HP 5120 EI Switch Series

Layer 3 - IP Routing

Command Reference

Part number: 5998-1792
Software version: Release 2220
Document version: 6W100-20130810

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Contents

Basic IP routing commands

The term "router" in this chapter refers to both routers and Layer 3 switches.

display ip routing-table

Syntax

display ip routing-table [**verbose**] [**|** { **begin** | **exclude** | **include** } *regular-expression*]

View

Any view

Default level

1: Monitor level

Parameters

verbose: Displays detailed routing table information, including inactive routes. Without this keyword, the command displays only brief information about active routes.

|: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

begin: Displays the first line that matches the specified regular expression and all lines that follow.

exclude: Displays all lines that do not match the specified regular expression.

include: Displays all lines that match the specified regular expression.

regular-expression: Specifies a regular expression, a case-sensitive string of 1 to 256 characters.

Description

Use **display ip routing-table** to display brief information about active routes in the routing table.

This command displays brief information about a routing table, with a routing entry contained in one line. The information displayed includes destination IP address/mask length, protocol, priority, cost, next hop, and outbound interface. This command displays only the optimal routes in use.

Use **display ip routing-table verbose** to display detailed information about all routes in the routing table.

This command displays detailed information about all active and inactive routes, including the statistics of the entire routing table and information for each route.

Examples

Display brief information about active routes in the routing table.

```
<Sysname> display ip routing-table
Routing Tables: Public
         Destinations : 6       Routes : 6

Destination/Mask    Proto  Pre  Cost         NextHop         Interface

1.1.2.0/24          Direct 0    0            1.1.2.1         Vlan11
1.1.2.1/32          Direct 0    0            127.0.0.1       InLoop0
```

```
127.0.0.0/8         Direct 0    0           127.0.0.1       InLoop0
127.0.0.1/32        Direct 0    0           127.0.0.1       InLoop0
192.168.0.0/24      Direct 0    0           192.168.0.1     Vlan1
192.168.0.1/32      Direct 0    0           127.0.0.1       InLoop0
```

Table 1 Command output

Field	Description
Destinations	Number of destination addresses
Routes	Number of routes
Destination/Mask	Destination address/mask length
Proto	Protocol that presents the route
Pre	Priority of the route
Cost	Cost of the route
NextHop	Address of the next hop on the route
Interface	Outbound interface for packets to be forwarded along the route

Display detailed information about all routes in the routing table.

```
<Sysname> display ip routing-table verbose
Routing Tables: Public
         Destinations : 6       Routes : 6

  Destination: 1.1.2.0/24
     Protocol: Direct          Process ID: 0
   Preference: 0                     Cost: 0
 IpPrecedence:                   QosLcId:
      NextHop: 1.1.2.1          Interface: Vlan-interface11
    BkNextHop: 0.0.0.0        BkInterface:
  RelyNextHop: 0.0.0.0          Neighbor : 0.0.0.0
    Tunnel ID: 0x0                  Label: NULL
  BKTunnel ID: 0x0                BKLabel: NULL
        State: Active Adv             Age: 06h46m22s
          Tag: 0

  Destination: 1.1.2.1/32
     Protocol: Direct          Process ID: 0
   Preference: 0                     Cost: 0
 IpPrecedence:                   QosLcId:
      NextHop: 127.0.0.1        Interface: InLoopBack0
    BkNextHop: 0.0.0.0        BkInterface:
  RelyNextHop: 0.0.0.0          Neighbor : 0.0.0.0
    Tunnel ID: 0x0                  Label: NULL
  BKTunnel ID: 0x0                BKLabel: NULL
        State: Active NoAdv           Age: 06h46m22s
          Tag: 0

  Destination: 127.0.0.0/8
```

```
    Protocol: Direct          Process ID: 0
  Preference: 0                     Cost: 0
IpPrecedence:                    QosLcId:
     NextHop: 127.0.0.1        Interface: InLoopBack0
   BkNextHop: 0.0.0.0        BkInterface:
 RelyNextHop: 0.0.0.0          Neighbor : 0.0.0.0
   Tunnel ID: 0x0                  Label: NULL
 BKTunnel ID: 0x0                BKLabel: NULL
       State: Active NoAdv           Age: 06h46m36s
         Tag: 0

 Destination: 127.0.0.1/32
    Protocol: Direct          Process ID: 0
  Preference: 0                     Cost: 0
IpPrecedence:                    QosLcId:
     NextHop: 127.0.0.1        Interface: InLoopBack0
   BkNextHop: 0.0.0.0        BkInterface:
 RelyNextHop: 0.0.0.0          Neighbor : 0.0.0.0
   Tunnel ID: 0x0                  Label: NULL
 BKTunnel ID: 0x0                BKLabel: NULL
       State: Active NoAdv           Age: 06h46m37s
         Tag: 0

 Destination: 192.168.0.0/24
    Protocol: Direct          Process ID: 0
  Preference: 0                     Cost: 0
IpPrecedence:                    QosLcId:
     NextHop: 192.168.0.1      Interface: Vlan-interface1
   BkNextHop: 0.0.0.0        BkInterface:
 RelyNextHop: 0.0.0.0          Neighbor : 0.0.0.0
   Tunnel ID: 0x0                  Label: NULL
 BKTunnel ID: 0x0                BKLabel: NULL
       State: Active Adv             Age: 06h46m35s
         Tag: 0

 Destination: 192.168.0.1/32
    Protocol: Direct          Process ID: 0
  Preference: 0                     Cost: 0
IpPrecedence:                    QosLcId:
     NextHop: 127.0.0.1        Interface: InLoopBack0
   BkNextHop: 0.0.0.0        BkInterface:
 RelyNextHop: 0.0.0.0          Neighbor : 0.0.0.0
   Tunnel ID: 0x0                  Label: NULL
 BKTunnel ID: 0x0                BKLabel: NULL
       State: Active NoAdv           Age: 06h46m35s
         Tag: 0
```

Displayed first are statistics for the whole routing table, followed by a detailed description of each route (in sequence).

Table 2 Command output

Field	Description
Destination	Destination address/mask length.
Protocol	Protocol that presents the route.
Process ID	Process ID.
Preference	Priority of the route.
Cost	Cost of the route.
IpPrecedence	IP precedence.
QosLcId	QoS-local ID.
NextHop	Address of the next hop on the route.
Interface	Outbound interface for packets to be forwarded along the route.
BkNextHop	Backup next hop.
BkInterface	Backup outbound interface.
RelyNextHop	Next hop address obtained through routing recursion.
Neighbor	Neighboring address determined by routing protocol.
Tunnel ID	Tunnel ID.
Label	Label.
BKTunnel ID	Backup tunnel ID.
BKLabel	Backup label.

Field	Description
State	Route status: • **Active**—This is an active unicast route. • **Adv**—This route can be advertised. • **Delete**—This route is deleted. • **Gateway**—This is an indirect route. • **Holddown**—Number of holddown routes. • **Int**—The route was discovered by an Interior Gateway Protocol (IGP). • **NoAdv**—The route is not advertised when the router advertises routes based on policies. • **NotInstall**—Among routes to a destination, the route with the highest priority is installed into the core routing table and advertised. A NotInstall route cannot be installed into the core routing table but can be advertised. • **Reject**—The packets matching a Reject route will be dropped. Besides, the router sends ICMP unreachable messages to the sources of the dropped packets. The Reject routes are usually used for network testing. • **Static**—A static route is not lost when you perform the save operation and then restart the router. Routes configured manually are marked as **static**. • **Unicast**—Unicast routes. • **Inactive**—Inactive routes. • **Invalid**—Invalid routes. • **WaitQ**—The route is the WaitQ during route recursion. • **TunE**—Tunnel. • **GotQ**—The route is in the GotQ during route recursion.
Age	Time for which the route has been in the routing table, in the sequence of hour, minute, and second from left to right.
Tag	Route tag.

display ip routing-table *ip-address*

Syntax

display ip routing-table *ip-address* [*mask* | *mask-length*] [**longer-match**] [**verbose**] [**|** { **begin** | **exclude** | **include** } *regular-expression*]

display ip routing-table *ip-address1* { *mask* | *mask-length* } *ip-address2* { *mask* | *mask-length* } [**verbose**] [**|** { **begin** | **exclude** | **include** } *regular-expression*]

View

Any view

Default level

1: Monitor level

Parameters

ip-address: Specifies the destination IP address, in dotted decimal format.

mask | *mask-length*: Specifies the IP address mask, in dotted decimal format or represented by an integer in the range of 0 to 32.

longer-match: Displays the route with the longest mask.

verbose: Displays detailed routing table information, including both active and inactive routes. Without this argument, the command displays only brief information about active routes.

|: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

begin: Displays the first line that matches the specified regular expression and all lines that follow.

exclude: Displays all lines that do not match the specified regular expression.

include: Displays all lines that match the specified regular expression.

regular-expression: Specifies a regular expression, a case-sensitive string of 1 to 256 characters.

Description

Use **display ip routing-table** *ip-address* to display information about routes to a specified destination address.

Executing the command with different parameters yields different output:

- **display ip routing-table** *ip-address*:
  - The system ANDs the input destination IP address with the subnet mask in each route entry.
  - The system ANDs the destination IP address in each route entry with its own subnet mask.

  If the two operations yield the same result for an entry and this entry is active, it is displayed.
- **display ip routing-table** *ip-address mask*:
  - The system ANDs the input destination IP address with the input subnet mask.
  - The system ANDs the destination IP address in each route entry with the input subnet mask.

  If the two operations yield the same result for an entry and the entry is active with a subnet mask less than or equal to the input subnet mask, the entry is displayed.

  Only route entries that exactly match the input destination address and mask are displayed.
- **display ip routing-table** *ip-address* **longer-match**:
  - The system ANDs the input destination IP address with the subnet mask in each route entry.
  - The system ANDs the destination IP address in each route entry with its own subnet mask.

  If the two operations yield the same result for multiple entries that are active, the one with the longest mask length is displayed.
- **display ip routing-table** *ip-address mask* **longer-match**:
  - The system ANDs the input destination IP address with the input subnet mask.
  - The system ANDs the destination IP address in each route entry with the input subnet mask.

  If the two operations yield the same result for multiple entries with a mask less than or equal to the input subnet mask, the one that is active with longest mask length is displayed.

Use **display ip routing-table** *ip-address1* { *mask-length* | *mask* } *ip-address2* { *mask-length* | *mask* } to display route entries with destination addresses within a specified range.

Examples

Display route entries for the destination IP address 11.1.1.1.

```
<Sysname> display ip routing-table 11.1.1.1
Routing Table : Public
Summary Count : 4
```

```
Destination/Mask    Proto  Pre  Cost        NextHop         Interface

0.0.0.0/0           Static 60   0           0.0.0.0         NULL0
11.0.0.0/8          Static 60   0           0.0.0.0         NULL0
11.1.0.0/16         Static 60   0           0.0.0.0         NULL0
11.1.1.0/24         Static 60   0           0.0.0.0         NULL0
```

Display route entries by specifying a destination IP address and the **longer-match** keyword.

```
<Sysname> display ip routing-table 11.1.1.1 longer-match
Routing Table : Public
Summary Count : 1

Destination/Mask    Proto  Pre  Cost        NextHop         Interface

11.1.1.0/24         Static 60   0           0.0.0.0         NULL0
```

Display route entries by specifying a destination IP address and mask.

```
<Sysname> display ip routing-table 11.1.1.1 24
Routing Table : Public
Summary Count : 1

Destination/Mask    Proto  Pre  Cost        NextHop         Interface

11.1.1.0/24         Static 60   0           0.0.0.0         NULL0
```

Display route entries by specifying a destination IP address and mask and the **longer-match** keyword.

```
<Sysname> display ip routing-table 11.1.1.1 24 longer-match
Routing Table : Public
Summary Count : 1

Destination/Mask    Proto  Pre  Cost        NextHop         Interface

11.1.1.0/24         Static 60   0           0.0.0.0         NULL0
```

Display route entries for destination addresses in the range of 1.1.1.0 to 5.5.5.0.

```
<Sysname> display ip routing-table 1.1.1.0 24 5.5.5.0 24
Routing Table : Public

Destination/Mask    Proto  Pre  Cost        NextHop       Interface

1.1.1.0/24          Direct 0    0           1.1.1.1       Vlan1
1.1.1.1/32          Direct 0    0           127.0.0.1     InLoop0
2.2.2.0/24          Direct 0    0           2.2.2.1       Vlan2
3.3.3.0/24          Direct 0    0           3.3.3.1       Vlan12
3.3.3.1/32          Direct 0    0           127.0.0.1     InLoop0
4.4.4.0/24          Direct 0    0           4.4.4.1       Vlan11
4.4.4.1/32          Direct 0    0           127.0.0.1     InLoop0
```

For command output, see Table 1.

display ip routing-table protocol

Syntax

display ip routing-table protocol *protocol* [**inactive** | **verbose**] [**|** { **begin** | **exclude** | **include** } *regular-expression*]

View

Any view

Default level

1: Monitor level

Parameters

protocol: Specifies the routing protocol. It can be **direct** or **static**.

inactive: Displays information about only inactive routes. Without this argument, the command displays information about both active and inactive routes.

verbose: Displays detailed routing table information. Without this argument, the command displays brief routing table information.

|: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

begin: Displays the first line that matches the specified regular expression and all lines that follow.

exclude: Displays all lines that do not match the specified regular expression.

include: Displays all lines that match the specified regular expression.

regular-expression: Specifies a regular expression, a case-sensitive string of 1 to 256 characters.

Description

Use **display ip routing-table protocol** to display routing information of a specified routing protocol.

Examples

Display brief information about direct routes.

```
<Sysname> display ip routing-table protocol direct
Public Routing Table : Direct
Summary Count : 6

Direct Routing Table Status : <Active>
Summary Count : 6

Destination/Mask    Proto  Pre  Cost       NextHop         Interface

2.2.2.0/24          Direct 0    0          2.2.2.1         Vlan2
2.2.2.2/32          Direct 0    0          127.0.0.1       InLoop0
127.0.0.0/8         Direct 0    0          127.0.0.1       InLoop0
127.0.0.1/32        Direct 0    0          127.0.0.1       InLoop0
192.168.80.0/24     Direct 0    0          192.168.80.10   Vlan11
192.168.80.10/32    Direct 0    0          127.0.0.1       InLoop0

Direct Routing Table Status : <Inactive>
```

```
Summary Count : 0
```

Display brief information about static routes.

```
<Sysname> display ip routing-table protocol static
Public Routing Table : Static
Summary Count : 2

Static Routing Table Status : <Active>
Summary Count : 0

Static Routing Table Status : <Inactive>
Summary Count : 2

Destination/Mask    Proto   Pre  Cost       NextHop      Interface
1.2.3.0/24          Static  60   0          1.2.4.5      Vlan10
3.0.0.0/8           Static  60   0          2.2.2.2      Vlan11
```

For command output, see Table 1.

display ip routing-table statistics

Syntax

display ip routing-table statistics [**|** { **begin** | **exclude** | **include** } *regular-expression*]

View

Any view

Default level

1: Monitor level

Parameters

|: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

begin: Displays the first line that matches the specified regular expression and all lines that follow.

exclude: Displays all lines that do not match the specified regular expression.

include: Displays all lines that match the specified regular expression.

regular-expression: Specifies a regular expression, a case-sensitive string of 1 to 256 characters.

Description

Use **display ip routing-table statistics** to display the route statistics of the routing table.

Examples

Display route statistics in the routing table.

```
<Sysname> display ip routing-table statistics
Proto       route       active      added       deleted       freed
DIRECT      24          4           25          1             0
STATIC      4           1           4           0             0
Total       28          5           29          1             0
```

Table 3 Command output

Field	Description
Proto	Origin of the routes
route	Number of routes from the origin
active	Number of active routes from the origin
added	Number of routes added into the routing table since the router started up or the routing table was last cleared
deleted	Number of routes marked as deleted, which will be freed after a period
freed	Number of routes that got freed (got removed permanently)
Total	Total number

display ipv6 routing-table

Syntax

display ipv6 routing-table [**verbose**] [**|** { **begin** | **exclude** | **include** } *regular-expression*]

View

Any view

Default level

1: Monitor level

Parameters

verbose: Displays detailed information about both active and inactive routes. Without this keyword, only brief information about active routes is displayed.

|: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

begin: Displays the first line that matches the specified regular expression and all lines that follow.

exclude: Displays all lines that do not match the specified regular expression.

include: Displays all lines that match the specified regular expression.

regular-expression: Specifies a regular expression, a case-sensitive string of 1 to 256 characters.

Description

Use **display ipv6 routing-table** to display brief IPv6 routing information, including destination IP address and prefix, protocol type, priority, metric, next hop, and outbound interface.

The command displays only active routes (the brief information about the current optimal routes).

Use **display ipv6 routing-table verbose** to display detailed information about all IPv6 routes, including both active and inactive routes. The output shows the statistics of the entire routing table, and then the detailed information of each route.

Examples

Display brief routing table information

```
<Sysname> display ipv6 routing-table
Routing Table : Public
```

```
        Destinations : 1        Routes : 1

Destination: ::1/128                        Protocol  : Direct
NextHop    : ::1                            Preference: 0
Interface  : InLoop0                        Cost      : 0
```

Table 4 Command output

Field	Description
Destination	IPv6 address of the destination network/host
NextHop	Next hop address
Preference	Route priority
Interface	Outbound interface
Protocol	Routing protocol
Cost	Route cost

Display detailed routing table information.

```
<Sysname> display ipv6 routing-table verbose
Routing Table : Public
         Destinations : 1        Routes : 1

 Destination  : ::1                                PrefixLength : 128
 NextHop      : ::1                                Preference   : 0
 IpPrecedence :                                    QosLcId      :
 RelayNextHop : ::                                 Tag          : 0H
 Neighbor     : ::                                 ProcessID    : 0
 Interface    : InLoopBack0                        Protocol     : Direct
 State        : Active NoAdv                       Cost         : 0
 Tunnel ID    : 0x0                                Label        : NULL
 Age          : 22161sec
```

Table 5 Command output

Field	Description
Destination	IPv6 address of the destination network/host
PrefixLength	Prefix length of the address
NextHop	Next hop
Preference	Route priority
IpPrecedence	IP precedence
QosLcId	QoS-local ID
RelayNextHop	Recursive next hop
Tag	Tag of the route
Neighbor	Neighbor address
ProcessID	Process ID
Interface	Outbound interface

Field	Description
Protocol	Routing protocol
State	State of the route, Active, Inactive, Adv (advertised), or NoAdv (not advertised)
Cost	Cost of the route
Tunnel ID	Tunnel ID
Label	Label
Age	Time that has elapsed since the route was generated

display ipv6 routing-table *ipv6-address*

Syntax

display ipv6 routing-table *ipv6-address prefix-length* [**longer-match**] [**verbose**] [**|** { **begin** | **exclude** | **include** } *regular-expression*]

display ipv6 routing-table *ipv6-address1 prefix-length1 ipv6-address2 prefix-length2* [**verbose**] [**|** { **begin** | **exclude** | **include** } *regular-expression*]

View

Any view

Default level

1: Monitor level

Parameters

ipv6-address: Specifies the destination IPv6 address.

prefix-length: Specifies the prefix length, in the range of 0 to 128.

longer-match: Displays the matched route having the longest prefix length.

ipv6-address1/*ipv6-address2*: Specifies the an IPv6 address range from IPv6 address1 to IPv6 address2.

prefix-length1/*prefix-length2*: Specifies the prefix length, in the range of 0 to 128.

verbose: Displays both active and inactive verbose routing information. Without this keyword, only brief active routing information is displayed.

|: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

begin: Displays the first line that matches the specified regular expression and all lines that follow.

exclude: Displays all lines that do not match the specified regular expression.

include: Displays all lines that match the specified regular expression.

regular-expression: Specifies a regular expression, a case-sensitive string of 1 to 256 characters.

Description

Use **display ipv6 routing-table** *ipv6-address* to display routing information about the specified destination IPv6 address.

Executing the command with different parameters yields different output:

- **display ipv6 routing-table** *ipv6-address prefix-length*:
  - The system ANDs the input destination IPv6 address with the input prefix length.
  - The system ANDs the destination IPv6 address in each route entry with the input prefix length.

  If the two operations yield the same result for an entry and the entry is active with a prefix length less than or equal to the input prefix length, the entry is displayed.
  - Only route entries that exactly match the input destination address and prefix length are displayed.
- **display ipv6 routing-table** *ipv6-address prefix-length* **longer-match**:
  - The system ANDs the input destination IPv6 address with the input prefix length.
  - The system ANDs the destination IPv6 address in each route entry with the input prefix length.

  If the two operations yield the same result for multiple entries with a prefix length less than or equal to the input prefix length, the one that is active with the longest prefix length is displayed.

Use **display ipv6 routing-table** *ipv6-address1 ipv6-address2* to display routes whose destinations fall into the specified IPv6 address range.

Examples

Display brief information about the route matching the specified destination IPv6 address.

```
<Sysname> display ipv6 routing-table 10::1 127
Routing Table: Public
Summary Count: 3

Destination: 10::/64                                  Protocol  : Static
NextHop    : ::                                       Preference: 60
Interface  : NULL0                                    Cost      : 0

Destination: 10::/68                                  Protocol  : Static
NextHop    : ::                                       Preference: 60
Interface  : NULL0                                    Cost      : 0

Destination: 10::/120                                  Protocol  : Static
NextHop    : ::                                        Preference: 60
Interface  : NULL0                                     Cost      : 0
```

Display brief information about the matched route with the longest prefix length.

```
<Sysname> display ipv6 routing-table 10:: 127 longer-match
Routing Tables: Public
Summary Count : 1
Destination: 10::/120                                  Protocol  : Static
NextHop    : ::                                        Preference: 60
Interface  : NULL0                                     Cost      : 0
```

Display routes whose destinations fall into the specified IPv6 address range.

```
<Sysname> display ipv6 routing-table 100:: 64 300:: 64
Routing Table : Public
Summary Count : 3

Destination: 100::/64                                 Protocol  : Static
NextHop    : ::                                       Preference: 60
```

```
Interface  : NULL0                                Cost      : 0

Destination: 200::/64                             Protocol  : Static
NextHop    : ::                                   Preference: 60
Interface  : NULL0                                Cost      : 0

Destination: 300::/64                             Protocol  : Static
NextHop    : ::                                   Preference: 60
Interface  : NULL0                                Cost      : 0
         Cost      : 0
```

For command output, see Table 4 .

display ipv6 routing-table protocol

Syntax

display ipv6 routing-table protocol *protocol* [**inactive** | **verbose**] [**|** { **begin** | **exclude** | **include** } *regular-expression*]

View

Any view

Default level

1: Monitor level

Parameters

protocol: Displays routes of a routing protocol, which can be **direct** or **static**.

inactive: Displays only inactive routes. Without this keyword, all active and inactive routes are displayed.

verbose: Displays both active and inactive verbose routing information. Without this keyword, only brief active routing information is displayed.

|: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

begin: Displays the first line that matches the specified regular expression and all lines that follow.

exclude: Displays all lines that do not match the specified regular expression.

include: Displays all lines that match the specified regular expression.

regular-expression: Specifies a regular expression, a case-sensitive string of 1 to 256 characters.

Description

Use **display ipv6 routing-table protocol** to display IPv6 routes of a specified routing protocol.

Examples

Display brief information about all direct routes.

```
<Sysname> display ipv6 routing-table protocol direct
Public Routing Table : Direct
Summary Count : 1

Direct Routing Table Status : <Active>
Summary Count : 1
```

```
Destination: ::1/128                                    Protocol  : Direct
NextHop    : ::1                                        Preference: 0
Interface  : InLoop0                                    Cost      : 0

Direct Routing Table Status : <Inactive>
Summary Count : 0
```

For command output, see Table 4.

display ipv6 routing-table statistics

Syntax

display ipv6 routing-table statistics [**|** { **begin** | **exclude** | **include** } *regular-expression*]

View

Any view

Default level

1: Monitor level

Parameters

|: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

begin: Displays the first line that matches the specified regular expression and all lines that follow.

exclude: Displays all lines that do not match the specified regular expression.

include: Displays all lines that match the specified regular expression.

regular-expression: Specifies a regular expression, a case-sensitive string of 1 to 256 characters.

Description

Use **display ipv6 routing-table statistics** to display IPv6 routing statistics, including total route number, added route number, and deleted route number.

Examples

Display IPv6 routing statistics.

```
<Sysname> display ipv6 routing-table statistics
Protocol   route       active      added       deleted     freed
DIRECT     1           1           1           0           0
STATIC     3           0           3           0           0
Total      4           1           4           0           0
```

Table 6 Command output

Field	Description
Protocol	Routing protocol
route	Route number of the protocol
active	Number of active routes
added	Routes added after the last startup of the router

Field	Description
deleted	Deleted routes, which will be released after a specified time
freed	Released (totally removed from the routing table) route number
Total	Total number of routes

reset ip routing-table statistics protocol

Syntax

reset ip routing-table statistics protocol { *protocol* | **all** }

View

User view

Default level

2: System level

Parameters

protocol: Clears statistics for the IPv4 routing protocol, which can be **direct** or **static**.

all: Clears statistics for all IPv4 routing protocols.

Description

Use **reset ip routing-table statistics protocol** to clear routing statistics for the routing table.

Examples

Clear routing statistics in the routing table.

```
<Sysname> reset ip routing-table statistics protocol all
```

reset ipv6 routing-table statistics

Syntax

reset ipv6 routing-table statistics protocol { *protocol* | **all** }

View

User view

Default level

2: System level

Parameters

protocol: Clears statistics for the routing protocol, which can be **direct** or **static**.

all: Clears statistics for all IPv6 routing protocols.

Description

Use **reset ipv6 routing-table statistics** to clear the route statistics of the routing table.

Examples

Clear statistics for all routing protocols.

```
<Sysname> reset ipv6 routing-table statistics protocol all
```

Static routing configuration commands

The term "router" in this chapter refers to both routers and Layer 3 switches.

delete static-routes all

Syntax

delete static-routes all

View

System view

Default level

2: System level

Parameters

None.

Description

Use **delete static-routes all** to delete all static routes.

When you use this command to delete static routes, the system will prompt you to confirm the operation before deleting all the static routes.

Related commands: **display ip routing-table** and **ip route-static**.

Examples

Delete all static routes on the router.

```
<Sysname> system-view
[Sysname] delete static-routes all
This will erase all ipv4 static routes and their configurations, you must reconfigure all static routes
Are you sure?[Y/N]:Y
```

ip route-static

Syntax

ip route-static *dest-address* { *mask* | *mask-length* } { *next-hop-address* [**track** *track-entry-number*] | *interface-type interface-number* [*next-hop-address*] } [**preference** *preference-value*] [**permanent**] [**description** *description-text*]

undo ip route-static *dest-address* { *mask* | *mask-length* } [*next-hop-address* | *interface-type interface-number* [*next-hop-address*]] [**preference** *preference-value*]

View

System view

Default level

2: System level

Parameters

dest-address: Specifies the destination IP address of the static route, in dotted decimal notation.

mask: Specifies the mask of the IP address, in dotted decimal notation.

mask-length: Specifies the mask length, in the range of 0 to 32.

next-hop-address: Specifies the IP address of the next hop, in dotted decimal notation.

interface-type interface-number: Specifies the output interface by its type and number. If the output interface is a broadcast interface, such as a VLAN interface, the next hop address must be specified.

preference *preference-value* : Specifies the preference of the static route, in the range of 1 to 255 and defaults to 60.

permanent: Specifies the route as a permanent static route. If the output interface is down, the permanent static route is still active.

description *description-text*: Configures a description for the static route, which consists of 1 to 60 characters, including special characters like space, but excluding question marks (?).

track *track-entry-number*: Associates the static route with a track entry. Use the *track-entry-number* argument to specify a track entry number, in the range of 1 to 1024.

Description

Use **ip route-static** to configure a unicast static route.

Use **undo ip route-static** to delete a unicast static route.

When you configure a unicast static route, follow these guidelines:

- If the destination IP address and the mask are both 0.0.0.0 (or 0), the configured route is a default route. The default route will be used for forwarding a packet if no route is available for the packet in the routing table.
- Implement different routing policies by tuning route preference. For example, to enable them to back up one another, assign different preferences to them.
- Specify the output interface or the next hop address of the static route as needed.
  - If the output interface supports network address-to-link layer address resolution or is a point-to-point interface, you may specify only the interface or the next hop address.
  - If the output interface is a Null 0 interface, no next hop address is required.
  - If you specify a broadcast interface (such as a VLAN interface) as the output interface for a static route, you must specify the corresponding next hop of the interface at the same time.
- The next hop address cannot be the IP address of a local interface (such as a VLAN interface). Otherwise, the static route does not take effect.
- If a static route needs route recursion, the associated track entry must monitor the next hop of the recursive route instead of that of the static route. Otherwise, a valid route may be mistakenly considered invalid.
- Do not specify the **permanent** keyword together with the **track** keyword.

Related commands: **display ip routing-table** and **ip route-static default-preference**.

Examples

Configure a static route, whose destination address is 1.1.1.1/24, next hop address is 2.2.2.2, and description information is **for internet & intranet**.

```
<Sysname> system-view
[Sysname] ip route-static 1.1.1.1 24 2.2.2.2 description for internet & intranet
```

ip route-static default-preference

Syntax

ip route-static default-preference *default-preference-value*

undo ip route-static default-preference

View

System view

Default level

2: System level

Parameters

default-preference-value: Specifies the default preference for static routes, in the range of 1 to 255.

Description

Use **ip route-static default-preference** to configure the default preference for static routes.

Use **undo ip route-static default-preference** to restore the default.

By default, the default preference of static routes is 60.

If no preference is specified when configuring a static route, the default preference is used.

When the default preference is re-configured, it applies only to newly added static routes.

Related commands: **display ip routing-table** and **ip route-static**.

Examples

Set the default preference of static routes to 120.

```
<Sysname> system-view
[Sysname] ip route-static default-preference 120
```

IPv6 static routing configuration commands

The term "router" in this chapter refers to both routers and Layer 3 switches.

delete ipv6 static-routes all

Syntax

delete ipv6 static-routes all

View

System view

Default level

2: System level

Parameters

None.

Description

Use **delete ipv6 static-routes all** to delete all static routes including the default route.

When using this command, you will be prompted whether to continue the deletion and only after you confirm the deletion will the static routes be deleted.

Related commands: **ipv6 route-static** and **display ipv6 routing-table**.

Examples

Delete all IPv6 static routes.

```
<Sysname> system-view
[Sysname] delete ipv6 static-routes all
This will erase all ipv6 static routes and their configurations, you must reconfigure all
static routes
Are you sure?[Y/N]Y
```

ipv6 route-static

Syntax

ipv6 route-static *ipv6-address prefix-length* { *interface-type interface-number* [*next-hop-address*] | *next-hop-address* } [**preference** *preference-value*]

undo ipv6 route-static *ipv6-address prefix-length* [*interface-type interface-number* [*next-hop-address*] | *next-hop-address*] [**preference** *preference-value*]

View

System view

Default level

2: System level

Parameters

ipv6-address prefix-length: Specifies the IPv6 address and prefix length.

interface-type interface-number: Specifies an output interface by its type and number. If the output interface is a non-P2P interface, such as an NBMA interface or broadcast interface (for example, a VLAN interface), the next hop address must be specified.

nexthop-address: Specifies the next hop IPv6 address.

preference *preference-value*: Specifies the route preference value, in the range of 1 to 255. The default is 60.

Description

Use **ipv6 route-static** to configure an IPv6 static route.

Use **undo ipv6 route-static** to remove an IPv6 static route.

An IPv6 static route that has the destination address configured as **::/0** (a prefix length of 0) is the default IPv6 route. If the destination address of an IPv6 packet does not match any entry in the routing table, this default route will be used to forward the packet.

If you specify a broadcast interface, such as a VLAN interface, as the output interface for a static route, you must specify the next hop address.

Related commands: **delete ipv6 static-routes all** and **display ipv6 routing-table**.

Examples

Configure a static IPv6 route, with the destination address being 1:1:2::/24 and next hop being 1:1:3::1.

```
<Sysname> system-view
[Sysname] ipv6 route-static 1:1:2:: 24 1:1:3::1
```

Support and other resources

Contacting HP

For worldwide technical support information, see the HP support website:

http://www.hp.com/support

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website:

http://www.hp.com/go/wwalerts

After registering, you will receive email notification of product enhancements, new driver versions, firmware updates, and other product resources.

Related information

Documents

To find related documents, browse to the Manuals page of the HP Business Support Center website:

http://www.hp.com/support/manuals

- For related documentation, navigate to the Networking section, and select a networking category.
- For a complete list of acronyms and their definitions, see *HP FlexNetwork Technology Acronyms*.

Websites

- HP.com http://www.hp.com
- HP Networking http://www.hp.com/go/networking
- HP manuals http://www.hp.com/support/manuals
- HP download drivers and software http://www.hp.com/support/downloads
- HP software depot http://www.software.hp.com
- HP Education http://www.hp.com/learn

Conventions

This section describes the conventions used in this documentation set.

Command conventions

Convention	Description
Boldface	**Bold** text represents commands and keywords that you enter literally as shown.
Italic	*Italic* text represents arguments that you replace with actual values.
[ ]	Square brackets enclose syntax choices (keywords or arguments) that are optional.
{ x | y | ... }	Braces enclose a set of required syntax choices separated by vertical bars, from which you select one.
[x | y | ...]	Square brackets enclose a set of optional syntax choices separated by vertical bars, from which you select one or none.
{ x | y | ... } *	Asterisk-marked braces enclose a set of required syntax choices separated by vertical bars, from which you select at least one.
[x | y | ...] *	Asterisk-marked square brackets enclose optional syntax choices separated by vertical bars, from which you select one choice, multiple choices, or none.
&<1-n>	The argument or keyword and argument combination before the ampersand (&) sign can be entered 1 to n times.
#	A line that starts with a pound (#) sign is comments.

GUI conventions

Convention	Description
Boldface	Window names, button names, field names, and menu items are in bold text. For example, the **New User** window appears; click **OK**.
>	Multi-level menus are separated by angle brackets. For example, **File** > **Create** > **Folder**.

Symbols

Convention	Description
WARNING	An alert that calls attention to important information that if not understood or followed can result in personal injury.
CAUTION	An alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software.
IMPORTANT	An alert that calls attention to essential information.
NOTE	An alert that contains additional or supplementary information.
TIP	An alert that provides helpful information.

Network topology icons

	Represents a generic network device, such as a router, switch, or firewall.
	Represents a routing-capable device, such as a router or Layer 3 switch.
	Represents a generic switch, such as a Layer 2 or Layer 3 switch, or a router that supports Layer 2 forwarding and other Layer 2 features.
	Represents an access controller, a unified wired-WLAN module, or the switching engine on a unified wired-WLAN switch.
	Represents an access point.
	Represents a security product, such as a firewall, a UTM, or a load-balancing or security card that is installed in a device.
	Represents a security card, such as a firewall card, a load-balancing card, or a NetStream card.

Port numbering in examples

The port numbers in this document are for illustration only and might be unavailable on your device.

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