ACL & QoS Configuration Commands

1 ACL Commands

1.1 command ID table

For IDs used in the following commands, refer to the command ID table below:

ID	Meaning
ID	Number of access list. Range: Standard IP ACL: 1 to 99, 1300 to 1999 Extended IP ACL: 100 to 199,2000 to 2699 Extended MAC ACL: 700 to 799 Extended expert ACL: 2700 to 2899
name	ACL name
sn	ACL SN (products can be set according to the priority)
start-sn	Start sequence number
inc-sn	Sequence number increment
deny	If matched, access is denied.
permit	If matched, access is permitted.
port	Protocol number. For IPv6, this field can be IPv6, ICMP, TCP, UDP and numbers 0 to 255. For IPv4, it can be one of EIGRP, GRE, IPINIP, IGMP, NOS, OSPF, ICMP, UDP, TCP,AHP, ESP, PCP, PIM and IP, or it can be numbers 0 to 255 that represent the IP protocol. It is described when some important protocols, such as ICMP, TCP and UDP, are listed individually.
interface *idx*	Interface index
src	Packet source IP address (host address or network address)
src-wildcard	Source IP address wildcard. It can be discontinuous, for example, 0.255.0.32.
src-ipv6-pfix	Source IPv6 network address or network type
dst-ipv6-pfix	Destination IPv6 network address or network type
pfix-len	Prefix mask length
src-ipv6-addr	Source IPv6 address
dst-ipv6-addr	Destination IPv6 address
dscp	Differential service code point, and code point value. Range: 0 to 63
flow-label	Flow label in the range 0 to 1048575
dst	Packet destination IP address (host address or network address)
dst-wildcard	Destination IP address wildcard. It can be discontinuous, such as 0.255.0.32
fragment	Packet fragment filtering.
precedence	Packet precedence value (0 to 7)

range	The layer 4 port number range of the packet.
time-range tm-rng-name	Time range of packet filtering, named *tm-rng-name*
tos	Type of service (0 to 15)
cos	Class of service (0-7)
cos inner *cos*	COS of the packet tag
icmp-type	ICMP message type (0 to 255)
icmp-code	ICMP message type code (0 to 255)
icmp-message	ICMP message type name (0 to 255)
operator port[port]	Operator (lt-smaller, eq-equal, gt-greater, neq-unequal, range-range) *port* indicates the port number. Dyadic operation needs two port numbers, while other operators only need one port number
src-mac-addr	Physical address of the source host
dst-mac-addr	Physical address of the destination host
VID vid	VLAN ID
VID inner vid	VID of the tag
ethernet-type	Ethernet protocol type. 0x value can be entered.
match-all *tcpf*	Match all bits of the TCP flag.
established	Match the RST or ACK bit of the TCP flag.
text	Remark text
in	Filter the incoming packets of the interface
out	Filter the outgoing packets of the interface
{rule mask offset}$^{+}$	rule: Hexadecimal value field; mask: Hexadecimal mask field offset: Refer to the offset table “+” sign indicates at least one group
log	Output the matching syslog when the packet matches the ACL rule.

Letter	Meaning	Offset	Letter	Meaning	Offset
A	Destination MAC	0	O	TTL field	34
B	Source MAC	6	P	Protocol number	35
C	Data frame length field	12	Q	IP check sum	36
D	VLAN tag field	14	R	Source IP address	38
E	DSAP (Destination Service Access Point) field	18	S	Destination IP address	42
F	SSAP (Source Service Access Point) field	19	T	TCP source port	46
G	Ctrl field	20	U	TCP destination port	48
H	Org Code field	21	V	Sequence number	50
I	Encapsulated data type	24	W	Confirmation field	54

J	IP version number	26	XY	IP header length and reserved bits	58
K	TOS field	27	Z	Resrved bits and flags bit	59
L	Length of IP packet	28	a	Windows size field	60
M	ID	30	b	Others	62
N	Flags field	32			

The offsets of fields in the above table are their offsets in 802.3 data frames of SNAP+tag.

1.2 access-list

Use this command to create an access list to filter data packets. Use the **no** form of this command to remove the specified access list.

1. Standard IP access list (1 to 99, 1300 to 1999)

access-list *id* { **deny** | **permit** } { *source source-wildcard* | **host** *source* | **any | interface** *idx* } [**time-range** *tm-range-name*] [**log**]

2. Extended IP access list (100 to 199, 2000 to 2699)

access-list *id* {**deny** | **permit**} **protocol** {*source source-wildcard* | **host** *source* | **any| interface** *idx* } {*destination destination-wildcard* | **host** *destination* | **any**} [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**log**]

3. Extended MAC access list (700 to 799)

access-list *id* {**deny** | **permit**} {**any** | **host** *source-mac-address* | *source-mac-address mask* } {**any** | **host** *destination-mac-address* | *destination-mac-address mask* } [*ethernet-type*][**cos** [*out*][**inner** *in*]]

4. Extended expert access list (2700 to 2899)

access-list *id* {**deny** | **permit**} [**protocol** | [*ethernet-type*][**cos** [*out*][**inner** *in*]]] [**VID** [*out*][**inner** *in*]] {**source** *source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any**} {**destination** *destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**}][**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**time-range** *time-range-name*]

- When you select the Ethernet-type field or cos field:

access-list *id* {**deny** | **permit**} {*ethernet-type*| **cos** [*out*][**inner** *in*]} [**VID** [*out*][**inner** *in*]] {**source** *source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {**destination** *destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**time-range** *time-range-name*]

- When you select the protocol field:

access-list *id* {deny | permit} **protocol [VID** [*out*][**inne**r *in*]] {**source** *source-wildcard* | host *source* | **any**} {**host** *source-mac-address* | **any** }{destination *destination-wildcard* | **host** *destination* | **any} {host** *destination-mac-address* | **any} [precedence** *precedence*] [**tos** *tos*] **[fragment]** [**range** *lower upper*] **[time-range** *time-range-name*]

- Extended expert ACLs of some important protocols:

Internet Control Message Protocol (ICMP)

access-list *id* {**deny** | **permit**} **icmp** [**VID** [*out*][**inner** *in*]] {**source** *source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {**destination** *destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

access-list *id* {**deny** | **permit**} **tcp** [**VID** [*out*][**inner** *in*]]{**source** *source-wildcard* | **host** *Source* | **any**}

{**host** *source-mac-address* | **any** } [**operator** port [*port*]] {**destination** *destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**operator port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

access-list *id* {**deny** | **permit**} **udp** [**VID** [*out*][**inner** *in*]] {**source** *source –wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } [**operator port** [*port*]] {**destination** *destination-wildcard* | **host** *destination* | **any**}{**host** *destination-mac-address* | **any**} [**operator port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

Parameter Description

Parameter	Description
id	Access list number. The ranges available are 1 to 99, 100 to 199, 1300 to 1999, 2000 to 2699, 2700 to 2899, and 700 to 799.
deny	If not matched, access is denied.
permit	If matched, access is permitted.
source	Specify the source IP address (host address or network address).
source-wildcard	It can be discontinuous, for example, 0.255.0.32.
protocol	IP protocol number. It can be one of EIGRP, GRE, IPINIP, IGMP, NOS, OSPF, ICMP, UDP, TCP, and IP. It can also be a number representing the IP protocol between 0 and 255. The important protocols such as ICMP, TCP, and UDP are described separately.
destination	Specify the destination IP address (host address or network address).
destination-wildcard	Wildcard of the destination IP address. It can be discontinuous, for example, 0.255.0.32.
fragment	Packet fragment filtering
precedence	Specify the packet priority.
precedence	Packet precedence value (0 to 7)
range	Layer4 port number range of the packet.
lower	Lower limit of the layer4 port number.
upper	Upper limit of the layer4 port number.
time-range	Time range of packet filtering
time-range-name	Time range name of packet filtering
tos	Specify type of service.
tos	ToS value (0 to 15)
icmp-type	ICMP message type (0 to 255)
icmp-code	ICMP message type code (0 to 255)
icmp-message	ICMP message type name
operator	Operator (lt-smaller, eq-equal, gt-greater, neq-unequal, range-range)
port [port]	Port number; range needs two port numbers, while other operators only need one port number.
host source-mac-address	Source physical address
host destination-mac-address	Destination physical address

VID vid	Match the specified VID.
ethernet-type	Ethernet type
match-all	Match all the bits of the TCP flag.
tcp-flag	Match the TCP flag.
established	Match the RST or ACK bits, not other bits of the TCP flag.

Defaults N/A

Command Mode Global configuration mode.

Usage Guide To filter the data by using the access control list, you must first define a series of rule statements by using the access list. You can use ACLs of the appropriate types according to the security needs:
The standard IP ACL (1 to 99, 1300 to 1999) only controls the source IP addresses.
The extended IP ACL (100 to 199, 2000 to 2699) can enforce strict control over the source and destination IP addresses.
The extended MAC ACL (700 to 799) can match against the source/destination MAC addresses and Ethernet type.
The extended expert access list (2700 to 2899) is a combination of the above and can match and filter the VLAN ID.
For the layer-3 routing protocols including the unicast routing protocol and multicast routing protocol, the following parameters are not supported by the ACL: **precedence** *precedence*/**tos** *tos*/**fragments**/**range** *lower upper*/**time-range** *time-range-name*
The TCP Flag includes part or all of the following:

- urg
- ack
- psh
- rst
- syn
- fin

The packet precedence is as below:

- critical
- flash
- flash-override
- immediate
- internet
- network
- priority
- routine

The service types are as below:

- max-reliability
- max-throughput
- min-delay
- min-monetary-cost
- normal

The ICMP message types are as below:

- administratively-prohibited
- dod-host-prohibited
- dod-net-prohibited
- echo
- echo-reply
- fragment-time-exceeded
- general-parameter-problem
- host-isolated
- host-precedence-unreachable
- host-redirect
- host-tos-redirect
- host-tos-unreachable
- host-unknown
- host-unreachable
- information-reply
- information-request
- mask-reply
- mask-request
- mobile-redirect
- net-redirect
- net-tos-redirect
- net-tos-unreachable
- net-unreachable
- network-unknown
- no-room-for-option
- option-missing
- packet-too-big
- parameter-problem
- port-unreachable
- precedence-unreachable
- protocol-unreachable
- redirect
- device-advertisement
- device-solicitation
- source-quench
- source-route-failed
- time-exceeded
- timestamp-reply
- timestamp-request
- ttl-exceeded
- unreachable

The TCP ports are as follows. A port can be specified by port name and port number:

- bgp

- chargen
- cmd
- daytime
- discard
- domain
- echo
- exec
- finger
- ftp
- ftp-data
- gopher
- hostname
- ident
- irc
- klogin
- kshell
- ldp
- login
- nntp
- pim-auto-rp
- pop2
- pop3
- smtp
- sunrpc
- syslog
- tacacs
- talk
- telnet
- time
- uucp
- whois
- www

The UDP ports are as follows. A UDP port can be specified by port name and port number.

- biff
- bootpc
- bootps
- discard
- dnsix
- domain
- echo
- isakmp
- mobile-ip
- nameserver
- netbios-dgm
- netbios-ns

- netbios-ss
- ntp
- pim-auto-rp
- rip
- snmp
- snmptrap
- sunrpc
- syslog
- tacacs
- talk
- tftp
- time
- who
- xdmcp

The Ethernet types are as below:

- aarp
- appletalk
- decnet-iv
- diagnostic
- etype-6000
- etype-8042
- lat
- lavc-sca
- mop-console
- mop-dump
- mumps
- netbios
- vines-echo
- xns-idp

Configuration Examples

1. Example of the standard IP ACL

The following basic IP ACL allows the packets whose source IP addresses are 192.168.1.64 - 192.168.1.127 to pass:

```
Orion Alpha A28X (config)#access-list 1 permit 192.168.1.64 0.0.0.63
```

2. Example of the extended IP ACL

The following extended IP ACL allows the DNS messages and ICMP messages to pass:

```
Orion Alpha A28X(config)#access-list 102 permit tcp any any eq domain log
Orion Alpha A28X(config)#access-list 102 permit udp any any eq domain log
Orion Alpha A28X(config)#access-list 102 permit icmp any any echo log
Orion Alpha A28X(config)#access-list 102 permit icmp any any echo-reply
```

3. Example of the extended MAC ACL

This example shows how to deny the host with the MAC address 00d0f8000c0c to provide service with the protocol type 100 on gigabit Ethernet port 1/1. The configuration procedure is as below:

```
Orion Alpha A28X(config)#access-list 702 deny host 00d0f8000c0c any aarp
Orion Alpha A28X(config)# interface gigabitethernet 1/1
```

```
Orion Alpha A28X(config-if)# mac access-group 702 in
```

4. Example of the extended expert ACL

The following example shows how to create and display an extended expert ACL. This expert ACL denies all the TCP packets with the source IP address 192.168.12.3 and the source MAC address 00d0.f800.0044.

```
Orion Alpha A28X(config)#access-list 2702 deny tcp host 192.168.12.3 mac
00d0.f800.0044 any any
Orion Alpha A28X(config)# access-list 2702 permit any any any any
Orion Alpha A28X(config)# show access-lists
expert access-list extended 2702
10 deny tcp  host  192.168.12.3 mac 00d0.f800.0044 any any
10 permit any any any any
```

Related Commands

Command	Description
show access-lists	Show all the ACLs.
mac access-group	Apply the extended MAC ACL on the interface.

Platform Description N/A

1.3 access-list list-remark

Use this command to write a helpful comment (remark) for an access list. Use the **no** form of this command to remove the remark.

access-list *id* **list-remark** *text*

no access-list *id* **list-remark**

Parameter Description

Parameter	Description
id	Access list number. Standard IP ACL: 1 to 99, 1300 to 1999. Extended IP ACL: 100 to 199. 2000 to 2699. Extended MAC ACL: 700 to 799. Extended Expert ACL: 2700 to 2899.
text	Comment that describes the access list.

Defaults The access lists have no remarks by default.

Command Mode Global configuration mode

Usage Guide You can use this command to write a helpful comment for a specified access list. If the specified access list does not exist, the command will create the access list, then add remarks for the access list.

Configuration Examples The following example writes a comment of “this acl is to filter the host 192.168.4.12” for ACL100.

```
Orion Alpha A28X(config)# ip access-list extended 100
```

```
Orion Alpha A28X(config)# access-list 100 list-remark this acl is to
filter the host 192.168.4.12
```

Related Commands

Command	Description
show access- lists	Displays all access lists, including the remarks for the access lists.
show access-lists *id*	Displays the access list of a specified number, including the remarks for the access list.
show access-lists *name*	Displays the access list of a specified name, including the remarks for the access list.

Platform Description

1.4 access-list remark

Use this command to write a helpful comment (remark) for an entry in a numbered access list. Use the **no** form of this command to remove the remark.

access-list *id* **remark** *text*

no access-list *id* **remark** *text*

Parameter Description

Parameter	Description
id	Access list number. Standard IP ACL: 1 to 99, 1300 to 1999. Extended IP ACL: 100 to 199. 2000 to 2699. Extended MAC ACL: 700 to 799. Extended Expert ACL: 2700 to 2899.
text	Comment that describes the access list entry.

Defaults The access list entries have no remarks by default.

Command Mode Global configuration mode

Usage Guide You can use this command to write a helpful comment for an entry in a specified access list. If the specified access list does not exist, the command will create the access list, then add remarks for the access entry.

Configuration Examples The following example writes a comment for an entry in ACL102.

```
Orion Alpha A28X(config)# access-list 102 remark deny-host-10.1.1.1
```

Related Commands

Command	Description
show access-lists	Displays all access lists, including the remarks for the access list entries.
show access-lists *id*	Displays the access list of a specified number,

	including the remarks for the access list entry.
show access-lists *name*	Displays the access list of a specified name, including the remarks for the access list entry.

Platform Description

1.5 clear access-list counters

Use this command to clear counters of packets matching the deny entries in ACLs.

clear access-list counters [*id* | *name*]

Parameter Description

Parameter	Description
id	Access list number
name	Access list name

Defaults

Command Mode Privileged EXEC mode

Usage Guide This command is used to clear the counters of packets matching the deny entries in ACLs.

Configuration Examples The following example clears the packet matching counter of ACL No. 1:

Before configuration:

```
Orion Alpha A28X #show access-lists
ip access-list standard 1
    10 deny host 50.1.1.2 (10 matches)
    20 permit host 60.1.1.2 (15 matches)
    (10 packets filtered)
```

After configuration:

```
Orion Alpha A28X# end
Orion Alpha A28X# clear access-list counters
Orion Alpha A28X# show access-lists
ip access-list standard 1
    10 deny host 50.1.1.2 (10 matches)
    20 permit host 60.1.1.2 (15 matches)
```

Related Commands

Command	Description
expert access-list	Defines an expert ACL.
deny	Defines a deny ACL entry.

permit	Defines a permits ACL entry.

Platform Description N/A

1.6 clear counters access-list

Use this command to clear counters of packets matching ACLs.

clear counters access-list [*id* | *name*]

Parameter Description

Parameter	Description
id	Access list number
name	Access list name

Defaults

Command Mode Privileged EXEC mode

Usage Guide This command is used to clear the counters of packets matching the specified or all ACLs.

Configuration Examples The following example clears the packet matching counter of ACL No. 2700:

```
Orion Alpha A28X #show access-lists 2700
expert access-list extended 2700
    10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any  (88
matches)
    20 deny tcp any any eq login any any (33455 matches)
    30 permit tcp any any host 192.168.6.9 any (10 matches)

Orion Alpha A28X# clear counters access-list 2700
Orion Alpha A28X #show access-lists 2700
expert access-list extended 2700
    10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any
    20 deny tcp any any eq login any any
    30 permit tcp any any host 192.168.6.9 any
```

Related Commands

Command	Description
expert access-list	Defines an expert ACL.
deny	Defines a deny ACL entry.
permit	Defines a permits ACL entry.

Platform Description N/A

1.7 deny

One or multiple **deny** conditions are used to determine whether to forward or discard the packet. In ACL configuration mode, you can modify the existent ACL or configure according to the protocol details.

5. Standard IP ACL

[*sn*] **deny** {*source source-wildcard* | **host** *source* | **any| interface** *idx* }[**time-range** *tm-range-name*] [**log**]

6. Extended IP ACL

[*sn*] **deny protocol source** *source-wildcard* **destination** *destination-wildcard* [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**log**]

Extended IP ACLs of some important protocols:

- Internet Control Message Prot (ICMP)

[*sn*] **deny icmp** {**source** *source-wildcard* | **host** *source* | **any**} {**destination** *destination-wildcard* | **host** *destination* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**time-range** *time-range-name*]

- Transmission Control Protocol (TCP)

[*sn*] deny udp {*source source –wildcard* | **host** *source* | **any**} [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

- User Datagram Protocol (UDP)

[*sn*] deny udp {*source source –wildcard* | **host** *source* | **any**} [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

7. Extended MAC ACL

[*sn*] **deny** { **any** | **host** *source-mac-address* } { **any** | **host** *destination-mac-address* } [*ethernet-type*] [**cos** [*out*] [**inner** *in*]]

8. Extended expert ACL

[*sn*] **deny**[**protocol** | [*ethernet-type*][**cos** [*out*] [**inner** *in*]]] [[**VID** [*out*][**inner** *in*]]] {*source source-wildcard* | **host** *source* | **any**}{**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*][**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

- When you select the ethernet-type field or cos field:

[*sn*] **deny** {[*ethernet-type*}[**cos** [*out*] [**inner** *in*]]} [[**VID** [*out*][**inner** *in*]]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**time-range** *time-range-name*]

- When you select the protocol field:

[*sn*] **deny protocol** [[**VID** [*out*][**inner** *in*]]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destinationdestination-wildcard* | **host** *destination* | **any**} { **host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

- Extended expert ACLs of some important protocols

Internet Control Message Protocol (ICMP)

[*sn*] **deny icmp** [[**VID** [*out*][**inner** *in*]]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any**} {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **deny tcp** [[**VID** [*out*][**inner** *in*]]]{*source source-wildcard* | **host** *Source* | **any**} {**host** *source-mac-address* | **any** } [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

[*sn*] **deny udp** [[**VID** [*out*][**inner** *in*]]]{*source source –wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**}{**host** *destination-mac-address* | **any**} [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

Address Resolution Protocol (ARP)

[*sn*] **deny arp** {**vid** *vlan-id*}[**host** *source-mac-address* | **any**] [**host** *destination –mac-address* | **any**] {*sender-ip sender-ip–wildcard* | **host** *sender-ip* | **any**} {*sender-mac sender-mac-wildcard* | **host** *sender-mac* | **any**} {*target-ip target-ip–wildcard* | **host** *target-ip* | **any**}

5. Extended IPv6 ACL

[*sn*] **deny protocol**{*source-ipv6-prefix*/*prefix-length* | **any** | **host** *source-ipv6-address* } {*destination-ipv6-prefix / prefix-length* | **any**| *hostdestination-ipv6-address*} [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

Extended ipv6 ACLs of some important protocols:

Internet Control Message Protocol (ICMP)

[*sn*]**deny icmp** {*source-ipv6-prefix / prefix-length* | *any source-ipv6-address* | **host**} {*destination-ipv6-prefix / prefix-length*| **host** *destination-ipv6-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **deny tcp** {*source-ipv6-prefix / prefix-length* | **host***source-ipv6-address* | **any**}[*operator* **port**[*port*]] {*destination-ipv6-prefix /prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

[sn] **deny udp** {*source-ipv6-prefix/prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix /prefix-length* | **host** *destination-ipv6-address* | **any**}[*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

Parameter Description

Parameter	Description
sn	ACL entry sequence number
source-ipv6-prefix	Source IPv6 network address or network type
destination-ipv6-prefix	Destination IPv6 network address or network type
prefix-length	Prefix mask length
source-ipv6-address	Source IPv6 address
destination-ipv6-address	Destination IPv6 address

dscp	Differential Service Code Point
dscp	Code value, within the range of 0 to 63
flow-label	Flow label
flow-label	Flow label value, within the range of 0 to 1048575.
protocol	For the IPv6, the field can be ipv6 | icmp | tcp | udp and number in the range 0 to 255
time-range	Time range of the packet filtering
time-range-name	Time range name of the packet filtering

Defaults No entry

Command mode ACL configuration mode.

Usage Guide Use this command to configure the filtering entry of ACLs in ACL configuration mode.

Configuration Examples The following example shows how to create and display an extended expert ACL. This expert ACL denies all the TCP packets with the source IP address 192.168.4.12 and the source MAC address 001300498272.

```
Orion Alpha A28X(config)#expert access-list extended 2702
Orion Alpha A28X(config-exp-nacl)#deny tcp  host
192.168.4.12 host 0013.0049.8272 any any
Orion Alpha A28X(config-exp-nacl)#permit any any any any
Orion Alpha A28X(config-exp-nacl)#show access-lists
expert access-list extended 2702
10 deny tcp  host  192.168.4.12 host 0013.0049.8272 any any
20 permit any any any any
Orion Alpha A28X(config-exp-nacl)#
```

This example shows how to use the extended IP ACL. The purpose is to deny the host with the IP address 192.168.4.12 to provide services through the TCP port 100 and apply the ACL to Interface gigabitethernet 1/1. The configuration procedure is as below:

```
Orion Alpha A28X(config)# ip access-list extended ip-ext-acl
Orion Alpha A28X(config-ext-nacl)# deny tcp host 192.168.4.12 eq 100 any
Orion Alpha A28X(config-ext-nacl)# show access-lists
ip access-list extended ip-ext-acl
10 deny tcp host 192.168.4.12 eq 100 any
Orion Alpha A28X(config-ext-nacl)#exit
Orion Alpha A28X(config)#interface gigabitethernet 1/1
Orion Alpha A28X(config-if)#ip access-group ip-ext-acl in
Orion Alpha A28X(config-if)#
```

This example shows how to use the extended MAC ACL. The purpose is to deny the host with the MAC address 0013.0049.8272 to send Ethernet frames of the type 100 and apply the rule to Interface gigabitethernet 1/1. The configuration procedure is as below:

```
Orion Alpha A28X(config)#mac access-list extended mac1
Orion Alpha A28X(config-mac-nacl)#deny host 0013.0049.8272 any aarp
Orion Alpha A28X(config-mac-nacl)# show access-lists
mac access-list extended mac1
```

```
10 deny host 0013.0049.8272 any aarp
Orion Alpha A28X(config-mac-nacl)#exit
Orion Alpha A28X(config)# interface gigabitethernet 1/1
Orion Alpha A28X(config-if)# mac access-group mac1 in
```

This example shows how to use the standard IP ACL. The purpose is to deny the host with the IP address 192.168.4.12 and apply the rule to Interface gigabitethernet 1/1. The configuration procedure is as below:

```
Orion Alpha A28X(config)#ip access-list standard 34
Orion Alpha A28X(config-ext-nacl)# deny host 192.168.4.12
Orion Alpha A28X(config-ext-nacl)#show access-lists
ip access-list standard 34
10 deny host 192.168.4.12
Orion Alpha A28X(config-ext-nacl)#exit
Orion Alpha A28X(config)# interface gigabitethernet 1/1
Orion Alpha A28X(config-if)# ip access-group 34 in
```

This example shows how to use the extended IPV6 ACL. The purpose is to deny the host with the IP address 192.168.4.12 and apply the rule to Interface gigabitethernet 1/1. The configuration procedure is as below:

```
Orion Alpha A28X(config)#ipv6 access-list extended v6-acl
Orion Alpha A28X(config-ipv6-nacl)#11 deny ipv6 host 192.168.4.12 any
Orion Alpha A28X(config-ipv6-nacl)#show access-lists
ipv6 access-list extended v6-acl
11 deny ipv6 host 192.168.4.12 any
Orion Alpha A28X(config-ipv6-nacl)# exit
Orion Alpha A28X(config)# interface gigabitethernet 1/1
Orion Alpha A28X(config-if)# ipv6 traffic-filter v6-acl in
```

Related Commands

Command	Description
show access-lists	Displays all ACLs.
ipv6 traffic-filter	Applies the extended IPv6 ACL on the interface.
ip access-group	Applies the IP ACL on the interface.
mac access-group	Applies the extended MAC ACL on the interface.
ip access-list	Defines an IP ACL.
mac access-list	Defines an extended MAC ACL.
expert access-list	Defines an extended expert ACL.
ipv6 access-list	Defines an extended IPv6 ACL.
permit	Permits the access.

Platform Description

N/A

1.8 expert access-group

Use this command to apply the specified expert access list globally or on the specified interface. Use the **no** form of the command to remove the application.

expert access-group { *id* | *name* } { **in** | **out** }

no expert access-group { *id* | *name* } { **in** | **out** }

Parameter Description

Parameter	Description
id	Expert access list number: 2700 to 2899
name	Name of the expert access list
in	Specifies filtering on inbound packets.
out	Specifies filtering on outbound packets.

Defaults No expert access list is applied globally or on the interface.

Command mode Global or interface configuration mode.

Usage Guide This command is used to apply the specified access list globally or on the interface to control the input and output data streams. Use the **show access-group** command to view the setting.

Configuration Examples The following example shows how to apply the **access-list *accept***_00d0f8xxxxxx only to Gigabit interface 0/1:

```
Orion Alpha A28X(config)# interface GigaEthernet 0/1
Orion Alpha A28X(config-if)# expert access-group
accept_00d0f8xxxxxx_only in
```

Related Commands

Command	Description
show access-group	Displays the ACL configuration.

Platform Description N/A

1.9 expert access-list advanced

Use this command to create an advanced expert access list and place the device in expert advanced access list configuration mode. Use the **no** form of this command to remove the advanced expert access list.

expert access-list advanced *name*

no expert access-list advanced *name*

Parameter Description

Parameter	Description
name	Name of the advanced expert access list

Defaults N/A

Command mode Global configuration mode

Usage Guide Use this command to create an advanced expert access list (namely, ACL80) to match your custom fields.

Configuration Examples The following example creates an advanced expert access list named adv-acl.

```
Orion Alpha A28X(config)# expert access-list advanced adv-acl
Orion Alpha A28X(config-exp-dacl)# show access-lists
expert access-list advanced adv-acl
```

Related Commands

Command	Description
show access-lists	Displays all access lists.
show access-lists *name*	Displays the access list of a specified name.

Platform Description N/A

1.10 expert access-list counter

Use this command to enable the counter of packets matching the specified expert access list. Use the **no** form of this command to disable this function.

expert access-list counter { *id* | *name* }

no expert access-list counter { *id* | *name* }

Parameter Description

Parameter	Description
id	Expert access list number: 2700 to 2899.
name	Name of the access list.

Defaults The counter of the packets matching the expert access list is disabled.

Command mode Global configuration mode

Usage Guide Use this command to enable the counter of packets matching the specified expert access list, so that you can analyze the counters to learn whether the network is attacked by the illegal packets.

Configuration Examples The following example enables the counter of packets matching the extended expert access list named exp-acl:

```
Orion Alpha A28X(config)# expert access-list counter exp-acl
Orion Alpha A28X(config)# show access-lists
expert access-list extended exp-acl
 10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any (16
matches)
 20 deny tcp any any eq login any any (78 matches)
```

The following example disables the counter of packets matching the extended expert access list named exp-acl.

```
Orion Alpha A28X(config)#no expert access-list counter exp-acl
Orion Alpha A28X(config)# show access-lists
expert access-list extended 2700
 10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any
 20 deny tcp any any eq login any any
```

Related Commands

Command	Description
show access-lists	Displays the extended expert ACL.

Platform Description N/A

1.11 expert access-list extended

Use this command to create an extended expert access list. Use the **no** form of the command to remove the ACL.

expert access-list extended {*id* | *name*}

no expert access-list extended {*id* | *name*}

Parameter Description

Parameter	Description
id	Extended expert access list number: 2700 to 2899
name	Name of the extended expert access list

Defaults N/A

Command mode Global configuration mode.

Usage Guide Use the **show access-lists** command to display the ACL configurations**.**

Configuration Examples Create an extended expert ACL named exp-acl:

```
Orion Alpha A28X(config)# expert access-list extended exp-acl
Orion Alpha A28X(config-exp-nacl)# show access-lists expert access-list
extended exp-acl
Orion Alpha A28X(config-exp-nacl)#
```

Create an extended expert ACL numbered 2704:

```
Orion Alpha A28X(config)# expert access-list extended 2704
Orion Alpha A28X(config-exp-nacl)# show access-lists  access-list extended
2704
Orion Alpha A28X(config-exp-nacl)#
```

Related Commands

Command	Description

show access-lists	Displays the extended expert ACLs

Platform Description N/A

1.12 expert access-list new-fragment-mode

Use this command to switch the matching mode of fragmentation packets. Use the **no** form of this command to restore the default matching mode of fragmentation packets.

expert access-list new-fragment-mode { *id* **|** *name* }

no expert access-list new-fragment-mode { *id* **|** *name* }

Parameter Description

Parameter	Description
id	Expert access list number: 2700 to 2899.
name	Name of the expert access list.

Defaults Use the default matching mode of fragmentation packets. By default, if the access rule is tagged with fragment, it will match all packets except for the first fragmentation packet. If the access rule is not tagged with fragment, all packets including the first and all subsequent fragmentation packets will be matched.

Command mode Global configuration mode

Usage Guide Use this command to switch and control the matching mode of access rules to fragmentation packets.

Configuration Examples The following example switches the matching mode of fragmentation packets for the ACL 2700 from the default mode to a new matching mode:

```
Orion Alpha A28X(config)#expert access-list new-fragment-mode 2700
```

Related Commands

Command	Description
-	-

Platform Description N/A

1.13 expert access-list resequence

Use this command to resequence an expert access list. Use the no form of this command to restore the default order of access entries.

expert access-list resequence { *id* | *name* } *start-sn inc-sn*

no expert access-list resequence { *id* | *name* }

Parameter

Parameter	Description

Description

Id	Expert access list number: 2700 to 2899.
name	Name of the expert access list
start-sn	Start sequence number. Range: 1 to 2147483647
inc-sn	Increment of the sequence number. Range: 1 to 2147483647

Defaults

start-sn: 10

inc-sn: 10

Command mode

Global configuration mode

Usage Guide

Use this command to change the order of the access entries.

Configuration Examples

The following example resequences entries of expert access list “exp-acl”:

Before the configuration:

```
Orion Alpha A28X# show access-lists
expert access-list extended exp-acl
 10 permit ip any any any any
 20 deny ip any any any any
```

After the configuration:

```
Orion Alpha A28X# config
Orion Alpha A28X(config)# expert access-list resequence exp-acl 21 43
Orion Alpha A28X(config)# exit
Orion Alpha A28X# show access-lists
expert access-list extended exp-acl
 21 permit ip any any any any
 64 deny ip any any any any
```

Related Commands

Command	Description
show access-lists	Displays all access lists..

Platform Description

N/A

1.14 global ip access-group

Use this command to apply the global IP-based access list on the interface. Use the **no** form of this command to remove the global IP-based access list from the interface.

global ip access-group

no global ip access-group

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the global IP-based access list is applied on the interface.

Command mode Interface configuration mode

Usage Guide N/A

Configuration Examples The following example applies the global IP-based access list on interface fastEthernet0/0.

```
Orion Alpha A28X(config)# interface fastEthernet 0/0
Orion Alpha A28X(config-if-GigabitEthernet 0/0)#global ip access-group
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.15 ip access-group

Use this command to apply a specific access list globally or to an interface. Use the **no** form of this command to remove the access list from the interface.

ip access-group {*id* | *name*} {**in** | **out**}

no ip access-group { *id* | *name*} {**in** | **out**}

Parameter Description

Parameter	Description
id	IP access list or extended IP access list number: 1 to 199, 1300 to 2699
name	Name of the IP ACL
in	Filters the incoming packets of the interface.
out	Filters the outgoing packets of the interface.

Defaults No access list is applied globally or on the interface by default.

Command mode Global or interface configuration mode.

Usage Guide Use this command to control access to a specified interface, globally.

Configuration Examples The following example applies the ACL 120 on interface fastEthernet0/0 to filter the incoming packets:

```
Orion Alpha A28X(config)# interface fastEthernet 0/0
Orion Alpha A28X(config-if)# ip access-group 120 in
```

Related Commands

Command	Description
access-list	Defines an ACL.

show access-lists	Displays all ACLs.

Platform Description N/A

1.16 ip access-list

Use this command to create a standard IP access list or extended IP access list. Use the **no** form of the command to remove the access list.

ip access-list {**extended** | **standard**} {*id* | *name*}

no ip access-list {**extended** | **standard**} {*id* | *name*}

Parameter Description

Parameter	Description
id	Access list number: Standard: 1 to 99, 1300 to 1999; Extended: 100 to 199, 2000 to 2699.
name	Name of the access list

Defaults N/A

Command mode Global configuration mode

Usage Guide Configure a standard access list if you need to filter on source address only. If you want to filter on anything other than source address, you need to create an extended access list.

Refer to **deny** or **permit** in the two modes. Use the **show access-lists** command to display the ACL configurations**.**

Configuration Examples The following example creates a standard access list named std-acl.

```
Orion Alpha A28X(config)# ip access-list standard std-acl
Orion Alpha A28X(config-std-nacl)# show access-lists
ip access-list standard std-acl
Orion Alpha A28X(config-std-nacl)#
```

The following example creates an extended ACL numbered 123:

```
Orion Alpha A28X(config)# ip access-list extended 123
Orion Alpha A28X(config-ext-nacl)# show access-lists
ip access-list extended 123
```

Related Commands

Command	Description
show access-lists	Displays all ACLs.

Platform Description N/A

1.17 ip access-list counter

Use this command to enable the counter of packets matching the standard or extended IP access list. Use the **no** form of this command to disable the counter.

ip access-list counter { *id* | *name* }

no ip access-list counter { *id* | *name* }

Parameter Description

Parameter	Description
id	IP access list number: Standard IP access list: 1 to 99, 1300 to 1999; Extended IP access list: 100 to 199, 2000 to 2699.
name	Name of the IP access list.

Defaults The counter of packets matching the standard or extended IP access list is disabled by default.

Command mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example enables the counter of packets matching the standard access list:

```
Orion Alpha A28X(config)# ip access-list counter std-acl
Orion Alpha A28X(config-std-nacl)# show access-lists
ip access-list standard std-acl
 10 permit 195.168.6.0 0.0.0.255 (999 matches)
 20 deny host 5.5.5.5 time-range tm (2000 matches)
```

The following example disables the counter of packets matching the standard access list:

```
Orion Alpha A28X(config)#no ip access-list counter std-acl
Orion Alpha A28X(config-std-nacl)# show access-lists
ip access-list standard std-acl
 10 permit 195.168.6.0 0.0.0.255
 20 deny host 5.5.5.5 time-range tm
```

Related Commands

Command	Description
show access-lists	Displays all access lists.

Platform Description N/A

1.18 ip access-list log-update interval

Use this command to configure the interval at which the IPv4 access list log is updated. Use the **no** form of this command to restore the default interval.

ip access-list log-update interval *time*

no ip access-list log-update interval

Parameter Description

Parameter	Description
time	For the access rule with the **log** option, a packet hit is output at the interval of ACL logging output. The interval ranges from 0 to 1440 minutes, and the default value is 5 minutes, indicating that the ACL matching log of a specified flow is output every 5 minutes. 0 indicates that no ACL logging is output.

Defaults The default interval at which the IPv4 access list log is updated is 5 minutes.

Command mode Global configuration mode

Usage Guide Use this command to configure the interval at which the IPv4 access list log is updated.

Configuration Examples The following example configures the interval for the IPv4 access list log update to 10 minutes:

```
Orion Alpha A28X# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Orion Alpha A28X(config)# ip access-list log-update interval 10
```

Related Commands

Command	Description
ip access-list	Defines an IPv4 access list.
deny	Defines the **deny** access entries.
permit	Defines the **permit** access entries.
show running	Displays running configurations of the device.

Platform Description N/A

1.19 ip access-list new-fragment-mode

Use this command to switch the matching mode of fragmentation packets of standard or extended IP access list. Use the **no** form of this command to restore the default matching mode of fragmentation packets.

ip access-list new-fragment-mode { *id* **|** *name* }

no ip access-list new-fragment-mode { *id* **|** *name* }

Parameter Description

Parameter	Description
id	IP access list number: Standard IP access list: 1 to 99, 1300 to 1999; Extended IP access list: 100 to 199, 2000 to 2699.
name	Name of the standard or extended IP access list

Defaults Use the default matching mode of fragmentation packets. By default, if the access rule is tagged with fragment, it will match all packets except for the first fragmentation packet. If the access rule is not

tagged with fragment, all packets including the first and all subsequent fragmentation packets will be matched.

Command mode Global configuration mode

Usage Guide This command is used to switch and control the fragmentation packet matching mode of access rules.

Configuration Examples The following example switches the fragmentation packet matching mode of the ACL 100 from the default mode to a new mode:

```
Orion Alpha A28X(config)#ip access-list new-fragment-mode 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.20 ip access-list resequence

Use this command to resequence a standard or extended IP access list. Use the **no** form of this command to restore the default order of access entries.

ip access-list resequence { *id* | *name* } *start-sn inc-sn*

no ip access-list resequence { *id* | *name* }

Parameter Description

Parameter	Description
id	IP access list number: Standard IP access list: 1 to 99, 1300 to 1999; Extended IP access list: 100 to 199, 2000 to 2699.
name	Name of the standard or extended IP access list
start-sn	Start sequence number. Range: 1 to 2147483647
inc-sn	Increment of the sequence number. Range: 1 to 2147483647

Defaults *start-sn*: 10

inc-sn: 10

Command mode Global configuration mode

Usage Guide Use this command to change the order of the access entries.

Configuration Examples The following example resequences entries of ACL1:

Before the configuration:

```
Orion Alpha A28X# show access-lists
ip access-list standard 1
10 permit host 192.168.4.12
```

```
20 deny any any
```

After the configuration:

```
Orion Alpha A28X# config
Orion Alpha A28X(config)# ip access-list resequence 1 21 43
Orion Alpha A28X(config)# exit
Orion Alpha A28X# show access-lists
ip access-list standard 1
21 permit host 192.168.4.12
64 deny any any
```

Related Commands

Command	Description
show access-lists	Displays all access lists..

Platform Description N/A

1.21 ipv6 access-list

Use this command to create an IPv6 access list and to place the device in IPv6 access list configuration mode. Use the **no** form of this command to remove the access list.

ipv6 access-list *name*

no ipv6 access-list *name*

Parameter Description

Parameter	Description
name	Name of the IPv6 access list.

Defaults N/A

Command mode Global configuration mode

Usage Guide To filter the IPv6 packets through the access list, you need to define an IPv6 access list by using the **ipv6 access-list** command.

Configuration Examples The following example creates an IPv6 access list named v6-acl:

```
Orion Alpha A28X(config)# ipv6 access-list v6-acl
Orion Alpha A28X(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
Orion Alpha A28X(config-ipv6-nacl)#
```

Related Commands

Command	Description
show access-lists	Displays all access lists.

Platform N/A

Description

1.22 ipv6 access-list counter

Use this command to enable the counter of packets matching the IPv6 access list. Use the **no** form of this command to disable the counter.

ipv6 access-list counter *name*

no ipv6 access-list counter *name*

Parameter Description

Parameter	Description
name	Name of the IPv6 access list.

Defaults -

Command mode Global configuration mode

Usage Guide Use this command to enable the counter of packets matching the IPv6 access list to monitor the IPv6 packets matching and filtering.

Configuration Examples The following example enables the counter of packets matching the IPv6 access list named v6-acl:

```
Orion Alpha A28X(config)# ipv6 access-list v6-acl
Orion Alpha A28X(config-ipv6-nacl)# show access-lists
ipv6 access-list acl-v6
 10 permit icmp any any (7 matches)
 20 deny tcp any any (7 matches)
```

The following example disables the counter of packets matching the IPv6 access list named v6-acl:

```
Orion Alpha A28X(config)#no ipv6 access-list v6-acl counter
Orion Alpha A28X(config-ipv6-nacl)# show access-lists
ipv6 access-list acl-v6
 10 permit icmp any any
20 deny tcp any any
```

Related Commands

Command	Description
show access-lists	Displays all access lists.

Platform Description N/A

1.23 ipv6 access-list log-update interval

Use this command to configure the interval at which the IPv6 access list log is updated. Use the **no** form of this command to restore the default interval.

ipv6 access-list log-update interval *time*

no ipv6 access-list log-update interval

Parameter Description

Parameter	Description
time	For the access rule with the **logging** option, a packet hit is output at the interval of ACL logging output. The interval ranges from 0 to 1440 minutes, and the default value is 5 minutes, indicating that the ACL matching log of a specific flow is output every 5 minutes. 0 indicates that no ACL logging is output.

Defaults By default, it is 5 minutes.

Command mode Global configuration mode

Usage Guide Use this command to configure the interval at which the IPv6 access list log is updated.

Configuration Examples The following example configures the interval for the IPv6 access list log update to 10 minutes:

```
Orion Alpha A28X# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Orion Alpha A28X(config)# ipv6 access-list log-update interval 9
```

Related Commands

Command	Description
ipv6 access-list	Defines an IPv6 access list.
deny	Defines the **deny** access entries.
permit	Defines the **permit** access entries.
show running	Displays the running configurations of the device.

Platform Description N/A

1.24 ipv6 access-list resequence

Use this command to resequence an IPv6 access list. Use the **no** form of this command to restore the default order of access entries.

ipv6 access-list resequence *name start-sn inc-sn*

no ipv6 access-list resequence *name*

Parameter Description

Parameter	Description
name	Name of the IPv6 access list
start-sn	Start sequence number. Range: 1 to 2147483647
inc-sn	Increment of the sequence number. Range: 1 to 2147483647

Defaults *start-sn*: 10

inc-sn: 10

Command mode Global configuration mode

Usage Guide Use this command to change the order of the access entries.

Configuration Examples The following example resequences entries of IPv6 access list “v6-acl”:
Before the configuration:

```
Orion Alpha A28X# show access-lists
ipv6 access-list v6-acl
 10 permit ipv6 any any
 20 deny ipv6 any any
```

After the configuration:

```
Orion Alpha A28X# config
Orion Alpha A28X(config)# ipv6 access-list resequence v6-acl 21 43
Orion Alpha A28X(config)# exit
Orion Alpha A28X# show access-lists
ipv6 access-list v6-acl
 21 permit ipv6 any any
 64 deny ipv6 any any
```

Related Commands

Command	Description
show access-lists	Displays all access lists..

Platform Description N/A

1.25 ipv6 traffic-filter

Use this command to apply an IPV6 access list on the specified interface. Use the **no** form of the command to remove the IPv6 access list from the interface/VXLAN.
ipv6 traffic-filter *name* { **in** | **out** }
no ipv6 traffic-filter *name* { **in** | **out** }

Parameter Description

Parameter	Description
name	Name of IPv6 access list
in	Specifies filtering on inbound packets
out	Specifies filtering on outbound packets

Defaults By default, it is not disabled.

Command mode Interface configuration mode.

Usage Guide Use this command to apply the IPv6 access list to a specified interface to filter the inbound or

outbound packets.

Configuration Examples The following example applies the IPv6 access list named **v6-acl** to interface GigabitEthernet 0/1:

```
Orion Alpha A28X(config)# interface GigaEthernet 0/1
Orion Alpha A28X(config-if)# ipv6 traffic-filter v6-acl in
```

Related Commands

Command	Description
show access-group	Displays ACL configurations on the interface.

Platform Description N/A

1.26 list-remark

Use this command to write a helpful comment (remark) for an access list. Use the **no** form of this command to remove the remark.

list-remark *text*

no list-remark

Parameter Description

Parameter	Description
text	Comment that describes the access list.

Defaults The access lists have no remarks by default.

Command mode ACL configuration mode

Usage Guide You can use this command to write a helpful comment for a specified access list.

Configuration Examples The following example writes a comment of “this acl is to filter the host 192.168.4.12” for ACL102.

```
Orion Alpha A28X(config)# ip access-list extended 102
Orion Alpha A28X(config-ext-nacl)# list-remark this acl is to filter the
host 192.168.4.12
Orion Alpha A28X(config-ext-nacl)# show access-lists
ip access-list extended 102
deny ip host 192.168.4.12 any
1000 hits
this acl is to filter the host 192.168.4.12
Orion Alpha A28X(config-ext-nacl)#
```

Related Commands

Command	Description
show access-lists	Displays all access lists.
ip access-list	Defines an IPv4 access list.
access-list list remark	Adds a helpful comment for an access list in global configuration mode.

Platform Description	N/A

1.27 mac access-group

Use this command to apply the specified MAC access list globally or on the specified interface. Use the **no** form of the command to remove the access list from the interface.

mac access-group { *id* | *name* } { **in** | **out** }

no mac access-group { *id* | *name* } { **in** | **out** }

Parameter Description

Parameter	Description
id	MAC access list number. The range is from 700 to 799.
name	Name of the MAC access list
in	Specifies filtering on the inbound packets.
out	Specifies filtering on the outbound packets.

Defaults No MAC access list is applied by default.

Command mode Global or interface configuration mode.

Usage Guide Use this command to apply the access list globally or to the interface to filter the inbound or outbound packets based on the MAC address.

Configuration Examples The following example applies the MAC access-list **accept_00d0f8xxxxxx_only** to interface GigabitEthernet 1/1:

```
Orion Alpha A28X(config)# interface GigaEthernet 1/1
Orion Alpha A28X(config-if-GigabitEthernet 1/1)# mac access-group
accept_00d0f8xxxxxx_only in
```

Related Commands

Command	Description
show access-group	Displays the ACL configuration on the interface.

Platform Description N/A

1.28 counter

Use this command to enable the counter of packet matching the extended MAC access list. Use the **no** form of this command to disable the counter.

mac access-list counter { *id* | *name* }

no mac access-list counter { *id* | *name* }

Parameter

Parameter	Description

Description

id	Extended MAC access list number. The range is from 700 to 799.
name	Name of the extended MAC access list

Defaults The counter is disabled by default.

Command mode Global configuration mode

Usage Guide Use this command to enable the counter of packets matching the MAC access list to monitor the packets matching and filtering.

Configuration Examples The following example enables the counter of packet matching the extended MAC access list named mac-acl:

```
Orion Alpha A28X(config)# mac access-list counter mac-acl
Orion Alpha A28X(config)# show access-lists
mac access-list extended mac-acl
 10 permit host 0023.56ac.8965 any (170 matches)
 20 deny any any etype-any cos 6 (239 matches)
```

The following example disables the counter of packet matching the extended MAC access list named mac-acl:

```
Orion Alpha A28X(config)#no mac access-list counter mac-acl
Orion Alpha A28X(config)# show access-lists
mac access-list extended mac-acl
 10 permit host 0023.56ac.8965 any
 20 deny any any etype-any cos 6
```

Related Commands

Command	Description
show access-lists	Displays all access lists.

Platform Description N/A

1.29 mac access-list extended

Use this command to create an extended MAC access list. Use the **no** form of the command to remove the MAC access list.

mac access-list extended { *id* | *name* }

no mac access-list extended { *id* | *name* }

Parameter Description

Parameter	Description
id	Extended MAC access list number. The range is from 700 to 799.
name	Name of the extended MAC access list

Defaults N/A

Command mode Global configuration mode.

Usage Guide To filter the packets based on the MAC address, you need to define a MAC access list by using the **mac access-list extended** command.

Configuration Examples The following command creates an extended MAC access list named mac-acl:

```
Orion Alpha A28X(config)# mac access-list extended mac-acl
Orion Alpha A28X(config-mac-nacl)# show access-lists
mac access-list extended mac-acl
```

The following command creates an extended MAC access list numbered 704:

```
Orion Alpha A28X(config)# mac access-list extended 704
Orion Alpha A28X(config-mac-nacl)# show access-lists
mac access-list extended 704
```

Related Commands

Command	Description
show access-lists	Displays all access lists.

Platform Description N/A

1.30 mac access-list resequence

Use this command to resequence an extended MAC access list. Use the **no** form of this command to restore the default order of access entries.

mac access-list resequence { *id* | *name* } *start-sn inc-sn*

no mac access-list resequence { *id* | *name* }

Parameter Description

Parameter	Description
id	Extended MAC access list number: 700 to 799.
name	Name of the extended MAC access list
start-sn	Start sequence number. Range: 1 to 2147483647
inc-sn	Increment of the sequence number. Range: 1 to 2147483647

Defaults *start-sn*: 10

inc-sn: 10

Command mode Global configuration mode

Usage Guide Use this command to change the order of the access entries.

Configuration Examples The following example resequences entries of extended MAC access list “mac-acl”:

Before the configuration:

```
Orion Alpha A28X# show access-lists
```

```
mac access-list extended mac-acl
 10 permit any any etype-any
 20 deny any any etype-any
```

After the configuration:

```
Orion Alpha A28X# config
Orion Alpha A28X(config)# mac access-list resequence exp-acl 21 43
Orion Alpha A28X(config)# exit
Orion Alpha A28X# show access-lists
mac access-list extended mac-acl
 21 permit any any etype-any
 64 deny any any etype-any
```

Related Commands

Command	Description
show access-lists	Displays all access lists..

Platform Description N/A

1.31 permit

One or multiple **permit** conditions are used to determine whether to forward or discard the packet. In ACL configuration mode, you can modify the existent ACL or configure according to the protocol details.

9. Standard IP ACL

[*sn*] **permit** {*source source-wildcard* | **host** *source* | **any | interface** *idx* } [**time-range** *tm-range-name*] [**log**]

10. Extended IP ACL

[*sn*] **permit protocol** *source source-wildcard destination destination-wildcard* [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**log**]

Extended IP ACLs of some important protocols:

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** {*source source-wildcard* | **host** *source* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **permit tcp** { *source source-wildcard* | **host** *source* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

[*sn*] **permit udp** {*source source -wildcard*|**host** *source* |**any**} [*operator* **port** [*port*]] {*destination destination-wildcard* |**host** *destination* | **any**} [**operator port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

11. Extended MAC ACL

[*sn*] **permit** { **any** | **host** *source-mac-address* | *source-mac-address mask*} { **any** | **host** *destination-mac-address* | *destination -mac-address mask* } [*ethernet-type*] [**cos** [*out*] [**inner** *in*]]

12. Extended expert ACL

[*sn*] **permit** [**protocol** | [*ethernet-type*][**cos** [*out*] [**inner** *in*]]] [**VID** [*out]*[**inner** *in]*] {*source source-wildcard* | **host** *source* | **any**} {**host** *source*-mac-*address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*][**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

When you select the Ethernet-type field or cos field:

[*sn*] **permit** {*ethernet-type*| **cos** [*out*] [**inner** *in*]} [**VID** [*out*][**inner** *in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**time-range** *time-range-name*]

When you select the protocol field:

[*sn*] **permit protocol** [**VID** [*out]*[**inner** *in*]] {*source source-wildcard* | **host** *Source* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

Extended expert ACLs of some important protocols:

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** [**VID** [*out*][**inner** *in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**}[*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **permit tcp** [**VID** [*out*][**inner** *in*]]{*source source-wildcard* | **host** *Source* | **any**} {**host** *source-mac-address* | **any** } [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

[*sn*] **permit udp** [**VID** [*out*][**inner** *in*]]{*source source –wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

Address Resolution Protocol (ARP)

[*sn*] **permit arp** {**vid** *vlan-id***}** [**host** *source-mac-address* | **any**] [**host** *destination –mac-address* | **any**] {*sender-ip sender-ip–wildcard* | **host** *sender-ip* | **any**} {*sender-mac sender-mac-wildcard* | **host** *sender-mac* | **any**} {*target-ip target-ip–wildcard* | **host** *target-ip* | **any**}

13. Extended IPv6 ACL

[*sn*] **permit protocol** {*source-ipv6-prefix / prefix-length* | **any** | **host** *source-ipv6-address*} {*destination-ipv6-prefix / prefix-length* | **any**| *hostdestination-ipv6-address*} [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

Extended IPv6 ACLs of some important protocols:

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** {*source-ipv6-prefix / prefix-length* | **any** *source-ipv6-address* | **host**} {*destination-ipv6-prefix / prefix-length*| **host** *destination-ipv6-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**dscp** *dscp*] [**flow-label** *flow-label*][**fragment**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **permit tcp** {*source-ipv6-prefix* / *prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix* / *prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

[*sn*] **permit udp** {*source-ipv6-prefix* / *prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix* / *prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode ACL configuration mode.

Usage Guide Use this command to configure the **permit** conditions for the ACL in ACL configuration mode.

Configuration Examples The following example shows how to create and display an Expert Extended ACL. This expert ACL permits all the TCP packets with the source IP address 192.168.4.12 and the source MAC address 001300498272.

```
Orion Alpha A28X(config)#expert access-list extended exp-acl
Orion Alpha A28X(config-exp-nacl)#permit tcp  host  192.168.4.12 host
0013.0049.8272 any any
Orion Alpha A28X(config-exp-nacl)#deny any any any any
Orion Alpha A28X(config-exp-nacl)#show access-lists
expert access-list extended exp-acl
10 permit tcp  host  192.168.4.12 host 0013.0049.8272 any any
20 deny any any any any
Orion Alpha A28X(config-exp-nacl)#
```

This example shows how to use the extended IP ACL. The purpose is to permit the host with the IP address 192.168.4.12 to provide services through the TCP port 100 and apply the ACL to interface gigabitethernet 1/1. The configuration procedure is as below:

```
Orion Alpha A28X(config)# ip access-list extended 102
Orion Alpha A28X(config-ext-nacl)# permit tcp host 192.168.4.12 eq 100 any
Orion Alpha A28X(config-ext-nacl)# show access-lists
ip access-list extended 102
10 permit tcp host 192.168.4.12 eq 100 any
Orion Alpha A28X(config-ext-nacl)#exit
Orion Alpha A28X(config)#interface gigabitethernet 1/1
Orion Alpha A28X(config-if)#ip access-group 102 in
Orion Alpha A28X(config-if)#
```

This example shows how to use the extended MAC ACL. The purpose is to permit the host with the MAC address 0013.0049.8272 to send Ethernet frames through the type 100 and apply the ACL to

interface gigabitethernet 1/1. The configuration procedure is as below:

```
Orion Alpha A28X(config)#mac access-list extended 702
Orion Alpha A28X(config-mac-nacl)#permit host 0013.0049.8272 any aarp
Orion Alpha A28X(config-mac-nacl)#show access-lists
mac access-list extended 702
10 permit host 0013.0049.8272 any aarp 702
Orion Alpha A28X(config-mac-nacl)#exit
Orion Alpha A28X(config)#interface gigabitethernet 1/1
Orion Alpha A28X(config-if)#mac access-group 702 in
```

This example shows how to use the standard IP ACL. The purpose is to permit the host with the IP address 192.168.4.12 and apply the ACL to interface gigabitethernet 1/1. The configuration procedure is as below:

```
Orion Alpha A28X(config)#ip access-list standard std-acl
Orion Alpha A28X(config-std-nacl)#permit host 192.168.4.12
Orion Alpha A28X(config-std-nacl)#show access-lists
ip access-list standard std-acl
  10 permit host 192.168.4.12
Orion Alpha A28X(config-std-nacl)#exit
Orion Alpha A28X(config)# interface gigabitethernet 1/1
Orion Alpha A28X(config-if)# ip access-group std-acl in
```

This example shows how to use the extended IPV6 ACL. The purpose is to permit the host with the IP address 192.168.4.12 and apply the ACL to interface gigabitethernet 1/1. The configuration procedure is as below:

```
Orion Alpha A28X(config)#ipv6 access-list extended v6-acl
Orion Alpha A28X(config-ipv6-nacl)#11 permit ipv6 host ::192.168.4.12 any
Orion Alpha A28X(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
11 permit ipv6 host ::192.168.4.12 any
Orion Alpha A28X(config-ipv6-nacl)# exit
Orion Alpha A28X(config)#interface gigabitethernet 1/1
Orion Alpha A28X(config-if)#ipv6 traffic-filter v6-acl in
```

Related Commands

Command	Description
show access-lists	Displays all access lists.
ipv6 traffic-filter	Applies the extended IPv6 access list to the interface.
ip access-group	Applies the IP access list to the interface.
mac access-group	Applies the extended MAC access list to the interface.
ip access-list	Defines an IP access list.
mac access-list	Defines an extended MAC access list.
expert access-list	Define an extended expert access list.
ipv6 access-list	Defines an extended IPv6 access list.
deny	Defines the **deny** access entry.

Platform Description N/A

1.32 redirect destination interface

Use this command to redirect the traffic matching the access list to the specified interface. Use the **no** form of this command to remove the redirection.

redirect destination interface *interface-name* **acl** { *id* | *name* } **in**

no redirect destination interface *interface-name* **acl** { *id* | *name* } **in**

Parameter Description

Parameter	Description
interface-name	Redirect interface
id	Access list number
name	Access list name

Defaults No redirection is configured.

Command mode Interface configuration mode

Usage Guide Use this command to configure access redirection, namely, to redirect the traffic matching the access list to the specified interface. You can monitor the operation of a specified access list by using this command.

Configuration Examples The following example configures access redirection.

```
Orion Alpha A28X(config)# interface gigabitEthernet 0/3
Orion Alpha A28X(config-if-GigabitEthernet 0/3)# redirect destination
interface gigabitEthernet 0/2 acl1 in
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.33 remark

Use this command to write a helpful comment (remark) for an entry in the access list. Use the **no** form of this command to remove the remark.

remark *text*

no remark

Parameter Description

Parameter	Description

text	Comment that describes the access entry.

Defaults The access entries have no remarks.

Command mode ACL configuration mode.

Usage Guide Use this command to write a helpful comment for an access entry.
Up to 100 characters are allowed in the remark.
Two identical access entry remarks in one access list is not allowed.
Removing an access entry may delete the remark for it as well.

Configuration Examples The following example writes remarks for the entry in extended IP access list 102.

```
Orion Alpha A28X(config)# ip access-list extended 102
Orion Alpha A28X(config-ext-nacl)# remark first_remark
Orion Alpha A28X(config-ext-nacl)# permit tcp 1.1.1.1 0.0.0.0 2.2.2.2
0.0.0.0
Orion Alpha A28X(config-ext-nacl)# remark second_remark
Orion Alpha A28X(config-ext-nacl)# permit tcp 3.3.3.3 0.0.0.0 4.4.4.4
0.0.0.0
Orion Alpha A28X(config-ext-nacl)# end
Orion Alpha A28X#
```

Related Commands

Command	Description
show access-lists	Displays all access lists.
ip access-list	Defines an IP access list.

Platform Description N/A

1.34 show access-group

Use this command to display the access list applied to the interface.
show access-group [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface	Interface name

Command mode Privileged EXEC mode

Usage Guide Use this command to display the access list configuration on the specified interface. If no interface is specified, access list configuration on all interfaces is displayed.

Configuration Examples

```
Orion Alpha A28X# show access-group interface GigabitEthernet 0/3
ip access-list extended 101
Applied On interface GigabitEthernet 0/3 in.
```

Related Commands

Command	Description
ip access-group	Applies the IP access list to the interface.
mac access-group	Applies the MAC access list to the interface.
expert access-group	Applies the expert access list to the interface.
ipv6 traffic-filter	Applies the IPv6 access list to the interface.

Platform Description N/A

1.35 show access-lists

Use this command to display all access lists or the specified access list.

show access-lists [*id* | *name*] [**summary**]

Parameter Description

Parameter	Description
id	Access list number
name	Name of the IP access list
summary	Access list summary

Command mode Global configuration mode

Usage Guide Use this command to display the specified access list. If no access list number or name is specified, all the access lists are displayed.

Configuration Examples

```
Orion Alpha A28X# show access-lists n_acl
ip access-list standard n_acl
Orion Alpha A28X# show access-lists 102
ip access-list extended 102

Orion Alpha A28X# show access-lists
ip access-list standard n_acl
ip access-list extended 101
permit icmp host 192.168.1.1 any log (1080 matches)
  permit tcp host 1.1.1.1 any established
  deny ip any any (80021 matches)
mac access-list extended mac-acl
expert access-list extended exp-acl
ipv6 access-list extended v6-acl
petmit ipv6 ::192.168.4.12 any (100 matches)
deny any any (9 matches)
```

Related Commands

Command	Description

ip access-list	Defines an IP access list.
mac access-list	Defines an extended MAC access list.
expert access-list	Defines an extended expert access list.
ipv6 access-list	Defines an extended IPv6 access list.

Platform Description N/A

1.36 show expert access-group

Use this command to display the expert access list applied to the interface.

show expert access-group [**interface** *interface*]]

Parameter Description

Parameter	Description
interface	Interface name
wlan-id	WLAN ID

Command mode Privileged EXEC mode

Usage Guide Use this command to display the expert access list configured on the interface. If no interface is specified, the expert access lists on all interfaces are displayed.

Configuration Examples

```
Orion Alpha A28X# show expert access-group interface gigabitethernet 0/2
expert access-group ee in
Applied On interface GigabitEthernet 0/2.
```

Related Commands

Command	Description
expert access-list	Defines an extended expert access list.

Platform Description N/A

1.37 show ip access-group

Use this command to display the standard and extended IP access lists on the interface.

show ip access-group [**interface** *interface*]

Parameter Description

Parameter	Description
interface	Interface name

Command mode Privileged EXEC mode

Usage Guide Use this command to display the standard and extended IP access lists configured on the interface.

If no interface is specified, the standard and extended IP access lists on all interfaces are displayed.

Configuration Examples

```
Orion Alpha A28X# show ip access-group interface gigabitethernet 0/1
ip access-group aaa in
Applied On interface GigabitEthernet 0/1.
```

Related Commands

Command	Description
ip access-list	Defines an IP access list.

Platform Description N/A

1.38 show ipv6 traffic-filter

Use this command to display the IPv6 access list on the interface.

show ipv6 traffic-filter [**interface** *interface*]

Parameter Description

Parameter	Description
interface	Interface name

Defaults -

Command mode Privileged EXEC mode

Usage Guide Use this command to display the IPv6 access list configured on the interface. If no interface is specified, the IPv6 access lists on all interfaces are displayed.

Configuration Examples

```
Orion Alpha A28X# show ipv6 traffic-filter interface gigabitethernet 0/4
ipv6 access-group v6 in
Applied On interface GigabitEthernet 0/4.
```

Related Commands

Command	Description
ipv6 access-list	Defines an IPv6 access list.

Platform Description N/A

1.39 show mac access-group

Use this command to display the MAC access list on the interface.

show mac access-group [**interface** *interface*]

Parameter Description

Parameter	Description

interface	Interface name

Defaults N/A

Command mode Privileged EXEC mode

Usage Guide Use this command to display the MAC access list configured on the interface. If no interface is specified, the MAC access lists on all interfaces are displayed.

Configuration Examples

```
Orion Alpha A28X# show mac access-group interface gigabitethernet 0/3
mac access-group mm in
Applied On interface GigabitEthernet 0/3.
```

Related Commands

Command	Description
mac access-list	Defines a MAC access list.

Platform Description N/A

1.40 show redirect interface

Use this command to display the access redirection configuration.

show redirect [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface-name	Interface name

Defaults N/A

Command mode Privileged EXEC mode

Usage Guide Use this command to display the access redirection configuration on the interface. If no interface is specified, the access redirection configuration on all interfaces is displayed.

Configuration Examples The following example displays the access redirection configuration on interface GigabitEthernet 0/3.

```
Orion Alpha A28X #show redirect interface gigabitEthernet 0/3
acl redirect configuration on interface gigabitEthernet 0/3
redirect destination interface gigabitEthernet 0/3 acl 1 in
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2 QoS Commands

2.1 class

Use this command to add reference to an existing class map. Use the **no** form of this command to remove the class from the policy map.

class *class-map-name*

no class *class-map-name*

Parameter Description

Parameter	Description
class-map-name	Reference to a class map.

Defaults The function is disabled by default.

Command Mode Policy configuration mode

Usage Guide N/A

Configuration Examples The following example adds reference to the class map named cmap1.

```
Orion Alpha A28X(config)# class-map cmap1
Orion Alpha A28X(config-cmap)# match ip dscp 5
Orion Alpha A28X(config-cmap)# exit
Orion Alpha A28X(config)# policy-map pmap1
Orion Alpha A28X(config-pmap)# class cmap1
Orion Alpha A28X(config-pmap-c)# end
```

Related Commands

Command	Description
show policy-map [*policy-map-name* **[class** *class-map-name*]]	Displays the policy map.

Platform Description N/A

2.2 class map

Use this command to create a class map and enter class-map configuration mode. Use the **no** or **default** form of this command to remove a class map.

class-map *class-map-name*

no class-map *class-map-name*

default class-map *class-map-name*

Parameter Description

Parameter	Description
class-map-name	Class map name. The class map name can be a maximum of 31 characters.

Defaults None

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example creates a class map named cm_acl to match an access list named me.

```
Orion Alpha A28X(config)# mac access-list extended me
Orion Alpha A28X(config-ext-macl)# permit host 1111.2222.3333 any
Orion Alpha A28X(config-ext-macl)# exit
Orion Alpha A28X(config)# class-map cm_acl
Orion Alpha A28X(config-cmap)# match access-group me
Orion Alpha A28X(config-cmap)# exit
```

The following example creates a class map named cm_dscp to match DHCP 8, 16 and 24.

```
Orion Alpha A28X(config)# class-map cm_dscp
Orion Alpha A28X(config-cmap)# match ip dscp 8 16 24
Orion Alpha A28X(config-cmap)# exit
```

Related Commands

Command	Description
show class-map [*class-map-name*]	Displays the class map.

Platform Description N/A

2.3 match

Use this command to define a match criteria in class map configuration mode. Use the **no** form of this command to remove the match criteria.

match { **access-group** *access_list* | **ip** { **dscp** *dscp-vlaue-list* | **precedence** *pre-vlaue-list* } }

no match { **access-group** *access_list* | **ip** { **dscp** *dscp-vlaue-list* | **precedence** *pre-vlaue-list* } }

Parameter Description

Parameter	Description
access-group *access_list*	Identifies a numbered or named access list as the match criteria.
ip dscp *dscp-vlaue-list*	Identifies DSCP values as the match criteria. Multiple DSCP can be configured. The range is from 0 to 63.
ip precedence *pre-vlaue-list*	Identifies IP precedence values as the match criteria. Multiple IP precedence can be configured. The range is from 0 to 7.

Defaults None

Command Mode Class map configuration mode

Usage Guide N/A

Configuration Examples The following example creates a class map named cmap1 to match DSCP 20, 22, 24 and 30.

```
Orion Alpha A28X(config)# class-map cmap1

Orion Alpha A28X(config-cmap)# match ip dscp 20 22 24 30
```

Related Commands

Command	Description
show class-map [*class-map-name*]	Displays the class map.

Platform Description N/A

2.4 mls qos cos

Use this command to configure the CoS value of an interface. Use the **no** form of this command to restore the default setting.

mls qos cos *default-cos*

no mls qos cos

Parameter Description

Parameter	Description
default-cos	CoS value of the interface. The range is from 0 to 7.

Defaults The default CoS value is 0.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the default CoS value to 7.

```
Orion Alpha A28X(config)# interface gigabitethernet 1/1

Orion Alpha A28X(config-if)# mls qos cos 7
```

Related Commands

Command	Description
show mls qos interface *interface-id*	Displays information of the specified interface.

Platform Description N/A

2.5 mls qos map cos-dscp

Use this command to map the CoS value to the DSCP value. Use the **no** or **default** form of this

command to restore the default CoS-DSCP mapping.

mls qos map cos-dscp *dscp1...dscp8*

no mls qos map cos-dscp

default mls qos map cos-dscp

Parameter Description

Parameter	Description
dscp1...dscp8	Specifies the DSCP value. The range is from 0 to 63.

Defaults By default, the CoS 0, 1, 2, 3, 4, 5, 6, 7 is mapped to the DSCP 0, 8, 16, 24, 32, 40, 48, 56 respectively.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples

```
Orion Alpha A28X(config)# mls qo map cos-dscp 8 10 16 18 24 26 32 34
```

Related Commands

Command	Description
show mls qos maps cos-dscp	Displays the CoS-DSCP mapping.

Platform Description N/A

2.6 mls qos map dscp-cos

Use this command to map the DSCP value to the CoS value. Use the **no** or **default** form of this command to restore the default DSCP-CoS mapping.

mls qos map dscp-cos *dscp-list* **to** *cos*

no mls qos map dscp-cos

default mls qos map dscp-cos

Parameter Description

Parameter	Description
dscp-list	DSCP list. The range is from 0 to 63.
cos	CoS value. The range is from 0 to 7.

Defaults The default DSCP-CoS mapping is listed below:

DSCP 0-7	DSCP 8-15	DSCP 16-23	DSCP 24-31	DSCP 32-39	DSCP 40-47	DSCP 48-55	DSCP 56-63
CoS 0	CoS 1	CoS 2	CoS 3	CoS 4	CoS 5	CoS 6	CoS 7

Command Mode Global configuration mode.

Usage Guide N/A

Configuration

```
Orion Alpha A28X(config)# mls qos map dscp-cos 8 10 16 18 to 0
```

Examples

Related Commands

Command	Description
show mls qos maps dscp-cos	Displays the DSCP-CoS mapping.

Platform Description N/A

2.7 mls qos map ip-precedence-dscp

Use this command to map the IP precedence to the DSCP value. Use the **no** or **default** form of this command to restore the default IP-precedence to DSCP mapping.

mls qos map ip-precedence-dscp *dscp1 ... dscp8*

no mls qos map ip-precedence-dscp

default mls qos map ip-precedence-dscp

Parameter Description

Parameter	Description
dscp1...dscp8	DSCP list. The range is from 0 to 63.

Defaults By default, the IP precedence 0, 1, 2, 3, 4, 5, 6, 7 is mapped to the DSCP 0, 8, 16, 24, 32, 40, 48, 56 respectively.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples

```
Orion Alpha A28X(config)# mls qo map ip-prec -dscp 8 10 16 18 24 26 32 34
```

Related Commands

Command	Description
show mls qos maps ip-pre-dscp	Displays the IP-precedence to DSCP mapping.

Platform Description N/A

2.8 mls qos scheduler

Use this command to configure the output queue scheduling. Use the **no** or **default** form of this command to restore the default scheduler.

mls qos scheduler [**sp** | **rr** | **wrr** | **wfq**]

no mls qos scheduler

Parameter Description

Parameter	Description
sp	Specifies the absolute priority scheduling.
rr	Specifies the round-robin scheduling.

wrr	Specifies the frame count weighted round-robin scheduling.
wfq	Specifies the weighted fair queuing.

Defaults The default queue scheduling is **wrr**.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies the sp scheduling.

```
Orion Alpha A28X(config)# mls qos scheduler sp
```

```
Orion Alpha A28X(config)# interface gigabitEthernet 0/1
Orion Alpha A28X(config-if-GigabitEthernet 0/1)# mls qos scheduler wrr
```

Related Commands

Command	Description
show mls qos scheduler	Displays the output queue scheduling.

Platform Description N/A

2.9 mls qos trust

Use this command to configure the trust mode on an interface. Use the **no** or **default** form of this command to restore the default setting.

mls qos trust { **cos** | **dscp** | **ip-precedence** }

no mls qos trust

default mls qos trust

Parameter Description

Parameter	Description
cos	Specifies the CoS trust mode.
dscp	Specifies the DSCP trust mode.
ip-precedence	Specifies the IP-PRE trust mode.

Defaults No trust mode is configured by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the CoS trust mode.

```
Orion Alpha A28X(config)# interface gigabitethernet 1/1
Orion Alpha A28X(config-if)# mls qos trust cos
```

Related Commands	Command	Description
	show mls qos interface *interface-id*	Displays the specified interface configuration.

Platform Description N/A

2.10 police

Use this command to configure traffic policing for a class map in a policy map. Use the **no** form of this command to remove traffic policing for the class map.

police *rate-bps burst-byte* [**exceed-action** { **drop** | **dscp** *new-dscp* | **cos** *new-cos* [**none-tos**] }]

no police

Parameter Description

Parameter	Description
rate-bps	Bandwidth limit value per second (The unit is KBits). This value depends on the specific product.
burst-byte	Burst traffic limit value (The unit is KBytes). This value depends on the specific product.
drop	Drops the packet. This is available only when the packet exceeds the bandwidth limit.
dscp *new-dscp*	Modifies the DSCP value of the packet. This is available only when the packet exceeds bandwidth limit. The DSCP value range is from 0 to 63.
cos *new-cos*	Modifies the CoS value of the packet. This is available only when the packet exceeds bandwidth limit. The CoS value range is from 0 to 7.
none-tos	Modifies the CoS value only.

Defaults No traffic policing is configured for the class map by default.

Command Mode Policy map class configuration mode

Usage Guide N/A

Configuration Examples The following example configures traffic policing which modifies the DSCP value of the packet to 16 for class map “cm-acl” in policy map “pmap1”.

```
Orion Alpha A28X(config)# policy-map pmap1
Orion Alpha A28X(config-pmap)# class cm-acl
Orion Alpha A28X(config-pmap-c)# police 102400 4096 exceed-action dscp 16
```

Related Commands	Command	Description
	show policy-map [*policy-map-name* [**class** *class-map-name*]]	Displays the policy map configuration.

Platform Description N/A

2.11 policy map

Use the following command to create a policy map and enter policy map configuration mode. Use the **no** or **default** form of this command to remove the specified policy map.
policy-map *policy-map-name*
no policy-map *policy-map-name*
default policy-map *policy-map-name*

Parameter Description

Parameter	Description
policy-map-name	Policy map name. The policy map name can be a maximum of 31 characters.

Defaults No policy map is configured by default.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example creates policy map “po”, and then adds a reference to class map “cmap1”. Sets the rate limit value to 10 Mbps, the burst traffic limit value to 256 Kbps, and discard packets which exceed the limit.

```
Orion Alpha A28X(config)# policy-map po
Orion Alpha A28X(config-pmap)# class cmaplOrion Alpha A28X(config-pmap-c)# police 10240 256 exceed-action drop
```

Related Commands

Command	Description
show policy-map [*policy-map-name* [**class** *class-map-name*]]	Displays the policy map configuration.

Platform Description N/A

2.12 priority-queue

Use this command to configure the output queue scheduling policy to SP. Use the **no** or **default** form of this command to restore the default queue scheduling policy.
priority-queue
no priority-queue

Parameter Description

Parameter	Description
N/A	N/A

Defaults The default output queue scheduling policy is WRR.

Command Mode Global configuration mode.

Usage Guide This command shares the same configuration with the **mls qos scheduler sp**. The **show run** command displays this configuration in the **mls qos scheduler sp** item instead of **priority-queue**.

Configuration Examples The following example configures the output queue scheduling policy to SP.

```
Orion Alpha A28X(config)# priority-queue
```

Related Commands

Command	Description
show mls qos scheduler	Displays the output queue scheduling policy.

Platform Description N/A

2.13 priority-queue cos-map

Use this command to configure the mapping between the CoS value and the queue ID. Use the **no** or **default** form of this command to restore the default CoS mapping to the queue.

priority-queue cos-map *qid cos0* [*cos1* [*cos2* [*cos3* [*cos4* [*cos5* [*cos6* [*cos7*]]]]]]]

no priority-queue cos-map

default priority-queue cos-map

Parameter Description

Parameter	Description
qid	Queue ID. The range is from 1 to 8.
cos0 ... cos7	CoS value. The range is from 0 to 7.

Defaults The default mapping between the CoS value and the queue ID is listed below:

Queue 1	Queue 2	Queue 3	Queue 4	Queue 5	Queue 6	Queue 7	Queue 8
CoS 0	CoS 1	CoS 2	CoS 3	CoS 4	CoS 5	CoS 6	CoS 7

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example maps the CoS 3, 5 to the output queue 1.

```
Orion Alpha A28X(config)#priority-queue cos-map 1 3 5
```

Related Commands

Command	Description
show mls qos queuing	Displays the output queues.

Platform Description N/A

2.14 qos queue

Use this command to configure a minimum or maximum of the interface bandwidth to a queue. Use the **no** or **default** form of this command to remove the minimum or maximum of the interface bandwidth.

qos queue [**ucast** | **mcast**] *queue-id* **bandwidth** { **minimum** | **maximum** } *bandwidth*

no qos queue [**ucast** | **mcast**] *queue-id* **bandwidth** { **minimum** | **maximum** }

default qos queue [**ucast** | **mcast**] *queue-id* **bandwidth** { **minimum** | **maximum** }

Parameter Description

Parameter	Description
queue [**ucast** | **mcast**]	The **queue ucast** keyword indicates configuring the minimum or maximum of the interface bandwidth to the unicast queue on the device supporting the unicast queue bandwidth configuration. The **queue mcast** keyword indicates configuring the minimum or maximum of the interface bandwidth to the multicast queue on the device supporting the multicast queue bandwidth configuration. The **queue** keyword indicates configuring the minimum or maximum of the interface bandwidth to the queue on the device supporting both unicast and multicast queue bandwidth configuration.
queue-id	Queue ID. The range is from 1 to 8.
bandwidth { **minimum** | **maximum** } *bandwidth*	Bandwidth value. The value range depends on the specific product.

Defaults No minimum or maximum of interface bandwidth to a queue is configured by default.

Command Mode Interface configuration mode

Usage Guide N/A

Configuration Examples The following example configures the minimum interface bandwidth of unicast queue 1 to 5 Mbps, and the maximum to 10 Mbps.

```
Orion Alpha A28X(config)# interface gigabitEthernet 0/1
Orion Alpha A28X(config-if-GigabitEthernet 0/1)# qos queue ucast 1
bandwidth maximum 10240
Orion Alpha A28X(config-if-GigabitEthernet 0/1)# qos queue ucast 1
bandwidth minimum 5120
```

The following example configures the minimum interface bandwidth of unicast queue 2 to 2 Mbps.

```
Orion Alpha A28X(config)# interface gigabitEthernet 0/1
Orion Alpha A28X(config-if-GigabitEthernet 0/1)# qos queue ucast 2
bandwidth minimum 2048
```

The following example configures minimum interface bandwidth of multicast queue 1 to 1 Mbps, and the maximum to 5 Mbps.

```
Orion Alpha A28X(config)# interface gigabitEthernet 0/1
Orion Alpha A28X(config-if-GigabitEthernet 0/1)# qos queue mcast 1 bandwidth maximum 5120
Orion Alpha A28X(config-if-GigabitEthernet 0/1)# qos queue mcast 1 bandwidth minimum 1024
```

Related Commands

Command	Description
show qos bandwidth [**interfaces** *interface-id*]	Displays the interface bandwidth of the queue.

Platform Description N/A

2.15 rate-limit

Use this command to configure rate limiting on the interface. Use the **no** or **default** form of this command to remove rate limiting from the interface.

rate-limit { input | output } *bps burst-size*

no rate-limit { **input | output** }

default rate-limit { **input | output** }

Parameter Description

Parameter	Description
input	Configures input rate limiting.
output	Configures output rate limiting.
bps	Bandwidth limit value per second (The unit is KBits). This value depends on the specific product.
burst-size	Burst traffic limit value (The unit is KBytes). This value depends on the specific product.

Defaults Rate limiting is not configured by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the rate limit value to 10 Mbps, and the burst traffic limit value to 256 Kbps.

```
Orion Alpha A28X(config)# interface gigabitethernet 1/3
Orion Alpha A28X(config-if-GigabitEthernet 1/3)# rate-limit input 10240 256
```

Related Commands

Command	Description
show mls qos rate-limit [**interface** *interface-id*]	Displays the rate limiting configuration of the

	interface.

Platform Description N/A

2.16 service-policy

Use this command to apply the policy map to the interface, the virtual group or globally. Use the **no** or **default** form of this command to remove the policy map.

service-policy { **input** | **output** } *policy-map-name*

no service-policy { **input** | **output** } *policy-map-name*

default service-policy { **input** | **output** } *policy-map-name*

Parameter Description

Parameter	Description
policy-map-name	Policy map name
input	Applies the policy map to the input direction.
output	Applies the policy map to the output direction.

Defaults No policy map is configured on the interface or virtual group by default.

Command Mode Interface configuration mode, and virtual group configuration mode.

Usage Guide N/A

Configuration Examples The following example applies policy map “po” to the input direction of interface GigabitEthernet 1/3.

```
Orion Alpha A28X(config)# interface gigabitethernet 1/3

Orion Alpha A28X(config-if-GigabitEthernet 1/3)# service-policy input po
```

The following example applies policy map “po” to the output direction of virtual group 3.

```
Orion Alpha A28X(config)# virtual-group 3

Orion Alpha A28X(config-VirtualGroup)# service-policy output po
```

Related Commands

Command	Description
show mls qos interface policers	Displays the policy map configuration on the interface.
show mls qos virtual-group policers	Displays the policy map configuration on the virtual group.

Platform Description N/A

2.17 set

Use this command to configure the CoS, DSCP or VID value for the traffic. Use the **no** form of this command to remove the CoS, DSCP or VID value from the traffic.

set { **ip dscp** *new-dscp* | **cos** *new-cos* [**none-tos**] | **vid** *new-vid* }

no set { **ip dscp** | **cos** | **vid** }

Parameter Description

Parameter	Description
ip dscp *new-dscp*	Configures the DSCP value for the traffic. The range is from 0 to 63.
cos *new-cos*	Configures the CoS value for the traffic. The range is from 0 to 7.
none-tos	Configures the CoS value only.
vid *new-vid*	Configures the VID value for the traffic. The range is from 1 to 4094.

Defaults No CoS, DSCP or VID value is configured for the traffic in policy map class mode.

Command Mode Policy map class configuration mode

Usage Guide N/A

Configuration Examples The following example creates policy map “pmap1”, and adds a reference to class map “cmap1”.

```
Orion Alpha A28X(config)# policy-map pmap1
Orion Alpha A28X(config-pmap)# class cmap1
```

The following example modifies the CoS value of the traffic to 3.

```
Orion Alpha A28X(config-pmap-c)# set cos 3
```

Related Commands

Command	Description
show policy-map[*policy-map-name* [**class** *class-map-name*]]	Displays the policy map configuration on the interface.

Platform Description N/A

2.18 show class-map

Use this command to display the class map.

show class-map [*class-map-name*]

Parameter Description

Parameter	Description
class-map-name	Class map name.

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays all class maps.

```
Orion Alpha A28X# show class-map
```

```
Class Map cmap1
  Match ip dscp 20 40
Class Map cmap2
  Match access-group 110
```

The fields in the output of this command are described in the following table.

Field	Description
Class Map	Indicates the class map name.
Match	Indicates the matched rule.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.19 show mls qos interface

Use this command to display the QoS configuration of the interface.

show mls qos interface [*interface-id*] [**policers**]

Parameter Description

Parameter	Description
interface-id	Interface name
policers	Displays the traffic policing configured on the interface.

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the QoS configuration of interface GigabitEthernt 1/3.

```
Orion Alpha A28X# show mls qos interface gigabitethernet 1/3
Interface: GigabitEthernet 0/3
Ratelimit input: 10240 256
Ratelimit output: 51200 4096
Attached input  policy-map: pmap1
Attached output policy-map:
Default trust: dscp
Default cos: 3
```

The fields in the output of this command are described in the following table.

Field	Description
Interface	Indicates the interface name.
Ratelimit input	Indicates the input rate limit value .
Ratelimit output	Indicates the output rate limit value .
Attached input policy-map	Indicates the input policy map .
Attached output policy-map	Indicates the output policy map.
Default trust	Indicates the trust mode of the interface.
Default cos	Indicates the default CoS value.

The following example displays the QoS configuration of all interfaces.

```
Orion Alpha A28X# show mls qos interface policers

Interface: GigabitEthernet 0/1

Attached input  policy-map: pmap1

Attached output policy-map: pmap1

Interface: GigabitEthernet 0/2

Attached input  policy-map: p1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.20 show mls qos maps

Use this command to display DSCP-CoS mapping, CoS-DSCP mapping and IP-PRE-DSCP mapping.

show mls qos maps [**cos-dscp** | **dscp-cos** | **ip-prec-dscp**]

Parameter Description

Parameter	Description
cos-dscp	Displays the CoS-DSCP mapping.
dscp-cos	Displays the DSCP-CoS mapping.
ip-prec-dscp	Displays the IP-PRE-DSCP mapping..

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the CoS-DSCP mapping.

```
Orion Alpha A28X# show mls qos maps cos-dscp

cos dscp
```

```
--- ----

0   0

1   8

2   16

3   24

4   32

5   40

6   48

7   56
```

The fields in the output of this command are described in the following table.

Field	Description
cos	Indicates the CoS value.
dscp	Indicates the DSCP value mapped .

The following example displays the DSCP- CoS mapping.

```
Orion Alpha A28X# show mls qos maps dscp-cos

dscp cos     dscp cos     dscp cos     dscp cos

---- ---     ---- ---     ---- ---     ---- ---

 0   0        1   0        2   0        3   0

 4   0        5   0        6   0        7   0

 8   1        9   1       10   1       11   1

12   1       13   1       14   1       15   1

16   2       17   2       18   2       19   2

20   2       21   2       22   2       23   2

24   3       25   3       26   3       27   3

28   3       29   3       30   3       31   3

32   4       33   4       34   4       35   4

36   4       37   4       38   4       39   4

40   5       41   5       42   5       43   5

44   5       45   5       46   5       47   5

48   6       49   6       50   6       51   6

52   6       53   6       54   6       55   6

56   7       57   7       58   7       59   7

60   7       61   7       62   7       63   7
```

The fields in the output of this command are described in the following table.

Field	Description
dscp	Indicates the DSCP value.
cos	Indicates the CoS value mapped .

The following example displays the IP-PRE-DSCP mapping.

```
Orion Alpha A28X# show mls qos maps ip-prec-dscp

ip-precedence dscp

------------- ----

            0 0

            1 8

            2 16

            3 24

            4 32

            5 40

            6 48

            7 56
```

The fields in the output of this command are described in the following table.

Field	Description
ip-precedence	Indicates the IP-PRE value.
dscp	Indicates the DSCP value mapped .

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.21 show mls qos queuing

Use this command to display the QoS queuing configuration.

show mls qos queueing [**interface** *interface-id*]

Parameter Description

Parameter	Description
interface *interface-id*	ID of interface.

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples

The following example displays the QoS queuing configuration.

```
Orion Alpha A28X# show mls qos queueing

Cos-queue map:

cos qid

--- ---

0   1

1   2

2   3

3   4

4   5

5   6

6   7

7   8


wrr bandwidth weights:

qid weights

--- -------

1   1

2   2

3   3

4   4

5   5

6   6

7   7

8   8


wfq bandwidth weights:

qid weights

--- -------

1   3

2   4

3   5

4   6

5   7

6   8
```

```
7   9

8   10


Interface: GigabitEthernet 0/1

 Wrr queue bandwidth: 1 1 1 1 2 2 2 2

Wfq queue bandwidth: 1 1 2 2 4 4 4 4
```

The fields in the output of this command are described in the following table.

Field	Description
Cos-queue map	Indicates the mapping between the CoS value and the queue ID.
wrr bandwidth weights	Indicates the WRR queue weight.
wfq bandwidth weights	Indicates the WFQ queue weight.
cos	Indicates the CoS value.
qid	Indicates the queue ID.
weights	Indicates the weight value

```
Orion Alpha A28X# show mls qos queueing interface gigabitEthernet 0/1

Interface: GigabitEthernet 0/1

 Wrr queue bandwidth: 1 1 1 1 2 2 2 2

Wfq queue bandwidth: 1 1 2 2 4 4 4 4
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.22 show mls qos rate-limit

Use this command to display the rate limiting configuration of the interface.

show mls qos rate-limit [**interface** *interface-id*]

Parameter Description

Parameter	Description
interface-id	Interface name

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the rate limiting configuration of all interfaces.

```
Orion Alpha A28X# show mls qos rate-limit

Interface: GigabitEthernet 0/1

  rate limit input Kbps = 10240 burst = 256

Interface: GigabitEthernet 0/3

  rate limit output Kbps = 102400 burst = 4096
```

The fields in the output of this command are described in the following table.

Field	Description
Interface	Indicates the interface name.
rate limit input Kbps = x burst = y	Indicates the input rate limit value, and the input burst traffic limit value.
rate limit output Kbps = x burst = y	Indicates the output rate limit value, and the output burst traffic limit value.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.23 show mls qos scheduler

Use this command to display the queue scheduling policy.

show mls qos scheduler [**interface** *interface-id*]

Parameter Description

Parameter	Description
interface *interface-id*	ID of the interface.

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the queue scheduling policy.

```
Orion Alpha A28X# show mls qos scheduler

Global Multi-Layer Switching scheduling

 Weighted Round Robin
```

The fields in the output of this command are described in the following table.

Field	Description
Weighted Round Robin	Indicates that the queue scheduling policy is WRR.

	The other queue scheduling policies are listed as follows: SP: Strict Priority RR: Round Robin WFQ: Weighted Fair Queue

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.24 show mls qos virtual-group

Use this command to display the policy map configuration on the virtual group.

show mls qos virtual-group [*virtual-group-number* | **policers**]

Parameter Description

Parameter	Description
virtual-group-number	Virtual group number. The range is from 1 to 128.
policers	Displays the policy map configuration on all virtual groups.

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the policy map configuration on all virtual groups.

```
Orion Alpha A28X# show mls qos virtual-group policers

Virtual-group: 1

Attached input policy-map: pmap1

Virtual-group: 20

Attached output policy-map: pmap2
```

The fields in the output of this command are described in the following table.

Field	Description
Virtual-group	Indicates the virtual group number.
Attached input policy-map	Indicates the policy map applied on the input virtual group.
Attached output policy-map	Indicates the policy map applied on the output virtual group.

Related

Command	Description

Commands	N/A	N/A

Platform Description N/A

2.25 show policy-map

Use this command to display policy maps.

show policy-map [*policy-map-name* [**class** *class-map-name*]]

Parameter Description

Parameter	Description
policy-map-name	Policy map name
class-map-name	Class map name

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays configuration of policy map “pmap1”.

```
Orion Alpha A28X# show policy-map pmap1


 Policy Map pmap1
    Class cmap1
      set ip dscp 16
    Class cmap2
      police 10240 256 exceed-action dscp 8
    Class cmap3
      police 512000 4096 exceed-action drop
```

The fields in the output of this command are described in the following table.

Field	Description
Policy Map	Indicates the policy map name.
Class	Indicates the class map name.
set	Indicates that the DSCP value is modified in this example.
police	Indicates bandwidth limit configuration and the action policy for the violated packets.

The following example displays the action policy for the traffic of class map “cmap1” in policy map

“pmap1” .

```
Orion Alpha A28X#show policy-map pmap1 class cmap1

Class cmap1

set ip dscp 16
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.26 show qos bandwidth

Use this command to display the bandwidth configuration.

show qos bandwidth [**interfaces** *interface-id*]

Parameter Description

Parameter	Description
interface-id	Interface name

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the bandwidth configuration of interface GigabitEthernet 0/1. (Taking the device supporting the bandwidth configuration of the unicast queue or the multicast queue for example.)

```
Orion Alpha A28X# show qos bandwidth interface gigabitEthernet 0/1


Interface: GigabitEthernet 0/1
 ------------------------------------------------
 uc-queue-id | minimum-bandwidth | maximum-bandwidth
 -----------   -----------------   -----------------
           1                5120               10240
           2                   0                   0
           3                   0                   0
           4                   0                   0
           5                   0                   0
           6                   0                   0
           7                   0                   0
```

```
           8                    0                    0
 ---------------------------------------------------
 Total ucast-queue minimum-bandwidth:            5120
 Total ucast-queue maximum-bandwidth:           10240


Interface: GigabitEthernet 0/1
 ---------------------------------------------------
 mc-queue-id | minimum-bandwidth | maximum-bandwidth
 -----------   -----------------   -----------------
           1                1024                5120
           2                   0                   0
           3                   0                   0
           4                   0                2048
 ---------------------------------------------------
 Total mcast-queue minimum-bandwidth:            1024
Total mcast-queue maximum-bandwidth:            5120
```

The fields in the output of this command are described in the following table.

Field	Description
Interface	Indicates the interface name.
queue-id	Indicates the queue ID.
uc-queue-id	Indicates the unicast queue ID.
mc-queue-id	Indicates the multicast queue ID.
minimum-bandwidth	Indicates the minimum bandwidth configuration. The unit is Kbps.
maximum-bandwidth	Indicates the maximum bandwidth configuration. The unit is Kbps.
Total queue minimum-bandwidth Total queue maximum-bandwidth	Indicates the total bandwidth of minimum and maximum when both unicast and multicast queues are displayed.
Total ucast-queue minimum-bandwidth Total ucast-queue maximum-bandwidth	Indicates the total bandwidth of minimum and maximum when only unicast queue is displayed.
Total mcast-queue minimum-bandwidth Total mcast-queue maximum-bandwidth	Indicates the total bandwidth of minimum and maximum when only multicast queue is displayed.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.27 show virtual-group

Use this command to display the member port in the virtual group.

show virtual-group [*virtual-group-number* | **summary**]

Parameter Description

Parameter	Description
virtual-group-number	Virtual group number. The range is from 1 to 128.
summary	Displays the member port in all virtual groups.

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the member port in all virtual groups.

```
Orion Alpha A28X# show virtual-group summary

  virtual-group        member

  -------------        ------------------------

  1                    Gi0/1 Gi0/2

  2                    Gi0/0
```

The fields in the output of this command are described in the following table.

Field	Description
virtual-group	Indicates the virtual group number.
member	Indicates the member port in the virtual group.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.28 virtual-group

Use this command to create a virtual group in global configuration mode.

Use this command to configure add an interface to a virtual group in interface configuration mode.

Use the **no** or **default** form of this command to remove a virtual group in global configuration mode.

Use the **no** or **default** form of this command to remove an interface from a virtual group in interface configuration mode.

virtual-group *virtual-group-number*
no virtual-group *virtual-group-number*
default virtual-group *virtual-group-number*

Parameter Description

Parameter	Description
virtual-group-number	Virtual group number. The range is from 1 to 128.

Defaults No virtual group is configured, or no interface is added to a virtual group, by default.

Command Mode Interface configuration mode, global configuration mode.

Usage Guide The member port added to the virtual group must be a physical port or an aggregate port member.

Configuration Examples The following example sets the interface gigabitEthernet 1/3 as the member of virtual group 3:

```
Orion Alpha A28X(config)# interface gigabitethernet 1/3
Orion Alpha A28X(config-if)# virtual-group 3
```

Related Commands

Command	Description
show virtual-group [*virtual-group-number* | **summary**]	Displays the virtual group configuration.

Platform Description N/A

2.29 wfq-queue bandwidth

Use this command to configure the WFQ queue weight ratio. Use the **no** or **default** form of this command to restore the default setting.
wfq-queue bandwidth *weight1 ... weight8*
no wfq-queue bandwidth
default wfq-queue bandwidth

Parameter Description

Parameter	Description
weight1...weight8	8 queue weights. The default queue weight ratio is 1:1:1:1:1:1:1:1. For the products supporting the SP scheduling policy, the weight range is from 0 to 15. For the products not supporting the SP scheduling policy, the weight range is from 1 to 15.

Defaults The default queue weight ratio is 1:1:1:1:1:1:1:1.

Command Mode Global configuration mode.

Usage Guide If the weight value is 0, the SP scheduling policy is applied.

Configuration Examples The following example configures the WFQ queue weight ratio to 1:1:2:4:4:4:6:8.

```
Orion Alpha A28X(config)# wfq-queue bandwidth 1 1 2 4 4 4 6 8
```

Related Commands

Command	Description
show mls qos queueing	Displays the QoS queuing configuration.

Platform Description N/A

2.30 wrr-queue bandwidth

Use this command to set the WRR weight ratio. Use the **no** or **default** form of this command to restore the default setting.

wrr-queue bandwidth *weight1 ... weight8*

no wrr-queue bandwidth

default wrr-queue bandwidth

Parameter Description

Parameter	Description
weight1...weight8	8 queue weights. The default queue weight ratio is 1:1:1:1:1:1:1:1. For the products supporting the SP scheduling policy, the weight range is from 0 to 15. For the products not supporting the SP scheduling policy, the weight range is from 1 to 15.

Defaults The default queue weight ratio is 1:1:1:1:1:1:1:1.

Command Mode Global configuration mode

Usage Guide If the weight value is 0, the SP scheduling policy is applied.

Configuration Examples The following example configures the WRR queue weight ratio to 1:1:1:1:2:2:4:8.

```
Orion Alpha A28X(config)# wrr-queue bandwidth 1 1 1 1 2 2 4 8
```

```
Orion Alpha A28X(config)# interface gigabitEthernet 0/1
Orion Alpha A28X(config-if-GigabitEthernet 0/1)# wrr-queue bandwidth 1 1 2 2 2 2 4 4
```

Related Commands

Command	Description
show mls qos queuing	Displays the QoS queuing configuration.

Platform Description N/A