Default Settings for CoPP

NOTE:

CoPP configures control policy of the traffic from the ASIC to CPU. It is a very sensitive process of the whole switch OS. Any incorrect setting could impact the stability or could even paralyze the normal network operation. **It is therefore highly recommended to KEEP the default configurations of CoPP to ensure the system and network stability.**

Default Queue Mapping Policy

By default, CoPP provides 24 CPU queues for data forwarding that would have a default scheduling weight. The system pre-defines 15 types of control plane protocols mapping from queue 8 to 22. The default queue mapping policy is as follows.

Table 1. Default Queue Mapping Policy

Protocols	CPU Queue	Default Scheduling Weight
Reserved	23	-
BPDU	22	32
LACP	21	32
LLDP	20	32
ARP	19	32
NDP	18	32
BFD	17	16
MLAG	16	16
MLAG-MAC-SYNC	15	16
BGP	14	16
OSPF	13	16
RIP	12	16
DHCP	11	16
VRRP	10	16
IGMP	9	16
PIM	8	16
Reserved	7	-
Reserved	6	-
Reserved	5	-
Reserved	4	-
Reserved	3	-
Reserved	2	-
Reserved	1	-
Default*	0	0

Reserved: Reserved CPU queues indicate the CPU queues that have not been used by the system pre-defined queue mapping settings. For user-defined CoPP policy, it is recommended to use the reserved queues for queue mapping settings.

Default*: The flow of traffic directed to switch CPU will be sent to CPU queue 0 when the traffic matches no firewall filter rule.

But for the packet with an Inet Precedence or DSCP value, it will not always be sent to CPU queue 0 when the traffic matches no firewall filter rule. When you configure the classifier to classify services on different inbound interfaces by using **set class-of-service classifier trust-mode dscp** and **set class-of-service interface classifier** commands. The packets will be sent to the CPU queue according to the Inet Precedence or DSCP value. Mappings from Inet Precedence/DSCP value to CPU Queue are shown in the following tables.

Table 2. Mapping from Inet Precedence value to CPU Queue

Inet-precedence	CPU Queue
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7

Table 3. Mapping from DSCP value to CPU Queue

DSCP	CPU Queue
0,1,2,3,4,5,6,7	0
8,9,10,11,12,13,14,15	1
16,17,18,19,20,21,22,23	2
24,25,26,27,28,29,30,31	3
32,33,34,35,36,37,38,39	4
40,41,42,43,44,45,46,47	5
48,49,50,51,52,53,54,55	6
56,57,58,59,60,61,62,63	7

Default CLI Settings

PicOS will startup with the following CLI commands by default. Users can change the pre-defined CoPP policies but are NOT allowed to delete them.

NOTE: The values of min-bandwidth-pps and max-bandwidth-pps are different on different platforms.

 # Default configurations of forwarding class for CoPP.

```
set class-of-service forwarding-class bpdu-class local-priority 22
set class-of-service forwarding-class lacp-class local-priority 21
set class-of-service forwarding-class lldp-class local-priority 20
set class-of-service forwarding-class arp-class local-priority 19
set class-of-service forwarding-class ndp-class local-priority 18
set class-of-service forwarding-class bfd-class local-priority 17
set class-of-service forwarding-class mlag-class local-priority 16
set class-of-service forwarding-class mlag-mac-sync-class local-priority 15
set class-of-service forwarding-class bgp-class local-priority 14
set class-of-service forwarding-class ospf-class local-priority 13
set class-of-service forwarding-class rip-class local-priority 12
set class-of-service forwarding-class dhcp-class local-priority 11
set class-of-service forwarding-class vrrp-class local-priority 10
set class-of-service forwarding-class igmp-class local-priority 9
set class-of-service forwarding-class pim-class local-priority 8
set class-of-service forwarding-class default-class local-priority 0
```

 # Default configurations of schedulers for CoPP.

```
set class-of-service scheduler arp-scheduler mode WRR
set class-of-service scheduler arp-scheduler weight 32
set class-of-service scheduler arp-scheduler max-bandwidth-pps 80
set class-of-service scheduler arp-scheduler min-bandwidth-pps 0


set class-of-service scheduler ndp-scheduler mode WRR
set class-of-service scheduler ndp-scheduler weight 32
set class-of-service scheduler ndp-scheduler max-bandwidth-pps 80
set class-of-service scheduler ndp-scheduler min-bandwidth-pps 0

set class-of-service scheduler bfd-scheduler mode WRR
set class-of-service scheduler bfd-scheduler weight 16
set class-of-service scheduler bfd-scheduler max-bandwidth-pps 80
set class-of-service scheduler bfd-scheduler min-bandwidth-pps 20

set class-of-service scheduler mlag-scheduler mode WRR
set class-of-service scheduler mlag-scheduler weight 16
set class-of-service scheduler mlag-scheduler max-bandwidth-pps 80
set class-of-service scheduler mlag-scheduler min-bandwidth-pps 20

set class-of-service scheduler mlag-mac-sync-scheduler mode WRR
set class-of-service scheduler mlag-mac-sync-scheduler weight 16
set class-of-service scheduler mlag-mac-sync-scheduler max-bandwidth-pps 80
set class-of-service scheduler mlag-mac-sync-scheduler min-bandwidth-pps 20

set class-of-service scheduler bgp-scheduler mode WRR
set class-of-service scheduler bgp-scheduler weight 16
set class-of-service scheduler bgp-scheduler max-bandwidth-pps 80
set class-of-service scheduler bgp-scheduler min-bandwidth-pps 20

set class-of-service scheduler ospf-scheduler mode WRR
set class-of-service scheduler ospf-scheduler weight 16
set class-of-service scheduler ospf-scheduler max-bandwidth-pps 80
set class-of-service scheduler ospf-scheduler min-bandwidth-pps 20

set class-of-service scheduler rip-scheduler mode WRR
set class-of-service scheduler rip-scheduler weight 16
set class-of-service scheduler rip-scheduler max-bandwidth-pps 80
set class-of-service scheduler rip-scheduler min-bandwidth-pps 20

set class-of-service scheduler dhcp-scheduler mode WRR
set class-of-service scheduler dhcp-scheduler weight 16
set class-of-service scheduler dhcp-scheduler max-bandwidth-pps 80
set class-of-service scheduler dhcp-scheduler min-bandwidth-pps 20

set class-of-service scheduler vrrp-scheduler mode WRR
```

```
set class-of-service scheduler vrrp-scheduler weight 16
set class-of-service scheduler vrrp-scheduler max-bandwidth-pps 80
set class-of-service scheduler vrrp-scheduler min-bandwidth-pps 20

set class-of-service scheduler igmp-scheduler mode WRR
set class-of-service scheduler igmp-scheduler weight 16
set class-of-service scheduler igmp-scheduler max-bandwidth-pps 80
set class-of-service scheduler igmp-scheduler min-bandwidth-pps 20

set class-of-service scheduler pim-scheduler mode WRR
set class-of-service scheduler pim-scheduler weight 16
set class-of-service scheduler pim-scheduler max-bandwidth-pps 80
set class-of-service scheduler pim-scheduler min-bandwidth-pps 20

set class-of-service scheduler bpdu-scheduler mode WRR
set class-of-service scheduler bpdu-scheduler weight 32
set class-of-service scheduler bpdu-scheduler max-bandwidth-pps 80
set class-of-service scheduler bpdu-scheduler min-bandwidth-pps 20

set class-of-service scheduler lacp-scheduler mode WRR
set class-of-service scheduler lacp-scheduler weight 32
set class-of-service scheduler lacp-scheduler max-bandwidth-pps 80
set class-of-service scheduler lacp-scheduler min-bandwidth-pps 20

set class-of-service scheduler lldp-scheduler mode WRR
set class-of-service scheduler lldp-scheduler weight 32
set class-of-service scheduler lldp-scheduler max-bandwidth-pps 80
set class-of-service scheduler lldp-scheduler min-bandwidth-pps 20

set class-of-service scheduler default-scheduler mode WRR
set class-of-service scheduler default-scheduler weight 8
set class-of-service scheduler default-scheduler max-bandwidth-pps 80
set class-of-service scheduler default-scheduler min-bandwidth-pps 0

set class-of-service scheduler-profile copp-profile forwarding-class bpdu-class scheduler bpdu-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class lacp-class scheduler lacp-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class lldp-class scheduler lldp-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class bfd-class scheduler bfd-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class mlag-class scheduler mlag-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class mlag-mac-sync-class scheduler mlag-mac-
sync-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class bgp-class scheduler bgp-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class ospf-class scheduler ospf-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class rip-class scheduler rip-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class dhcp-class scheduler dhcp-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class vrrp-class scheduler vrrp-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class igmp-class scheduler igmp-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class pim-class scheduler pim-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class arp-class scheduler arp-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class ndp-class scheduler ndp-scheduler
set class-of-service scheduler-profile copp-profile forwarding-class default-class scheduler default-scheduler
```

 # Apply schedulers of CoPP to inbound interface.

```
set class-of-service interface inbound-control-plane scheduler-profile copp-profile
```

 # Default configurations of protocol sequences and forwarding class.

```
set firewall filter copp sequence 10 from protocol bpdu
set firewall filter copp sequence 10 then forwarding-class bpdu-class
set firewall filter copp sequence 20 from protocol lacp
set firewall filter copp sequence 20 then forwarding-class lacp-class
set firewall filter copp sequence 30 from protocol lldp
set firewall filter copp sequence 30 then forwarding-class lldp-class
set firewall filter copp sequence 40 from protocol arp
set firewall filter copp sequence 40 then forwarding-class arp-class
set firewall filter copp sequence 50 from protocol ndp
set firewall filter copp sequence 50 then forwarding-class ndp-class
set firewall filter copp sequence 60 from protocol bfd
set firewall filter copp sequence 60 then forwarding-class bfd-class
set firewall filter copp sequence 70 from protocol mlag
set firewall filter copp sequence 70 then forwarding-class mlag-class
set firewall filter copp sequence 80 from protocol mlag-mac-sync
set firewall filter copp sequence 80 then forwarding-class mlag-mac-sync-class
set firewall filter copp sequence 90 from protocol bgp
set firewall filter copp sequence 90 then forwarding-class bgp-class
set firewall filter copp sequence 100 from protocol ospf
set firewall filter copp sequence 100 then forwarding-class ospf-class
set firewall filter copp sequence 110 from protocol rip
set firewall filter copp sequence 110 then forwarding-class rip-class
set firewall filter copp sequence 120 from protocol dhcp
set firewall filter copp sequence 120 then forwarding-class dhcp-class
set firewall filter copp sequence 130 from protocol vrrp
set firewall filter copp sequence 130 then forwarding-class vrrp-class
set firewall filter copp sequence 140 from protocol igmp
set firewall filter copp sequence 140 then forwarding-class igmp-class
set firewall filter copp sequence 150 from protocol pim
set firewall filter copp sequence 150 then forwarding-class pim-class
```

#Apply firewall filter of CoPP to inbound interface.

```
set firewall filter copp input interface inbound-control-plane
```

Show Default Settings of CoPP

- You can use **run show copp bandwidth**, **run show class-of-service interface inbound-control-plane** and **run show filter copp** commands to view the default settings. (Besides default settings, the commands will also show the COPP configurations made by the user.)

```
admin@Xorplus# run show copp bandwidth
Forwarding Class  Min-Bandwidth Max-Bandwidth Weight Local-Priority Schedule-Mode
default-class        0            80           8      0              WRR
pim-class            0            80           16     8              WRR
igmp-class           0            80           16     9              WRR
vrrp-class           0            80           16     10             WRR
dhcp-class           0            80           16     11             WRR
rip-class            0            80           16     12             WRR
ospf-class           0            80           16     13             WRR
bgp-class            0            80           16     14             WRR
mlag-mac-sync-class  0            80           16     15             WRR
mlag-class           0            80           16     16             WRR
bfd-class            0            80           16     17             WRR
arp-class            20           80           32     18             WRR
arp-class            20           80           32     19             WRR
lldp-class           20           80           32     20             WRR
lacp-class           20           80           32     21             WRR
bpdu-class           20           80           32     22             WRR
```

```
admin@XorPlus#  run show filter copp
Filter: copp
    Description:
    Sequence: 10
        Description:
        match counter:  0 packets
        match-condition:
            protocol:                bpdu
        action: forward
        forwarding_class: bpdu-class
    Sequence: 20
        Description:
        match counter:  0 packets
        match-condition:
            protocol:                lacp
        action: forward
        forwarding_class: lacp-class
    Sequence: 30
        Description:
        match counter:  0 packets
        match-condition:
            protocol:                lldp
        action: forward
        forwarding_class: lldp-class
    Sequence: 40
        Description:
        match counter:  0 packets
        match-condition:
            protocol:                arp
        action: forward
        forwarding_class: arp-class
    Sequence: 50
        Description:
        match counter:  0 packets
        match-condition:
            protocol:                ndp
        action: forward
        forwarding_class: ndp-class
    Sequence: 60
        Description:
        match counter:  0 packets
        match-condition:
            protocol:                bfd
        action: forward
        forwarding_class: bfd-class
    Sequence: 70
        Description:
        match counter:  0 packets
        match-condition:
            protocol:                mlag
        action: forward
        forwarding_class: mlag-class
    Sequence: 80
        Description:
        match counter:  0 packets
        match-condition:
            protocol:                mlag-mac-sync
        action: forward
        forwarding_class: mlag-mac-sync-class
    Sequence: 90
        Description:
        match counter:  0 packets
        match-condition:
            protocol:                bgp
        action: forward
        forwarding_class: bgp-class
    Sequence: 100
        Description:
        match counter:  0 packets
        match-condition:
            protocol:                ospf
```

```
    action: forward
    forwarding_class: ospf-class
Sequence: 110
    Description:
    match counter:  0 packets
    match-condition:
        protocol:                rip
    action: forward
    forwarding_class: rip-class
Sequence: 120
    Description:
    match counter:  0 packets
    match-condition:
        protocol:                dhcp
    action: forward
    forwarding_class: dhcp-class
Sequence: 130
    Description:
    match counter:  0 packets
    match-condition:
        protocol:                vrrp
    action: forward
    forwarding_class: vrrp-class
Sequence: 140
    Description:
    match counter:  0 packets
    match-condition:
        protocol:                igmp
    action: forward
    forwarding_class: igmp-class
Sequence: 150
    Description:
    match counter:  0 packets
    match-condition:
        protocol:                pim
    action: forward
    forwarding_class: pim-class
Input interface: inbound-control-plane
```

```
admin@Xorplus# run show class-of-service interface inbound-control-plane
Interface : inbound-control-plane
Scheduler-profile : copp-profile
Forwarding-class     Local-priority   Scheduler               Min-Bandwidth   Max-Bandwidth   Weight   Schedule-
Mode
------------------   --------------   ---------------------   -------------   -------------   ------
-------------
default-class        0                default-scheduler       0               80              8
WRR
pim-class            8                pim-scheduler           0               80              16
WRR
igmp-class           9                igmp-scheduler          0               80              16
WRR
vrrp-class           10               vrrp-scheduler          0               80              16
WRR
dhcp-class           11               dhcp-scheduler          0               80              16
WRR
rip-class            12               rip-scheduler           0               80              16
WRR
ospf-class           13               ospf-scheduler          0               80              16
WRR
bgp-class            14               bgp-scheduler           0               80              16
WRR
mlag-mac-sync-class  15               mlag-mac-sync-scheduler 0               80              16
WRR
mlag-class           16               mlag-scheduler          0               80              16
WRR
bfd-class            17               bfd-scheduler           0               80              16       WRR
ndp-class            18               arp-scheduler           20              80              32
WRR
arp-class            19               arp-scheduler           20              80              32
WRR
lldp-class           20               lldp-scheduler          20              80              32
WRR
lacp-class           21               lacp-scheduler          20              80              32
WRR
bpdu-class           22               bpdu-scheduler          20              80              32       WRR
```