

Содержание

[Введение](#)

[Общие сведения](#)

[Классы Nexus 5500 CoPP и их Типы трафика](#)

[Классы CoPP](#)

Введение

Этот документ описывает защиту Nexus 5500 Уровня управления (CoPP) классы и с каким типом трафика совпадают к каждому классу.

Общие сведения

CoPP был представлен на Nexus 5500 через Выпуск 5.1 (3) NX-OS. CoPP внедрен на Nexus 55xx только. Это не доступно на Nexus 50x0.

Классы Nexus 5500 CoPP и их Типы трафика

Nexus 5500 предоставляет очень ограниченный контроль над CoPP по сравнению с Nexus 7000. Политика Nexus 5500 CoPP не может быть полностью удалена. Пользователь может выбрать между тремя предопределенной политикой или может создать специализированную политику, учитывая, что классы CoPP не могут быть удалены из policy-map. Только скорость/размер пакета Committed information rate (CIR) (гарантированная скорость передачи) может быть отредактирована. Также никакие новые карты классов CoPP не могут быть определены.

Возможные policy-map CoPP:

- copp-system-policy-default
- copp-system-policy-scaled-l2
- copp-system-policy-scaled-l3
- copp-system-policy-customize

Названия policy-map очевидны. Только одна из этих четырех политики может быть применена в одиночное время. Удаление любой политики автоматически применяет политику по умолчанию.

Только copp-system-policy-customized может быть отредактирован. При попытке отредактировать первые три политики, ошибка возвращается:

```
Switch(config)# policy-map type control-plane copp-system-policy-scaled-l2  
ERROR: Only copp-system-policy-customized can be modified  
Switch(config)#
```

Классы CoPP

Все карты классов используют операторы Match Protocol.

Карты классов не обнаруживаются в рабочей конфигурации. Единственная CoPP-связанная конфигурация, которая показывает в running-config, является настроенным config policy-map на по умолчанию. Пример:

```
Switch# sh run copp
!Command: show running-config copp
!Time: Tue Apr 30 20:20:00 2013

version 5.2(1)N1(2)
logging level copp 4
policy-map type control-plane copp-system-policy-customized
  class copp-system-class-arp
    police cir 5000 kbps bc 3600000 bytes
  class copp-system-class-default
    police cir 2048 kbps bc 6400000 bytes
control-plane
  service-policy input copp-system-policy-customized
```

Switch#

Карты классов CoPP могут быть проверены с уровнем управления **show policy-map interface** или **show class-map type control-plane**. Описание предоставлено рядом с каждым сообщением о совпадении:

```
Switch# show policy-map interface control-plane | i class-map|match class-map copp-system-
class-igmp (match-any)
  match protocol igmp --> Matches on IGMP IP protocol number (2)
class-map copp-system-class-pim-hello (match-any)
  match protocol pim --> Matches on PIM IP protocol number (103)
class-map copp-system-class-bridging (match-any)
  match protocol bridging --> Matches on STP BPDUs
class-map copp-system-class-arp (match-any)
  match protocol arp --> Matches on ARP Ethertype (0x806)
class-map copp-system-class-dhcp (match-any)
  match protocol dhcp --> Matches on DHCP UDP port number (67, 68)
class-map copp-system-class-mgmt (match-any)
  match protocol mgmt. --> Matches on Telnet, SSH, HTTP, SNMP, FTP,
  NTP using their well-known ports
class-map copp-system-class-lacp (match-any)
  match protocol lacp --> Matches LACP BPDUs address and Ethertype
  (01-80-C2-00-00-02, 078809)
class-map copp-system-class-lldp (match-any)
  match protocol lldp_dcx --> Matches on LLDP ethertype (0x88CC)
class-map copp-system-class-udld (match-any)
  match protocol udld --> Matches on UDLD destination address
class-map copp-system-class-isis (match-any)
  match protocol isis_dce --> Matches on ISIS Ethertype
class-map copp-system-class-msdp (match-any)
  match protocol msdp --> Matches on MSDP TCP port (639)
class-map copp-system-class-cdp (match-any)
  match protocol cdp --> Matches on CDP destination address 0100.0ccc.cccc
class-map copp-system-class-fip (match-any)
  match protocol fip --> Matches on FIP ethertype (0x8914)
class-map copp-system-class-bgp (match-any)
  match protocol bgp --> Matches on BGP TCP port number (179)
class-map copp-system-class-eigrp (match-any)
  match protocol eigrp --> Matches on EIGRP IP Protocol number (88)
class-map copp-system-class-exception (match-any)
```

```

    match protocol exception --> IP options, Martian packets (same src and dst addresses)
class-map copp-system-class-glean (match-any)
    match protocol glean --> Matches on Adjacency lookup miss
class-map copp-system-class-hsrp-vrrp (match-any)
    match protocol hsrp_vrrp --> Matches on HSRP & VRRP Destination IP
class-map copp-system-class-icmp-echo (match-any)
    match protocol icmp_echo --> Matches on ICMP type for echo
class-map copp-system-class-ospf (match-any)
    match protocol ospf --> Matches on OSPF IP Protocol number (89)
class-map copp-system-class-pim-register (match-any)
    match protocol reg --> Matches on PIM register packets
class-map copp-system-class-rip (match-any)
    match protocol rip --> Matches on RIP UDP Port (520)
class-map copp-system-class-l3dest-miss (match-any)
    match protocol unicast --> Miss in UFIB Lookup
class-map copp-system-class-mcast-miss (match-any)
    match protocol multicast --> Miss in MFIB Lookup
class-map copp-system-class-excp-ip-frag (match-any)
    match protocol ip_frag --> Matches on MTU-exceeded traffic
class-map copp-system-class-excp-same-if (match-any)
    match protocol same-if --> Matches traffic to be sent via same ingress interface
class-map copp-system-class-excp-ttl (match-any)
    match protocol ttl --> Matches on TTL=0/1
class-map copp-system-class-default (match-any)
    match protocol default --> Matches packets not matched by previous classes

```

Switch#

Карты классов CoPP были увеличены в Выпуске 5.2 для соответствия на дубликатах управляющих пакетов IPv6:

```

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    match protocol udld --> Matches on UDLD destination address
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```
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    match protocol unicast --> Miss in UFIB Lookup
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class-map copp-system-class-default (match-any)
    match protocol default --> Matches packets not matched by previous classes
Switch#
```