

decnet out-routing-filter

To provide access control to routing information being sent out on an interface, use the **decnet out-routing-filter** command in interface configuration mode. To remove access control, use the **no** form of this command.

decnet out-routing-filter *access-list-number*

no decnet out-routing-filter

Syntax Description

<i>access-list-number</i>	Standard DECnet access list applying to source addresses. The value can be in the range 300 to 399.
---------------------------	---

Defaults

No access control to routing information is defined.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

Addresses that fail this test are shown in the update message as unreachable.

Examples

The following example sets up Ethernet interface 1 with a DECnet out-routing filter of 351. This filter is applied to addresses in the transmitted routing updates. Transmitted hello messages are not filtered.

```
interface ethernet 1
  decnet out-routing-filter 351
```

Related Commands

Command	Description
access-list (DECnet standard)	Creates a standard access list.
decnet in-routing-filter	Provides access control to hello messages or routing information received on an interface.
show decnet interface	Displays the global DECnet status and configuration for all interfaces.

decnet path-split-mode

To specify how Cisco IOS software splits the routable packets between equal-cost paths, use the **decnet path-split-mode** command in global configuration mode.

decnet path-split-mode { **normal** | **interim** }

Syntax Description	normal	interim
	Normal mode, where equal-cost paths are selected on a round-robin basis. This is the default.	Traffic for any particular (higher-layer) session is always routed over the same path. This mode supports older implementations of DECnet (VMS Versions 4.5 and earlier) that do not support out-of-order packet caching. Other sessions may take another path, thus using equal-cost paths that a router may have for a particular destination.

Defaults Normal mode

Command Modes Global configuration

Command History	Release	Modification
	10.0	This command was introduced.

Examples In the following example, a router will split routable packets between equal-cost paths using the round-robin (or first-come, first-served) basis:

```
decnet path-split-mode normal
```

Related Commands	Command	Description
	decnet max-cost	Sets the maximum cost specification for intra-area routing.
	decnet max-paths	Defines the maximum number of equal-cost paths to a destination that Cisco IOS software keeps in its routing table.

decnet propagate static

To enable static route propagation, use the **decnet propagate static** command in global configuration mode. To disable propagation, use the **no** form of this command.

decnet propagate static

no decnet propagate static

Syntax Description This command has no arguments or keywords.

Defaults No default routes are propagated.

Command Modes Global configuration

Command History	Release	Modification
	11.0	This command was introduced.

Usage Guidelines By default, DECnet static routes are not propagated to other routers. Use the **decnet propagate static** command to enable static route propagation. A default route is used only after DECnet conversion is checked.

Examples The following example enables static route propagation for the specified static and default routes:

```
decnet propagate static
!
decnet route 3.0 ethernet 0 aa00.0400.0404
decnet route 5.0 serial 0
decnet route 5.100 serial 2
decnet route default 2.100
decnet route 6.0 2.3 4 5
```

Related Commands	Command	Description
	decnet route (interface static route)	Creates an interface static route.
	decnet route (specific static route)	Enters a specific static route.
	show decnet	Displays the global DECnet parameters.
	show decnet static	Displays all statically configured DECnet routes.

decnet route (interface static route)

To create an interface static route, use this version of the **decnet route** command in global configuration mode. To remove this route, use the **no** form of this command.

decnet route *decnet-address next-hop-type number [snpa-address] [hops [cost]]*

no decnet route *decnet-address next-hop-type number*

Syntax Description		
<i>decnet-address</i>	DECnet address. This value is entered into a static routing table and used to match a destination DECnet address. Use a node address value of 0 to specify an area static route.	
<i>next-hop-type</i>	Interface type.	
<i>number</i>	Interface number.	
<i>snpa-address</i>	(Optional) Optional for serial links; required for multiaccess networks.	
<i>hops</i>	(Optional) Hop count to be associated with the route being advertised.	
<i>cost</i>	(Optional) Cost to be associated with the route being advertised.	

Defaults

hops: 0

cost: 0

No interface static routes are created.

Command Modes

Global configuration

Command History

Release	Modification
10.3	This command was introduced.

Usage Guidelines

If you do not specify a Subnetwork Point of Attachment (SNPA) address when you have a multiaccess network, you receive an error message indicating a bad SNPA. By default, DECnet static routes are not propagated to other routers. Use the **decnet propagate static** command to enable propagation.

Examples

The following example creates a static route for a serial interface. No SNPA need be specified for point-to-point interfaces.

```
decnet route 3.1 serial 1
```

The following example creates a static route for an Ethernet interface. The SNPA must be specified for an interface that is not point-to-point.

```
decnet route 3.2 ethernet 1 aa00.0400.0104
```

Related Commands

Command	Description
decnet propagate static	Enables static route propagation.
decnet route (specific static route)	Enters a specific static route.
decnet route default (interface default route)	Creates an interface default route.
decnet route default (specific default route)	Enters a specific default route.
show decnet static	Displays all statically configured DECnet routes.

decnet route (specific static route)

To enter a specific static route, use this version of the **decnet route** command in global configuration mode. DECnet addresses that match are forwarded to the *next-hop-address*. To remove this route, use the **no** form of this command.

decnet route *decnet-address next-hop-address [hops [cost]]*

no decnet route *decnet-address next-hop-address*

Syntax Description

<i>decnet-address</i>	DECnet address. This value is entered into a static routing table and used to match a destination DECnet address. Use a node address value of 0 to specify an area static route.
<i>next-hop-address</i>	This value is used to establish the next hop of the route for forwarding packets.
<i>hops</i>	(Optional) Hop count to be associated with the route being advertised. Default is 0.
<i>cost</i>	(Optional) Cost to be associated with the route being advertised. Default is 0.

Defaults

No interface static routes are created.

Command Modes

Global configuration

Command History

Release	Modification
10.3	This command was introduced.

Usage Guidelines

Area static routes can be configured by specifying a DECnet node address of 0. By default, DECnet static routes are not propagated to other routers. Use the **decnet propagate static** command to enable propagation.

Examples

The following example creates a static route for 1.1 that points to 1.9 and uses default values of 0 for the *hops* and *cost* arguments:

```
decnet route 1.1 1.9
```

The following example creates a static route for 3.100 that points to 3.4 and specifies values for the *hops* and *cost*:

```
decnet route 3.100 3.4 9 8
```

The following example creates a static route for area 1 that points to 2.999:

```
decnet route 1.0 2.999
```

Related Commands

Command	Description
decnet propagate static	Enables static route propagation.
decnet route (interface static route)	Creates an interface static route.
decnet route default (interface default route)	Creates an interface default route.
decnet route default (specific default route)	Enters a specific default route.
show decnet static	Displays all statically configured DECnet routes.

decnet route default (interface default route)

To create an interface default route, use this version of the **decnet route default** command in global configuration mode. To remove this route, use the **no** form of this command.

decnet route default *next-hop-type number* [*snpa-address*] [*hops* [*cost*]]

no decnet route default *next-hop-type number*

Syntax Description

<i>next-hop-type</i>	Interface type.
<i>number</i>	Interface number.
<i>snpa-address</i>	(Optional) Optional for serial links; required for multiaccess networks.
<i>hops</i>	(Optional) Hop count to be associated with the route being advertised. Default is 0.
<i>cost</i>	(Optional) Cost to be associated with the route being advertised. Default is 0.

Defaults

No interface default routes are created.

Command Modes

Global configuration

Command History

Release	Modification
11.0	This command was introduced.

Usage Guidelines

If you do not specify an SNPA address when you have a multiaccess network, you receive an error message indicating a bad SNPA.

A default route is used only after DECnet conversion is checked. DECnet default routes are not propagated to other routers.

Examples

The following example creates a default route for a serial interface. No SNPA need be specified for point-to-point interfaces.

```
decnet route default serial 1
```

The following example creates a default route for an Ethernet interface. The SNPA must be specified for an interface that is not point-to-point.

```
decnet route default ethernet 1 aa00.0400.0104
```

Related Commands	Command	Description
	decnet propagate static	Enables static route propagation.
	decnet route (interface static route)	Creates an interface static route.
	decnet route default (interface default route)	Creates an interface default route.
	decnet route default (specific default route)	Enters a specific default route.
	show decnet static	Displays all statically configured DECnet routes.

decnet route default (specific default route)

To enter a specific default route, use this version of the **decnet route default** command in global configuration mode. To remove this route, use the **no** form of this command.

decnet route default *next-hop-address* [*hops* [*cost*]]

no decnet route default *next-hop-address*

Syntax Description

<i>next-hop-address</i>	This value is used to establish the next hop of the route for forwarding packets.
<i>hops</i>	(Optional) Hop count to be associated with the route being advertised. Default is 0.
<i>cost</i>	(Optional) Cost to be associated with the route being advertised. Default is 0.

Defaults

hops: 0

cost: 0

No interface default routes are created.

Command Modes

Global configuration

Command History

Release	Modification
10.3	This command was introduced.

Usage Guidelines

A default route is used only after DECnet conversion is checked. By default, DECnet static routes are not propagated to other routers. Use the **decnet propagate static** command to enable propagation.

DECnet packets not for the current area are forwarded to the *next-hop-address*.

Examples

The following example creates a default route for 1.3, which uses default values of 0 for hops and cost:

```
decnet route default 1.3
```

Related Commands

Command	Description
decnet propagate static	Enables static route propagation.
decnet route (interface static route)	Creates an interface static route.
decnet route (specific static route)	Enters a specific static route.
decnet route default (interface default route)	Creates an interface default route.
show decnet static	Displays all statically configured DECnet routes.

decnet route-cache

To enable fast switching, use the **decnet route-cache** command in interface configuration mode. To disable fast switching, use the **no** form of this command.

decnet route-cache

no decnet route-cache

Syntax Description This command has no arguments or keywords.

Defaults Enabled

Command Modes Interface configuration

Release	Modification
10.0	This command was introduced.

Usage Guidelines By default, Cisco's DECnet routing software implements fast switching of DECnet datagrams. There are times when it makes sense to disable fast switching. This is especially important when using rates slower than T1.

Fast switching uses memory space on interface cards. In situations where a high-bandwidth interface is writing large amounts of information to a low-bandwidth interface, additional memory could help avoid congestion on the slow interface.

On a Cisco router that has DECnet traffic passing through a GRE tunnel interface and the **decnet route-cache** command enabled, loss of connectivity over the tunnel may occur after a tunnel key is configured on the tunnel interface. If this occurs, enter the **no decnet route-cache** command on the tunnel interface, followed by the **decnet route-cache** command to clear the problem.

Examples The following example disables fast switching on Ethernet interface 0:

```
interface ethernet 0
 no decnet route-cache
```

decnet router-priority

To elect a designated router to which packets are sent when no destination is specified, use the **decnet router-priority** command in interface configuration mode.

decnet router-priority *value*

Syntax Description	<i>value</i>	Priority of the router. This can be a number in the range 0 to 127. The larger the number the higher the priority.
---------------------------	--------------	--

Defaults	64
-----------------	----

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	10.0	This command was introduced.

Usage Guidelines

The *designated* router is the router to which all end nodes on an Ethernet communicate if they do not know where else to send a packet. The designated router is chosen through an election process in which the router with the highest priority gets the job. When two or more routers on a single Ethernet in a single area share the same highest priority, the unit with the highest node number is elected. You can reset a router's priority to help ensure that it is elected designated router in its area.

On a LAN with both DECnet IV and DECnet IV Prime hosts, make sure that a bilingual router always becomes the designated router.

DECnet end systems use the designated router only when they have no other information about how to reach a particular system. The end systems maintain a cache of how to reach other systems on the network. The cache contains the following information:

```
<remote system DECnet address> <next hop DECnet address>
```

When an end system receives a packet, it examines three pieces of information: the intra-LAN bit, the source address, and the previous hop. If the intra-LAN bit is set, indicating that the packet has never left this wire (and, thus, the remote system is reachable without a router), a cache entry is created as follows:

```
<remote system DECnet address> = <source address>
<next hop DECnet address> = <source address>
```

If the intra-LAN bit is not set, indicating that the packet has come from another network, the cache entry is created as follows:

```
<remote system DECnet address> = <source address>
<next hop DECnet address> = <previous hop>
```

If there is no cache entry, then the designated router is used. This means that when starting a session, the designated router is used, but the reverse traffic will populate a cache entry so that the router can later communicate directly.

A DECnet IV Prime end node sends a packet to the Unknown Destination multicast if it has no cache entry for the destination and has no designated router.

Examples

The following example sets DECnet priority for this router to 110 on Ethernet interface 1:

```
interface ethernet 1
  decnet router-priority 110
```

decnet routing

To enable DECnet routing, use the **decnet routing** command in global configuration mode. To disable DECnet routing, use the **no** form of this command.

decnet [*network-number*] **routing** [**iv-prime**] *decnet-address*

no decnet routing

Syntax Description

<i>network-number</i>	(Optional) Network number in the range 0 to 3. Specified when using ATG. If not specified, the default is network 0.
iv-prime	(Optional) Enables DECnet Phase IV Prime routing.
<i>decnet-address</i>	Address in DECnet format X.Y, where X is the area number and Y is the node number.

Defaults

Disabled

Command Modes

Global configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

Enabling DECnet changes the MAC addresses of the router's interfaces. This is not a problem on routers equipped with nonvolatile memory. On systems that attempt to get their IP network addresses from network servers rather than from nonvolatile memory, there may be a problem as with the hardware addresses changing and confusing other IP-speaking hosts. This potential problem can be avoided by configuring and enabling DECnet before enabling other protocols.



Note

You can configure up to four DECnet networks (numbered 0 to 3). To set up multiple DECnet networks, use the **decnet** global configuration commands with the appropriate network number and keywords. If the network number is omitted from the commands, network 0 is configured for DECnet routing.

DECnet Phase IV Prime eliminates the DEC addressing restrictions so that DECnet nodes can coexist with systems running other protocols that have other MAC address restrictions. If **iv-prime** is not specified, only Phase IV is enabled; configuring the MAC address will then make DECnet inoperable. The standard "AA-00-04-00" form will be set as the address of the interface on which DECnet is enabled. If Phase IV Prime was already running and this command is reissued without the **iv-prime** keyword (that is, going from Phase IV Prime to Phase IV), the command returns an error if any of the interfaces that have DECnet enabled have MAC addresses that are not compliant with DECnet Phase IV, requiring the user to evaluate conflicting interface commands.

The **no** form of this command disables Phase IV and Phase IV Prime routing.

Examples

The following example enables DECnet routing for the router in area 21 with node number 456:

```
decnet routing 21.456
```

Related Commands

Command	Description
decnet cost	Sets a cost value for an interface.
decnet node-type	Specifies the node type.

decnet routing-timer

To specify how often Cisco IOS software sends routing updates that list the hosts that the router can reach, use the **decnet routing-timer** command in interface configuration mode. To disable the routing update timer, use the **no** form of this command.

decnet routing-timer *seconds*

no decnet routing-timer

Syntax Description	<i>seconds</i>	Time, in seconds, from 1 to 65,535. The default is 40 seconds.
--------------------	----------------	--

Defaults	40 seconds
----------	------------

Command Modes	Interface configuration
---------------	-------------------------

Command History	Release	Modification
	10.0	This command was introduced.

Usage Guidelines	Other routers use this information to construct local routing tables. In a network where changes occur infrequently or do not need to be responded to immediately (it is small and uncomplicated, applications are not particularly sensitive to delays or occasional packet loss, slow serial links, and so on), increasing the time between routing updates reduces the amount of unnecessary network traffic. Digital calls this argument the <i>broadcast routing timer</i> because they use a different timer for serial lines; Cisco's DECnet implementation does not make this distinction.
------------------	--

Examples	The following example sets a serial interface to broadcast routing updates every 2 minutes (120 seconds):
----------	---

```
interface serial 0
  decnet routing-timer 120
```

decnet split-horizon

To use split horizon when sending routing updates, use the **decnet split-horizon** command in interface configuration mode. To disable split horizon, use the **no** form of this command.

decnet split-horizon

no decnet split-horizon

Syntax Description This command has no arguments or keywords.

Defaults Enabled

Command Modes Interface configuration

Command History	Release	Modification
	10.2	This command was introduced.

Usage Guidelines The **decnet split-horizon** command also affects whether broadcast packets received on an interface are resent on the same interface.

The **decnet split-horizon** command determines how much information is included in routing updates sent out an interface. It also determines whether received broadcasts are retransmitted on the same interface. When you enable split horizon, routing updates sent out on a given interface will not include any information that was originally learned from that interface, and broadcasts will not be retransmitted on the receiving interface. This is because split horizon is designed for networks that are either broadcast networks, or are fully connected mesh networks. In these types of networks, resending this information is a waste of network bandwidth because all other stations on that network have already heard the information. Disabling split horizon causes Cisco IOS software to include all information in routing updates, and to resend broadcast packets on the network from which they were received.

You can use this command on any interface, but generally it makes sense to use it only for X.25 and Frame Relay interfaces. You should disable split horizon on X.25 and Frame Relay networks that are not fully connected mesh topologies.

Examples The following example disables split horizon on an X.25 network:

```
interface serial 0
 no decnet split-horizon
```

lat host-delay

To set the delayed acknowledgment for incoming local-area transport (LAT) slave connections, use the **lat host-delay** command in global configuration mode. To restore the default, use the **no** form of this command.

lat host-delay *number*

no host-delay

Syntax Description

<i>number</i>	Delay, in milliseconds.
---------------	-------------------------

Defaults

Disabled

Command Modes

Global configuration

Command History

Release	Modification
10.3	This command was introduced.

Examples

The following example sets the acknowledgment for incoming LAT slave connections to 100 milliseconds:

```
lat host-delay 100
```

lat service autocommand

To associate a command with a service, use the **lat service autocommand** command in global configuration mode. To remove the specified autocommand, use the **no** form of this command.

lat service *service-name* **autocommand** *command*

no lat service *service-name* **autocommand** *command*

Syntax Description

<i>service-name</i>	Name of the service.
<i>command</i>	Command to be associated with the service.

Defaults

No commands are automatically associated with a service.

Command Modes

Global configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

When an inbound connection is received for the specified service, the command associated with the service is automatically executed instead of the user receiving a virtual terminal session.

Authentication is bypassed for these services; only the LAT password is checked.



Note

Do not use this option with the **rotary** keyword.

Examples

The following example associates the command **telnet ramana** to the service RAMANA:

```
lat service RAMANA autocommand telnet ramana
```

show decnet

To display the global DECnet parameters, use the **show decnet** command in privileged EXEC mode.

show decnet

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.

Examples The following is sample output from the **show decnet** command:

```
Router# show decnet

Global DECnet parameters for network 0:
  Local address is 19.15, node type is area (Phase-IV Prime)
  Level-2 'Attached' flag is FALSE, nearest level-2 router is 19.5
  Maximum node is 350, maximum area is 63, maximum visits is 63
  Maximum paths is 1, path split mode is normal
  Local maximum cost is 1022, maximum hops is 30
  Area maximum cost is 1022, maximum hops is 30
  Static routes *NOT* being sent in routing updates
  Default route configured; next hop address of 2.100
```

[Table 22](#) describes significant fields shown in the display.

Table 22 *show decnet Field Descriptions*

Field	Description
Global DECnet parameters for network 0:	Indicates the DECnet network number of the network being described.
Local address is 19.15	DECnet address.
node type is area	Indicates the DECnet node type with which the interface has been configured. Possible values include area (area router) or routing-iv (intra-area router).

Table 22 *show decnet Field Descriptions (continued)*

Field	Description
Level-2 'Attached' flag is FALSE	(DECnet Level-2 routers only) Indicates that this Level-2 router is not "attached" (can not reach other DECnet Phase IV areas). If the "'Attached" flag is TRUE, the router has reachability to other areas. If the "Attached" flag is FALSE, other displays on this line are the following: <ul style="list-style-type: none"> • Nearest Level-2 router is NONE—(DECnet Level-1 routers only) Indicates that this Level-1 router has not heard from any eligible Level-2 router (to send out-of-area packets to). • Nearest Level-2 router is 1.200—(DECnet Level-1 routers only) Indicates that this router's nearest Level-2 router is 1.200. Any packets received by this router destined for other areas are sent to 1.200.
(Phase-IV Prime)	Indicates that the router is running DECnet Phase IV Prime routing.
Maximum node is 350	Highest node number that the router will recognize.
maximum area is 63	Indicates the maximum DECnet area number, which is used to control the size of internal routing tables and messages sent to other routers. Range: 1 to 63. Default: 63.
maximum visits is 63	Indicates the maximum number of times (visits) a packet can pass through a router. Range: 1 to 63. Default: 63.
Maximum paths is 1	Indicates the maximum number of equal-cost paths the router will save. Range: 1 to 31. Default: 1.
path split mode is normal	Indicates how the router splits the routable packets among equal-cost paths. Possible values: normal (default) or interim.
Local maximum cost is 1022	For intra-area routes. Router ignores routes in its area that have a cost greater than this value.
maximum hops is 30	Indicates the maximum number of hops for a usable route within the local area. The router ignores routes within the local area that use more than this number of hops.
Area maximum cost is 1022	Indicates the maximum cost specification for interarea routing. The router ignores routes to other areas that have a cost greater than this value. Range: 1 to 1022; Default: 1022.
maximum hops is 30	Indicates the maximum number of hops for a usable route to other areas. The router ignores routes to other areas that use more than this number of hops.
Static routes *NOT* being sent in routing updates	Indicates static routes are not included in routing updates.
Default route configured; next hop address of 2.100	Indicates a default route is configured on this router and shows the next hop address.

show decnet accounting

To display the active accounting or checkpointed database, use the **show decnet accounting** command in EXEC mode.

show decnet accounting [checkpoint]

Syntax Description	checkpoint	(Optional) Displays entries in the checkpoint database.
---------------------------	-------------------	---

Command Modes	EXEC
----------------------	------

Command History	Release	Modification
	11.2 F	This command was introduced.

Examples This sample output from the **show decnet accounting** command shows accounting data collected for traffic passing between the DECnet address pair 27.100 and 27.107:

```
Router# show decnet accounting

Source  Destination  Bytes  Packets
27.100  27.107      145    5
27.107  27.100      500    5

Accounting data age is 5
```

[Table 23](#) describes the fields shown in the display.

Table 23 *show decnet accounting Field Descriptions*

Field	Description
Source	Source address of the packet.
Destination	Destination address of the packet.
Bytes	Number of bytes transmitted from the source address to the destination address.
Packets	Number of packets transmitted from the source address to the destination address.
Accounting data age is ...	Time reported since the accounting database has been cleared. It can be in one of the following formats: <i>mm</i> , <i>hh:mm</i> , <i>dd:hh</i> , and <i>ww:dd</i> , where <i>m</i> is minutes, <i>h</i> is hours, <i>d</i> is days, and <i>w</i> is weeks.

Related Commands

Command	Description
clear decnet accounting	Deletes all entries in the accounting database when DECnet accounting is enabled.
decnet accounting	Enables DECnet accounting.
decnet accounting list	Specifies the source and destination address pairs for which DECnet accounting information is kept.
decnet accounting threshold	Sets the maximum number of accounting database entries.
decnet accounting transits	Sets the maximum number of transit entries that will be stored in the DECnet accounting database.

show decnet interface

To display the global DECnet status and configuration for all interfaces, or the status and configuration for a specified interface, use the **show decnet interface** command in EXEC mode.

show decnet interface [*type number*]

Syntax Description	
<i>type</i>	(Optional) Interface type.
<i>number</i>	(Optional) Interface number.

Command Modes EXEC

Command History	Release	Modification
	10.0	This command was introduced.

Examples

The following is sample output from the **show decnet interface** command:

```
Router# show decnet interface

Global DECnet parameters for network 0:
  Local address is 19.15, node type is area
  Maximum node is 350, maximum area is 63, maximum visits is 63
  Maximum paths is 1, path split mode is normal
  Local maximum cost is 1022, maximum hops is 30
  Area maximum cost is 1022, maximum hops is 30
Ethernet 1 is up, line protocol is up, encapsulation is ARPA
  Interface cost is 4, priority is 64, DECnet network: 0
  The designated router is 1.9
  Sending HELLOs every 15 seconds, routing updates 40 seconds
  Smallest router blocksize seen is 1498 bytes
  Routing input list is not set, output list is not set
  Access list is not set
  DECnet fast switching is enabled
  Number of L1 router adjacencies is: 3
  Number of non-PhaseIV+ router adjacencies is: 3
  Number of PhaseIV+ router adjacencies is: 0
  Router is bilingual
```

[Table 24](#) describes significant fields shown in the display.

Table 24 *show decnet interface Field Descriptions—Unspecified Interface*

Field	Description
Global DECnet parameters for network 0:	Indicates the DECnet network number of the network being described.
Local address is 19.15	DECnet address of the router.

Table 24 *show decnet interface Field Descriptions—Unspecified Interface (continued)*

Field	Description
node type is area	Indicates the DECnet node type with which the interface has been configured. Possible values include area (area router) or routing-iv (intra-area router).
Maximum node is 350	Highest node number that the router will recognize.
maximum area is 63	Indicates the maximum DECnet area number, which is used to control the size of internal routing tables and messages sent to other routers. Range: 1 to 63. Default: 63.
maximum visits is 63	Indicates the maximum number of times (visits) a packet can pass through a router. Range: 1 to 63. Default: 63.
Maximum paths is 1	Indicates the maximum number of equal-cost paths the router will save. Range: 1 to 31. Default: 1.
path split mode is normal	Indicates how the router splits the routable packets among equal-cost paths. Possible values: normal (default) or interim.
Local maximum cost is 1022	For intra-area routes. Router ignores routes in its area that have a cost greater than this value.
maximum hops is 30	Indicates the maximum number of hops for a usable route within the local area. The router ignores routes within the local area that use more than this number of hops.
Area maximum cost is 1022	Indicates the maximum cost specification for interarea routing. The router ignores routes to other areas that have a cost greater than this value. Range: 1 to 1022; Default: 1022.
maximum hops is 30	Indicates the maximum number of hops for a usable route to other areas. The router ignores routes to other areas that use more than this number of hops.
Ethernet 0 is up	Indicates whether the interface hardware is currently active and if it has been taken down by an administrator.
line protocol is up	Indicates whether the software processes that handle the line protocol believe the interface is usable (that is, whether keepalives are successful).
encapsulation is ARPA	Indicates the encapsulation type.
Interface cost is 4	Indicates the cost that has been assigned to this interface using the decnet cost interface configuration command.
priority is 64	Indicates the priority that has been assigned to this router on this interface. End systems select the router with the highest priority as their designated router.
DECnet network: 0	Indicates that this interface is on DECnet network 0. This fact is significant only if ATG is turned on.
The designated router is 1.3	Indicates the designated router on this particular LAN.
Sending HELLOs every 15 seconds	Indicates the frequency of hello packets.
routing updates 40 seconds	Indicates the frequency of routing updates.

Table 24 *show decnet interface Field Descriptions—Unspecified Interface (continued)*

Field	Description
Smallest router blocksize seen is 1498 bytes	Indicates the largest size of packets being sent on all routers on the LAN.
Routing input list is not set, output list is not set	Indicates that no access restrictions on incoming (or outgoing) router update or hello messages have been set for this interface.
Access list is not set	Indicates that no access lists have been configured for the interface.
DECnet fast switching is enabled	Indicates that fast switching is enabled.
Number of L1 router adjacencies is : 3	Indicates how many Level 1 adjacencies the router has on this interface.
Number of non-PhaseIV+ router adjacencies is: 3	Number of L1 and L2 routers on this interface that are not running Phase IV+.
Number of PhaseIV+ router adjacencies is: 0	Number of L2 routers on this interface that are running Phase IV+.
Router is bilingual	The router's MAC address on this interface is Phase IV-compatible (that is, it takes the form AA-00-04-00-xx-yy or 55-00-20-00-aa-bb on interfaces where the address is bit swapped). This means that the router behaves as both a Phase IV and a Phase IV Prime router.

The following is sample output from the **show decnet interface** command when you specify an interface:

```
Router# show decnet interface ethernet 0

Ethernet0 is up, line protocol is up, encapsulation is ARPA
Interface cost is 4, priority is 64, DECnet network: 0
The designated router is 1.3
Sending HELLOs every 15 seconds, routing updates 40 seconds
Smallest router blocksize seen is 1498 bytes
Routing input list is not set, output list is not set
Access list is not set
DECnet fast switching is enabled
Number of L1 router adjacencies is: 1
Number of non-PhaseIV+ router adjacencies is: 3
Number of PhaseIV+ router adjacencies is: 0
Router is bilingual
```

[Table 25](#) describes significant fields shown in the display.

Table 25 *show decnet interface Field Descriptions—Specified Interface*

Field	Description
Ethernet 0 is up	Indicates whether the interface hardware is currently active and if it has been taken down by an administrator.
line protocol is up	Indicates whether the software processes that handle the line protocol believe the interface is usable (that is, whether keepalives are successful).
encapsulation is ARPA	Indicates the encapsulation type.
Interface cost is 4	Indicates the cost that has been assigned to this interface using the decnet cost interface configuration command.
priority is 64	Indicates the priority that has been assigned to this router on this interface. End systems select the router with the highest priority as their designated router.
DECnet network: 0	Indicates that this interface is on DECnet network 0. This fact is significant only if ATG is turned on.
The designated router is 1.3	Indicates the designated router on this particular LAN.
Sending HELLOs every 15 seconds	Indicates the frequency of hello packets.
routing updates 40 seconds	Indicates the frequency of routing updates.
Smallest router blocksize seen is 1498 bytes	Indicates the largest size of packets being sent on all routers on the LAN.
Routing input list is not set, output list is not set	Indicates that no access restrictions on incoming (or outgoing) router update or hello messages have been set for this interface.
Access list is not set	Indicates that no access lists have been configured for the interface.
DECnet fast switching is enabled	Indicates that fast switching is enabled.
Number of L1 router adjacencies is : 1	Indicates how many Level 1 adjacencies the router has on this interface.
Number of non-PhaseIV+ router adjacencies is: 3	Number of L1 and L2 routers on this interface that are not running Phase IV+.
Number of PhaseIV+ router adjacencies is: 0	Number of L2 routers on this interface that are running Phase IV+.
Router is bilingual	The router's MAC address on this interface is Phase IV-compatible (that is, it takes the form AA-00-04-00-xx-yy or 55-00-20-00-aa-bb on interfaces where the address is bit swapped). This means that the router behaves as both a Phase IV and a Phase IV Prime router.

show decnet map

To display the address mapping information used by the DECnet Address Translation Gateway, use the **show decnet map** command in EXEC mode.

show decnet map

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	10.0	This command was introduced.

Examples The following is sample output from the **show decnet map** command:

```
Router# show decnet map

Net Node  -> Net Node  Uses      Cost Hops
  0 1.100      1 2.100    0
```

[Table 26](#) describes significant fields shown in the display.

Table 26 *show decnet map Field Descriptions*

Field	Description
Net Node -> Net Node	Network number and node address.
Uses	Number of times this map was used.
Cost	Cost associated with the route.
Hops	Number of hops to destination mode.

show decnet neighbors

To display all Phase IV and Phase IV Prime adjacencies and the MAC address associated with each neighbor, use the **show decnet neighbors** command in privileged EXEC mode.

show decnet neighbors

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.

Examples The following is sample output from the **show decnet neighbors** command:

```
Router# show decnet neighbors

Net Node      Interface    MAC address   Flags
0  3.11      Ethernet0    aa00.0400.0b0c  A
0  1.1       Ethernet0    aa00.0400.0104  V
0  1.3       Ethernet1    aa00.0400.0304  V
0  1.6       Ethernet1    aa00.0400.0604  V
0  2.2       TokenRing    5500.2000.4020  V IV-PRIME
```

[Table 27](#) describes the fields shown in the display.

Table 27 *show decnet neighbors Field Descriptions*

Field	Description
Net	Number of the DECnet network this adjacency is in.
Node	DECnet address of the adjacency.
Interface	Interface over which this adjacency was heard.
MAC address	MAC address that this adjacency is using on this interface.
Flags	A: L2 adjacency. V: L1 adjacency. IV-PRIME: DECnet Phase IV Prime adjacency.

show decnet route

To display the DECnet routing table, use the **show decnet route** command in EXEC mode.

show decnet route [*decnet-address*]

Syntax Description	<i>decnet-address</i>	(Optional) Displays the DECnet address and, when specified, the first hop route to that address.
--------------------	-----------------------	--

Command Modes	EXEC
---------------	------

Command History	Release	Modification
	10.0	This command was introduced.

Examples

The following is sample output from the **show decnet route** command when a DECnet address name is not specified, so the entire routing table is displayed:

Router# **show decnet route**

```

Area          Cost  Hops  Next Hop to Node      Expires  Prio
-----
 1             4     1    Ethernet1 -> 1.300      26       64   A
*1            4     1    Ethernet1 -> 1.400      37       64   A
*2            8     2    Ethernet1 -> 1.400
*5            0     0      (Local) -> 5.5
*10           4     1    Ethernet2 -> 10.1       36       64   A
*13           11    3    Ethernet1 -> 1.400
*44           22    6    Ethernet1 -> 1.400
*51           18    4    Ethernet1 -> 1.400
*61            1     1      (OSI) -> 5.5
*62            1     1      (OSI) -> 5.5
*3            0     0    (STATIC) Ethernet0, snpa aa00.0400.0404
*4            0     0    (STATIC) Serial0
*6            5     4    (STATIC) forwarding to 2.3

Node          Cost  Hops  Next Hop to Node      Expires  Prio
-----
*(Area)       0     0      (Local) -> 5.5
*5.5          0     0      (Local) -> 5.5       32       64  A+

*DEFAULT*:    0     0    using next hop address of 2.100

```

As the display shows, the **show decnet route** command can display more than one route for a destination when equal-cost paths have been set with the **decnet max-paths** global configuration command and when there is more than one equal-cost path to a destination. The display also shows that this node is an area router.

[Table 28](#) describes significant fields shown in the display.

Table 28 *show decnet route Field Descriptions*

Field	Description
*	Currently selected route for a particular destination. In interim mode, the selected route will never appear to change.
Node	DECnet address of this (reachable) destination.
(Area)	All Level 1 routes are displayed in this section except for this the first entry, which points to the nearest Level 2 router.
Cost	Assigned cost for the interface, based on a recommended value for the underlying media. Range: 1 to 63. No default.
Hops	Number of hops to this node from the router being monitored.
Next Hop to Node	DECnet address of the next hop a packet will take to get to the final destination as well as the interface.
(Local)	The address that the router is configured with.
(OSI)	Indicates that this route is an OSI injected route - that is it comes from CLNS due to DECnet phase IV/DECnet phase V conversion.
(STATIC)	Indicates that this entry was created by the decnet route command.
Expires	Displays how many seconds from now this entry expires.
Prio	Router priority of this node.
V	Adjacent Level 1 router.
A+	Adjacent Level 2 (area) router. A indicates that this is an adjacency created from a Phase IV hello, and A+ indicates that this is an adjacency created from a Phase IV+ hello.

show decnet static

To display all statically configured DECnet routes, use the **show decnet static** command in privileged EXEC mode.

show decnet static

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC

Command History	Release	Modification
	11.1	This command was introduced.

Usage Guidelines All static routes are stored in a static route queue, which allows static routes to be reinstated when DECnet routing is turned off then on again.

Not all routes in the static route queue will show up in the routing table. This happens under the following conditions:

- The router is a Level 1 router and any of the following apply. Assume the router DECnet address is 1.1:
 - A Level 2 area static route is configured.


```
decnet route 2.0 1.2
```
 - A static route is configured not in the same area as the router.


```
decnet route 3.10 1.200
```
 - A static route is configured for the same address as the router.


```
decnet route 1.1 1.200
```
- The router is a Level 2 router and any of the following apply. Assume the router DECnet address is 2.1:
 - A Level 1 static router is not in the same area as the router.


```
decnet route 4.1 10.200
```
 - A static route appears because a Level 2 route is installed to area 4.


```
decnet route 4.0 10.200
```
 - A Level 2 static route is configured for the router's own area.


```
decnet route 2.0 10.200
```
 - A static route is configured for the same address as the router.


```
decnet route 2.1 5.4
```

Examples

The following is sample output from the **show decnet static** command:

```
Router# show decnet static
```

Address	Cost	Hops	Next hop	SNPA
3	0	0	Ethernet0	aa00.0400.0404
5	0	0	Serial0	
5.100	0	0	Serial2	
DEFAULT	0	0	2.100	
6	5	4	2.3	

Note that this router is a Level 2 router with a DECnet address of 1.2, so a static route configured for 5.100 is not relevant here. This route appears in the **show decnet static** command display, but not in the routing table.

show decnet traffic

To show the DECnet traffic statistics (including datagrams sent, received, and forwarded), use the **show decnet traffic** command in EXEC mode.

show decnet traffic

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	10.0	This command was introduced.

Examples The following is sample output from the **show decnet traffic** command:

```
Router# show decnet traffic

Total: 42 received, 0 format errors, 0 unimplemented
0 not a gateway, 0 no memory, 0 no routing vector
0 congestion encountered
Hellos: 21 received, 0 bad, 0 other area, 16 sent
Level 1 routing: 14 received, 0 bad, 0 other area, 16 sent
Level 2 routing: 7 received, 0 not primary router, 8 sent
Data: 0 received, 0 not long format, 0 too many visits
0 forwarded, 0 returned, 0 converted, 0 local destination
0 access control failed, 0 no route, 0 encapsulation failed
0 inactive network, 0 incomplete map
```

[Table 29](#) describes the fields shown in the display.

Table 29 *show decnet traffic Field Descriptions*

Field	Description
Total:	Displays the totals of packet types received.
received	Total of all types of DECnet packets received.
format errors	Lists the number of packets that appeared to be DECnet, but were formatted incorrectly. The number in the received field includes these packets.
0 unimplemented	Reports the number of incoming packets that are DECnet control packets, and how many specify a service that the router does not implement. This includes services implemented to forward Level 1 and Level 2 routing information, and router and end-system hello packets.
0 not a gateway	Reports the total number of packets received while not routing DECnet.

Table 29 *show decnet traffic Field Descriptions (continued)*

Field	Description
0 no memory	Records transaction attempts when the system has run out of memory.
0 no routing vector	Indicates that either a routing update came in from another router when the router did not have an adjacency for it, or it had no routing vector for the type of routing update. Use the debug decnet-routing EXEC command for more information.
0 congestion encountered	Number of times the DECnet output process encounters a nonempty interface output queue.
HELLOs:	Displays the number of hello messages received and sent.
received	Displays the total number of hello messages received. All protocol types are included.
bad	Displays the total number of “bad” hello messages received. Invoke the EXEC command debug decnet to display more information about why the hello message was judged as bad.
other area	Displays the total number of hello messages received from nodes on other areas when the router is a Level 1 router only.
sent	Displays the total number of hello messages sent.
Level 1 routing:	Displays the Level 1 routing updates received and sent.
received	Displays the total number of Level 1 routing updates received.
bad	Displays the total number of Level 1 updates received that were judged to be bad.
other area	Displays the total number of Level 1 updates from nodes in other areas.
sent	Displays the total number of Level 1 updates sent.
Level 2 routing:	Displays the Level 2 routing updates received and sent.
received	Displays the total number of Level 2 updates received.
not primary router	Should always be zero.
sent	Displays the total number of Level 2 updates sent.
Data:	Displays the number of data packets received and sent.
received	Displays the total number of noncontrol (data) packets received.
not long format	Displays the number of packets received which are not in the long DECnet format. This number should always be zero. If it is not, investigate the source of the improperly formatted packets.
too many visits	Lists the number of packets received which have visited too many routers and have been flushed.
forwarded	Lists the total number of packets forwarded.
returned	Lists the total number of packets returned to the sender at the senders’ request.
converted	Displays the number of Phase IV packets converted to Phase V packets.

Table 29 *show decnet traffic Field Descriptions (continued)*

Field	Description
local destination	Packets received that are destined for this router.
access control failed	Lists the packets dropped because access control required it.
no route	Lists the total packets dropped because the router did not know where to forward them.
encapsulation failed	Lists the number of packets that could not be encapsulated. This usually happens where there are entries missing in a map for a public data network, such as X.25 or Frame Relay. This can also occur if an interface is set for an encapsulation for which there is no defined DECnet encapsulation, such as Point-to-Point Protocol (PPP) on serial interfaces.
inactive network	Displays the number of packets that appear to come from a known interface, or that ATG returned because they did not make sense.
incomplete map	Counts the number of packets that failed address translation. This usually means a node that is not in the ATG map is trying to access a node in another network advertised by the ATG.