:01.26 -vtysh
  1015 root        20   0  361372 47152 15892 S   0.0   2.3   0:07.83 /usr/bin/hpe-tsdbd
   334 root        20   0  155660 44492  7352 S   0.0   2.2   0:07.36 python /usr/bin/dhcp_server_adapter
  1292 root        20   0  161844 44148  5004 S   0.0   2.2   0:10.72 python /usr/bin/ops_mgmtintfcfg --detach +
   583 root        20   0  237208 41812  8484 S   0.0   2.0   0:13.49 /usr/bin/hpe-pvstd --detach --pidfile -vS+
  6311 root        20   0  491876 36864 12544 S   0.0   1.8   0:02.65 /usr/bin/vsx-syncd
  6833 root        20   0  521380 35616 12828 S   0.0   1.7   0:04.25 /usr/bin/hpe-policyd
  6299 root        20   0  564056 35272 11816 S   0.0   1.7   0:03.15 /usr/bin/hpe-config ckptpostcfg
  6983 root        20   0  272016 26664 14304 S   0.0   1.3   0:02.21 /usr/bin/port-accessd --detach --pidfile +
   707 root        20   0  175288 20328 15164 S   0.0   1.0   0:10.93 /usr/bin/pimd --detach --pidfile -vSYSLOG+
  6306 root        20   0  219856 20312  7928 S   0.0   1.0   0:01.11 /usr/bin/simplivityd
  7385 root        20   0  197124 18760 13284 S   0.0   0.9   0:03.45 /usr/bin/captiveportald --pidfile -vSYSLO+
   645 root        20   0  740188 18084 12508 S   0.0   0.9   1:57.88 /usr/bin/ndmd --pidfile -vSYSLOG:INFO

-- MORE --, next page: Space, next line: Enter, quit: q
```

- To view system resource-utilization type:
 - o show system resource-utilization

```
switch# show system resource-utilization

System Resources:
Processes: 162
CPU usage(%): 1
Memory usage(%): 50
Open FD's: 1574

Process                CPU Usage(%)  Memory Usage(%)  Open FD's
-----
(sd-pam)                0              0                  7
aautilscfgd            0              1                  11
acctd                   0              0                  8
acctsyslogd            0              0                  6
acpi_thermal_pm        0              0                  0
acpid                   0              0                  9
agetty                  0              0                  4
ata_sff                 0              0                  0
audispd                 0              0                  7
auditd                  0              0                  9
bannerd                 0              1                  9
bash                    0              0                  4
bfdd                    0              1                  13
bluetoothd             0              0                  12

-- MORE --, next page: Space, next line: Enter, quit: q
```

```

bond0          0          0          0
btd            0          1         12
captiveportal  0          1         79
cdpd          0          1         12
certmgr       0          1         11
classifier    0          1         10
cpuhp/0      0          0          0
crash-handler 0          0          9
crond        0          0          6
crypto       0          0          0
dbus-daemon  0          0         15
dhcp-options  0          0          9
dhcp-server-  0          2          8
ada
dm_bufio_cache 0          0          0
dnsmasq      0          0          5
ext4-rsv-conver 0          0          0
external_storag 0          1         10
e
fand         0          1         10
fibapp       0          0         11
hpe-buttd   0          1         10
hpe-cardd   0          1         15
hpe-config  0          2          8
hpe-credmgr  0          1         10
-- MORE --, next page: Space, next line: Enter, quit: q

```

Task 3 – Monitoring the environment

For this task use the various show commands detailed here to review event, capacities, boot-history, and the environment.

Log into the console and run the following commands:

- To view the devices boot-history type:
 - `show boot-history` (note, this command will not work with the OVA – below is output from an Aruba CX 8360)

```

Switch1(config)# show boot-history
Management module
=====

Index : 1
Boot ID : cda3046641124f9bb37d97de2ca68a42
Current Boot, up for 5 hrs 17 mins 34 secs

Index : 0
Boot ID : e9fbef5a7dfb480d99ff6f71ef1aaa14
30 Mar 21 15:37:12 : Reboot requested by user

Index : 3
Boot ID : d531577621444e87b3782c62fecc579d
30 Mar 21 10:05:09 : Reboot requested by user

Index : 2

```

```
Boot ID : bae2a2ac234246ff964a68c633ddc6ec
30 Mar 21 10:01:39 : Reboot requested by user
Switch1(config)#
```

- To view the event list type:

- o show events

```
switch# show events
-----
Event logs from current boot
-----
2021-03-30T18:39:55.161781+00:00 switch aaautilsctgd[526]: Event|2302|LOG_INFO|AMM|1/1|TACACS Server Group add : tacacs (default)
2021-03-30T18:39:55.162184+00:00 switch aaautilsctgd[526]: Event|2303|LOG_INFO|AMM|1/1|RADIUS Server Group add : radius (default)
2021-03-30T18:40:12.488012+00:00 switch intfd[576]: Event|402|LOG_INFO|AMM|1/1|Interface port admin set to down for bridge_normal interface
2021-03-30T18:40:12.505459+00:00 switch lldpd[590]: Event|109|LOG_INFO|AMM|1/1|Configured LLDP tx-delay to 2
2021-03-30T18:40:12.536698+00:00 switch btd[572]: Event|8001|LOG_INFO|AMM|1/1|Bluetooth has been enabled
2021-03-30T18:40:12.783491+00:00 switch lacpd[578]: Event|1307|LOG_INFO|AMM|1/1|LACP system ID set to 08:00:09:bd:65:47
2021-03-30T18:40:13.002456+00:00 switch hpe-cardd[659]: Event|3221|LOG_DEBUG|AMM|1/1|Line module 1/1 device initialization started
2021-03-30T18:40:13.044235+00:00 switch hpe-cardd[659]: Event|3201|LOG_INFO|AMM|1/1|Line module 1/1 inserted
2021-03-30T18:40:13.264684+00:00 switch hpe-sysmond[3795]: Event|6303|LOG_INFO|AMM|1/1|Current system memory usage for module 1/1 is 28%
2021-03-30T18:40:13.690624+00:00 switch vrfmgrd[574]: Event|5401|LOG_INFO|AMM|1/1|Created a vrf entity e7f929ad-a9dc-4024-9280-d94e9f4550ef
2021-03-30T18:40:13.749057+00:00 switch ztpd[6340]: Event|8701|LOG_INFO|AMM|1/1|ZTP service has started
2021-03-30T18:40:13.873087+00:00 switch vrfmgrd[574]: Event|5401|LOG_INFO|AMM|1/1|Created a vrf entity 6ad3adcd-4742-4d62-9c57-a1d034446724
2021-03-30T18:40:14.941961+00:00 switch bfd[674]: Event|7302|LOG_INFO|AMM|1/1|BFD was disabled
2021-03-30T18:40:15.382388+00:00 switch intfd[576]: Event|402|LOG_INFO|AMM|1/1|Interface port admin set to down for 1/1/5 interface
2021-03-30T18:40:15.393368+00:00 switch intfd[576]: Event|402|LOG_INFO|AMM|1/1|Interface port_admin set to down for 1/1/9 interface
2021-03-30T18:40:15.399551+00:00 switch intfd[576]: Event|402|LOG_INFO|AMM|1/1|Interface port_admin set to down for 1/1/3 interface
2021-03-30T18:40:15.399767+00:00 switch intfd[576]: Event|402|LOG_INFO|AMM|1/1|Interface port_admin set to down for 1/1/1 interface
2021-03-30T18:40:15.407784+00:00 switch intfd[576]: Event|402|LOG_INFO|AMM|1/1|Interface port_admin set to down for 1/1/6 interface
2021-03-30T18:40:15.415965+00:00 switch intfd[576]: Event|402|LOG_INFO|AMM|1/1|Interface port_admin set to down for 1/1/8 interface
2021-03-30T18:40:15.427473+00:00 switch intfd[576]: Event|402|LOG_INFO|AMM|1/1|Interface port_admin set to down for 1/1/7 interface
-- MORE --, next page: Space, next line: Enter, quit: q
```

- Note that with the show events command you have several options to filter the shown events.

```
switch# show events
-a Display event logs from previous and current boots
-c Display event logs for specified event category
-d Display event logs for specified daemon
-e Display event logs for specified event IDs
-n Display the specified number of event logs
-r Display event logs in reverse order (most recent first)
-s Display event logs as per specified severity
<CR>
```

- To view the device capacities list type:

- o show capacities

```
Switch1(config)# show capacities

System Capacities:
Capacities Name                                     Value
-----
Maximum number of active gateway vmacs configurable 16
Maximum number of BFD sessions configurable in a system 256
Maximum number of AS numbers in BGP as-path attribute 32
Maximum number of BGP as-path entries in a single aspath-list 128
Maximum number of aspath-lists 256
Maximum number of community entries in a single community-list 128
Maximum number of community-lists 256
Maximum number of equal cost paths 8
Maximum number of BGP neighbors allowed across all VRFs 256
Maximum number of BGP peer groups allowed across all VRFs 128
Maximum number of routes accepted from a BGP peer 32500
Maximum number of routes in BGP RIB 65000
Maximum number of BGP route reflector clients allowed across all VRFs 256
Maximum number of Access Control Entries configurable in a system 128000
Maximum number of Object Group Entries configurable in a system 4000
Maximum number of Object Groups configurable in a system 4000
Maximum number of Access Control Lists configurable in a system 8000
Maximum number of class entries configurable in a system 128000
Maximum number of classes configurable in a system 4000
Maximum number of entries in an Access Control List 16000
Maximum number of entries in a class 16000
Maximum number of entries in an Object Group 1024
Maximum number of entries in a policy 256
Maximum number of classifier policies configurable in a system 4000
Maximum number of policy entries configurable in a system 4000
Maximum number of dynamic VLANs that can be allowed using MVRP 1024
Maximum number of GBP Role Mappings 256
Maximum number of nexthops per IP ECMP group 8
Maximum number of IP neighbors (IPv4+IPv6) supported in the system 163840
Maximum number of GRE IPv4, "IPv6 in IPv4" and "IPv6 in IPv6" tunnels in a system 127
Maximum number of IP Directed Broadcast Neighbors supported in the system 4096
Maximum number of ipsla responder sessions configurable in a system 500
Maximum number of ipsla source sessions configurable in a system 500
Maximum number of IPv4 neighbors(# of ARP entries) supported in the system 163840
Maximum number of IPv6 neighbors(# of ND entries) supported in the system 163840
Maximum number of Keychains supported in the system 64
Maximum number of Keys supported in a single Keychain 64
Maximum number of Keys supported in the system 4096
Maximum number of L2 MAC addresses supported in the system 114688
Maximum number of L3 Groups for IP Tunnels and ECMP Groups 2000
Maximum number of L3 Destinations for Routes, Nexthops in Tunnels and ECMP groups 4093
Maximum number of configurable LAG ports 54
Maximum number of members supported by a LAG port 16
Maximum number of VLANs across ports allowed in loop-protect 10240
Maximum number of configurable VSX ports 54
Maximum number of members supported by a MCLAG port 16
Maximum number of IGMP/MLD groups supported 8192
Maximum number of IGMP/MLD snooping groups supported 8192
Maximum number of IGMP/MLD static groups supported 8192
Maximum number of Mirror Sessions configurable in a system 4
Maximum number of enabled Mirror Sessions in a system 4
Maximum number of MSDP Peers supported 64
Maximum number of MSDP SA Cache entries supported 32768
Maximum number of mstp instances configurable in a system 64
Maximum number of NAE agents in a system 50
Maximum number of NAE monitors in a system 150
Maximum number of NAE scripts in a system 25
Maximum number of OSPFv2 areas configurable in the system 128
Maximum number of OSPFv2 interfaces configurable in the system 128
Maximum number of OSPFv2 interfaces per area in the system 128
Maximum number of OSPFv2 processes supported across each VRF 8
Maximum number of OSPFv3 areas configurable in the system 128
Maximum number of OSPFv3 interfaces configurable in the system 128
Maximum number of OSPFv3 interfaces per area in the system 128
Maximum number of OSPFv3 processes supported across each VRF 8
Switch1(config)#
```

- Note that with the show capacities command you have several options to filter the shown capacities.

```
Switch1(config)# show capacities
active-gateway-vmacs    Filter Active Gateways vmacs entries.
bfd                    Filter BFD entries.
bgp                    Filter BGP entries.
classifier              Filter Classifier entries.
dynamic-vlan-count     Filter Dynamic VLAN count entries.
gbp-role-mapping       Filter GBP Role MAPPING entries.
ip-ecmp                Filter IP ECMP entries.
ipsla_responder        Filter IPSLA_RESPONDER entries.
ipsla_source           Filter IPSLA_SOURCE entries.
keychain               Filter keychain entries.
l2-mac-addresses-count Filter L2 MAC Addresses Count entries.
l3-resources           Filter L3 Resources entries.
lag                    Filter LAG entries.
loop-protect           Filter Loop Protect entries.
mgmd-group-count       Filter IGMP/MLD Group entries.
mgmd-snooping-group-count Filter IGMP/MLD Snooping Group entries.
mgmd-static-group-count Filter IGMP/MLD Static Group entries.
mirroring              Filter Mirroring entries.
msdp-peer-count        Filter MSDP Peer entries.
msdp-sa-count          Filter MSDP SA Cache entries.
mstp                   Filter MSTP entries.
nae                    Filter NAE entries.
ospfv2                 Filter OSPFv2 entries.
ospfv3                 Filter OSPFv3 entries.
pim-mroute-count       Filter PIM/PIMv6 MRoute entries.
pim-nexthop-count      Filter PIM/PIMv6 Nexthop entries.
rbac                   Filter RBAC entries.
rip                    Filter RIP entries.
ripng                  Filter RIPng entries.
rpvst                  Filter RPVST entries.
smartlink              Filter SMARTLINK entries.
svi-count              Filter SVI count entries.
tunneling              Filter Tunneling entries.
udld                   Filter UDLD entries.
vlan-count             Filter VLAN count entries.
vlan-translation       Filter VLAN Translation entries.
vrrp                   Filter VRRP entries.
vsx                    Filter VSX entries.
vsx-interface-count    Filter VSX Interface entries.
vsx-peer               Displays VSX peer switch information
vxlan                  Filter VXLAN entries.
<cr>
Switch1(config)# show capacities tunneling
```

- To view the current value and maximum for each capacity type:
 - show capacities-status

```
Switch1(config)# show capacities-status

System Capacities Status
Capacities Status Name                                     Value Maximum
-----
Number of active gateway mac addresses in a system        0          16
Number of aspath-lists configured                         0          256
Number of community-lists configured                     0          256
Number of BGP neighbors configured across all VRFs       0          256
Number of BGP peer groups configured across all VRFs    0          128
Number of BGP route reflector clients configured across  0          256
Number of Access Control Entries currently configured     0        128000
Number of Object Group Entries currently configured       0          4000
Number of Object Groups currently configured              0          4000
Number of Access Control Lists currently configured       0          8000
Number of class entries currently configured              0        128000
Number of classes currently configured                   0          4000
Number of policies currently configured                  0          4000
Number of policy entries currently configured             0          4000
Number of dynamic VLANs currently learnt using MVRP     0          1024
Number of GBP Role Mappings configured                   0          256
Number of IP neighbor (IPv4+IPv6) entries                2        163840
Number of GRE IPv4, "IPv6 in IPv4" and "IPv6 in IPv6"    0          127
Number of IP Directed Broadcast neighbor entries         0          4096
Number of ipsla responder sessions currently configured  0          500
Number of ipsla source sessions currently configured     0          500
Number of IPv4 neighbor(ARP) entries                    2        163840
Number of IPv6 neighbor(ND) entries                     0        163840
Number of L3 Groups for IP Tunnels and ECMP Groups        0          2000
Number of L3 Destinations for Routes, Nexthops in ECMP   0          4093
Number of Mirror Sessions currently configured           2          4
Number of Mirror Sessions currently enabled              1          4
Number of MSDP Peers                                     0          64
Number of MSDP SA Cache entries                         0        32768
Number of mstp instances currently configured            0          64
Number of configured NAE agents currently active in the  1          50
Number of configured NAE monitors currently active in   8          150
Number of configured NAE scripts currently active in    1          25
Number of OSPFv2 areas configured in the system         3          128
Number of OSPFv2 interfaces configured in the system    1          128
Number of OSPFv3 areas configured in the system         2          128
Number of OSPFv3 interfaces configured in the system    1          128
Number of PBR Action Lists currently configured         0          256
Number of RIP interfaces configured in the system       0          32
Number of RIPng interfaces configured in the system     0          32
Number of prefix-lists configured                      0          256
Number of route-maps configured                        0          256
Number of RPVST VLANs currently configured              0          254
Number of RPVST Vports currently configured             0          2048
Number of unique GRE IPv4, "IPv6 in IPv4" and "IPv6 in  0          127
Number of unique GRE IPv4, "IPv6 in IPv4" and "IPv6 in  0          4
Number of active UDLD interface                        6          52
Number of routes (IPv4+IPv6) currently configured       3        65536
Number of IPv4 routes currently configured              2        65536
Number of IPv6 routes currently configured              1        65536
Number of VLANs currently configured                    3          4094
Number of different IPv4 VRRP virtual router groups     0          8
Number of different IPv6 VRRP virtual router groups     0          8
Number of IPv4 VRRP virtual addresses configured in a   0          1024
Number of IPv6 VRRP virtual addresses configured in a   0          512
Number of VRRP virtual router groups configured in a   0          256
Number of VXLAN Interfaces currently configured         0          1
Number of VXLAN L2VNIs currently configured             0          4093
Number of VXLAN L3VNIs currently configured            0          255
Number of VXLAN VNIs currently configured              0          4093
Number of VXLAN VTEPs currently configured             0          1024
Switch1(config)#
```

- Note that with the show capacities-status command you have several options to filter the shown capacities.


```
switch# show capacities-status
active-gateway-vmacs  Filter Active Gateways vmacs entries.
bfd                  Filter BFD entries.
bgp                  Filter BGP entries.
classifier           Filter Classifier entries.
dynamic-vlan-count  Filter Dynamic VLAN count entries.
ipsla_responder     Filter IPSLA_RESPONDER entries.
ipsla_source        Filter IPSLA_SOURCE entries.
l3-resources        Filter L3 Resources entries.
loop-protect        Filter Loop Protect entries.
mirroring           Filter Mirroring entries.
mstp                Filter MSTP entries.
nae                 Filter NAE entries.
ospfv2              Filter OSPFv2 entries.
ospfv3              Filter OSPFv3 entries.
rip                 Filter RIP entries.
ripng               Filter RIPNG entries.
rpvst               Filter RPVST entries.
tunneling           Filter Tunneling entries.
vlan-count          Filter VLAN count entries.
vrrp                Filter VRRP entries.
vsx-peer            Displays VSX peer switch information
vxlان              Filter VXLAN entries.
<cr>
```

- To view the current fan, temperature, and power-supply status type:
 - show environment
- To view the current fan, temperature, and power-supply status type:
Users can filter the
 - fan Show system fan status information
 - led Show locator LED information
 - power-supply Power supply information
 - temperature Show temperature sensor information
 - vsx-peer Displays VSX peer switch information

Note, this command will not work with the OVA – below is output from an Aruba CX 8360.

```
Switch1(config)# show environment

show environment system-airflow
System Airflow:
-----
port-to-power

show environment fan
Fan tray information
-----
Name Description Status Serial Number Fans
-----
1/1 JL714A Aruba X741 Prt2Pwr Fan ready N/A 2
1/2 JL714A Aruba X741 Prt2Pwr Fan ready N/A 2
1/3 JL714A Aruba X741 Prt2Pwr Fan ready N/A 2
Fan information
-----
Mbr/Fan or Product Serial Number Speed Direction Status RPM
Mbr/Tray/Fan Name
-----
1/1 N/A N/A slow port-to-power ok 6240
1/2 N/A N/A slow port-to-power ok 6256
1/1/1 N/A N/A slow port-to-power ok 5707
1/1/2 N/A N/A slow port-to-power ok 5163
1/2/1 N/A N/A slow port-to-power ok 5808
1/2/2 N/A N/A slow port-to-power ok 5123
1/3/1 N/A N/A slow port-to-power ok 5732
1/3/2 N/A N/A slow port-to-power ok 5113

show environment led
Mbr/Name State Status
-----
1/locator off ok

show environment power-supply
Mbr/PSU Product Serial PSU Wattage
Number Number Status Maximum
-----
1/1 JL600A CN02KGC04P OK 550
1/2 JL600A CN02KGC04Q OK 550

show environment temperature
Temperature information
-----
Mbr/Slot-Sensor Module Type Current Status
temperature
-----
1/1-CPU management-module 49.19 C normal
1/1-CPU_TZ_0 management-module 48.00 C normal
1/1-CPU_TZ_1 management-module 47.00 C normal
1/1-CPU_TZ_2 management-module 48.00 C normal
1/1-CPU_TZ_3 management-module 49.00 C normal
1/1-CPU_TZ_4 management-module 49.00 C normal
1/1-DDR management-module 41.00 C normal
1/1-LCB management-module 35.50 C normal
1/1-Port-Side-Inlet management-module 24.17 C normal
1/1-Power-Side-Outlet management-module 43.00 C normal
1/1-Switch-ASIC management-module 74.00 C normal
```

- Note that with the show environment command you have several options to filter the shown values.

```
Switch1(config)# show environment
fan          Show system fan status information
led          Show locator LED information
power-supply Power supply information
system-airflow Display System Airflow
temperature  Show temperature sensor information
vsx-peer     Displays VSX peer switch information
<cr>
```

- To view detailed information about switch features run the show tech command. If no parameters are specified, the show tech command shows information about all switch features. Technical support personnel use the output from this command for troubleshooting.
 - show tech

```
Switch1(config)# show tech
=====
Show Tech executed on Tue Mar 30 21:27:54 2021
=====
[Begin] Feature basic
=====

*****
Command : show clock
*****
Tue Mar 30 21:27:54 UTC 2021
System is configured for timezone : UTC

*****
Command : show version
*****

-----
ArubaOS-CX
(c) Copyright 2017-2021 Hewlett Packard Enterprise Development LP
-----
Version       : LL.10.07.0001CA
Build Date    : 2021-03-29 13:05:02 UTC
Build ID      : ArubaOS-CX:LL.10.07.0001CA:5bfac8fe853d:202103291217
Build SHA     : 5bfac8fe853d37db4ddb7992138440fe4f51e5be
Active Image  : primary

Service OS Version : LL.01.07.0003-internal
BIOS Version      : LL.01.0001

*****
Command : show interface dom
*****

-----
Port      Type      Lane  Temp      Voltage  Tx Bias  Rx Power  Tx Power
          (C)      (V)     (mA)     (dBm)    (dBm)
-----
1/1/1     SFP+BT    58.00  n/a       n/a      n/a      n/a
1/1/2     SFP+DAC3  n/a    n/a       n/a      n/a      n/a
1/1/3     SFP+DAC1  n/a    n/a       n/a      n/a      n/a
1/1/4     SFP+DAC1  n/a    n/a       n/a      n/a      n/a
1/1/5     SFP+DAC3  n/a    n/a       n/a      n/a      n/a
1/1/6     SFP+SR    32.87  3.30     3.52    -4.36    -1.95
1/1/17    SFP+SR    33.95  3.28     3.64    -16.66   -2.19
1/1/32    SFP+DAC1  n/a    n/a       n/a      n/a      n/a
1/1/33    QSFP+DA1  n/a    n/a       n/a      n/a      n/a
1/1/35    QSFP+DA3  n/a    n/a       n/a      n/a      n/a
1/1/36    QSFP+DA3  n/a    n/a       n/a      n/a      n/a

-----

*****
Command : show interface
*****
```

```
*****  
Command : show interface  
*****  
  
Interface 1/1/1 is up  
Admin state is up  
Link state: up for 5 hours (since Tue Mar 30 15:40:03 UTC 2021)  
Link transitions: 1  
Description:  
Hardware: Ethernet, MAC Address: 00:fd:45:67:04:51  
MTU 1500  
Type SFP+BT  
Full-duplex  
qos trust cos  
Speed 10000 Mb/s  
Auto-negotiation is on  
Flow-control: off  
Error-control: off  
VLAN Mode: access  
Access VLAN: 3998  
Rate collection interval: 300 seconds  
  
Rate                RX                TX                Total (RX+TX)  
-----  
Mbits / sec         0.00                0.00                0.00  
KPkts / sec         0.00                0.00                0.00  
-- MORE --, next page: Space, next line: Enter, quit: q
```

- Note that with the show tech command you have several options to filter the shown values.

```

switch# show tech
aaa                Authentication Authorization and Accounting
acl                Access Control Lists
basic              Show Tech Basic
bfd                BFD Information
bgp                Border Gateway Protocol
bluetooth          show bluetooth information
cdp                show cdp information
config             Switch Configuration Management
copp               Control Plane Policing
dhcp-relay         Dynamic Host Configuration Protocol Relay
dhcp-server        Dynamic Host Configuration Protocol Server
dhcpv4-snooping    Dynamic Host Configuration Protocol Snooping
dhcpv6-relay       Dynamic Host Configuration Protocol Version 6
Relay
dhcpv6-server      Dynamic Host Configuration Protocol Version 6
Server
dhcpv6-snooping    Dynamic Host Configuration Protocol Version 6
Snooping
dns-client         DNS client
dynautz            Radius Dynamic Authorization
external-storage   External Storage Drive
gre_ipv4           Generic Routing Encapsulation (GRE) IPv4 Tunnel
igmp               Internet Group Management Protocol
interface          Interfaces
ip-lockdown        IP source lockdown
ip-sla             ip service level agreement
ip_6in4            IPv6 in IPv4
ip_6in6            IPv6 in IPv6
ipv6-ra            IPv6 Router Advertisement
irdp               ICMP Router Discovery Protocol
l2mac              L2 MAC Table
lacp               Link Aggregation Control Protocol
lldp               Link Layer Discovery Protocol
local-file         Capture command-output into a local-file
log-rotate         Log Rotation
loop-protect       Loop Protect
loopback           Loopback Interface
mgmt               Management interface
mirror             Mirroring
mld                Multicast Listener Discovery Protocol
modules            Module Information
msdp               Multicast Source Discovery Protocol
mstp               Multiple Spanning Tree Protocol
mvrp               Multiple VLAN Registration Protocol
nae                Network Analytics Engine
nd-snooping        Neighbor Discovery Snooping
ndmd               Neighbor Discovery Management
ntp                Network Time Protocol
ospfv2             Open Shortest Path First version 2 Protocol
ospfv3             Open Shortest Path First version 3 Protocol
pbr                Policy Based Routing
pim                Protocol-Independent Multicast (PIM Sparse)
pim6               Protocol-Independent Multicast IPv6 (PIM6 Sparse)
pki                PKI

```

