

## DECnet Commands

This chapter describes the function and displays the syntax of each DECnet command. For more information about defaults and usage guidelines, see the corresponding chapter of the *Router Products Command Reference* publication.

**access-list** *access-list-number* {**permit** | **deny**} *source source-mask*  
**no access-list**

To create a standard access list, use the **access-list** global configuration command. Use the **no** form of this command to delete the entire access list.

<i>access-list-number</i>	Integer you choose between 300 and 399 that uniquely identifies the access list.
<b>permit</b>	Permits access when there is an address match.
<b>deny</b>	Denies access when there is an address match.
<i>source</i>	Source address. DECnet addresses are written in the form <i>area.node</i> . For example, 50.4 is node 4 in area 50. All addresses are in decimal.
<i>source-mask</i>	Mask to be applied to the address of the source node. Bits are set wherever the corresponding bits in the address should be ignored. All masks are in decimal.

**access-list** *access-list-number* {**permit** | **deny**} *source source-mask*  
[*destination*] [*destination-mask*]  
**no access-list**

To create an extended access list, use the **access-list** global configuration command. Use the **no** form of this command to delete the entire access list.

<i>access-list-number</i>	Integer you choose between 300 and 399 that uniquely identifies the access list.
<b>permit</b>	Permits access when there is an address match.
<b>deny</b>	Denies access when there is an address match.
<i>source</i>	Source address. DECnet addresses are written in the form <i>area.node</i> . For example, 50.4 is node 4 in area 50. All addresses are in decimal.
<i>source-mask</i>	Mask to be applied to the address of the source node. All masks are in decimal.
<i>destination</i>	(Optional) Destination node's DECnet address in decimal format. DECnet addresses are written in the form <i>area.node</i> . For example, 50.4 is node 4 in area 50.
<i>destination-mask</i>	(Optional) Destination mask. DECnet addresses are written in the form <i>area.node</i> . For example, 50.4 is node 4 in area 50. All masks are in decimal.

**access-list** *access-list-number* {**permit** | **deny**} *source source-mask*  
[*destination destination-mask eq | neq [source-object |*  
*destination-object | identification | any*]]

**no access-list**

The optional argument *source-object* consists of the following string:

**src** [[**eq** | **neq** | **gt** | **lt**] *object-number*] [**exp** *regular expression*]  
[**uic** [*group, user*]]

The optional argument *destination-object* consists of the following string:

**dst** [[**eq** | **neq** | **gt** | **lt**] *object-number*] [**exp** *regular expression*]  
[**uic** [*group, user*]]

The optional argument *identification* consists of the following string:

[**id** *regular expression*] [**password** *regular expression*] [**account**  
*regular expression*]

To create an access list that filters *connect initiate* packets, use the **access-list** global configuration command. Use the **no** form of this command to disable the access list.

<i>access-list-number</i>	Integer you choose between 300 and 399 that uniquely identifies the access list.
<b>permit</b>	Permits access when there is an address match.
<b>deny</b>	Denies access when there is an address match.
<i>source</i>	Source address. DECnet addresses are written in the form <i>area.node</i> . For example, 50.4 is node 4 in area 50. All addresses are in decimal.
<i>source-mask</i>	Mask to be applied to the address of the source node. All masks are in decimal.
<i>destination</i>	(Optional) Destination node's DECnet address in decimal format. DECnet addresses are written in the form <i>area.node</i> . For example, 50.4 is node 4 in area 50. All addresses are in decimal.

<i>destination-mask</i>	(Optional) Destination mask. DECnet addresses are written in the form <i>area.node</i> . For example, 50.4 is node 4 in area 50. All masks are in decimal.
<b>eq</b>   <b>neq</b>	Use either of these keywords: <b>eq</b> —item matches the packet if <i>all</i> the specified parts of <i>source-object</i> , <i>destination-object</i> , and <i>identification</i> match data in the packet. <b>neq</b> —item matches the packet if <i>any</i> of the specified parts do <i>not</i> match the corresponding entry in the packet.
<i>source-object</i>	(Optional) Contains the keyword <b>src</b> and one of the following optional keywords: <b>eq</b>   <b>neq</b>   <b>lt</b>   <b>gt</b> —equal to, not equal to, less than, or greater than. These keywords must be followed by the argument <i>object-number</i> , a numeric DECnet object number. <b>exp</b> —stands for expression; followed by a regular expression that matches a string. <b>uic</b> —stands for user identification code; followed by a numeric user ID (UID) expression. The argument [ <i>group, user</i> ] is a numeric UID expression. In this case, the bracket symbols are literal; they must be entered. The group and user parts can be specified in decimal, in octal by prefixing the number with a 0, or in hex by prefixing the number with 0x. The uic expression is displayed in show displays as an octal number.

<i>destination-object</i>	<p>(Optional) Contains the mandatory keyword <b>dst</b> and one of the following optional keywords:</p> <p><b>eq</b>   <b>neq</b>   <b>lt</b>   <b>gt</b>—equal to, not equal to, less than, or greater than. These keywords must be followed by the argument <i>object-number</i>, a numeric DECnet object number.</p> <p><b>exp</b>—stands for expression; followed by a regular expression that matches a string.</p> <p><b>uic</b>—stands for user identification code; followed by a numeric user ID (UID) expression. In this case, the bracket symbols are literal; they must be entered. The group and user parts can either be specified in decimal, in octal by prefixing the number with a 0, or in hex by prefixing the number with 0x. The uic expression is displayed in show displays as an octal number.</p>
<i>identification</i>	<p>(Optional) Uses any of the following three keywords:</p> <p><b>id</b>—regular expression; refers to user ID.</p> <p><b>password</b>—regular expression; the password to the account.</p> <p><b>account</b>—regular expression; the account string.</p>
<b>any</b>	<p>Item matches if <i>any</i> of the specified parts <i>do</i> match the corresponding entries for <i>source-object</i>, <i>destination-object</i>, or <i>identification</i>.</p>

### **clear decnet counters**

To clear DECnet counters that are shown in the output of the **show decnet traffic** EXEC command, use the **clear decnet counters** EXEC command.

### **decnet access-group** *access-list number*

To create a DECnet access group, use the **decnet access-group** interface configuration command.

*access-list-number*    Either a standard or extended DECnet access list. A standard DECnet access list applies to destination addresses. The value (or values in the case of extended lists) can be in the range 300 through 399.

### **decnet advertise** *decnet-area hops cost*

#### **no decnet advertise** [*decnet-area*]

To configure border routers to propagate Phase IV areas through an OSI backbone, use the **decnet advertise** global configuration command. To disable this feature, use the **no decnet advertise** command.

*decnet-area*            Phase IV area that you want propagated.

*hops*                    Hop count to be associated with the route being advertised. The default is 0.

*cost*                    Cost to be associated with the route being advertised. The default is 0.

**decnet** [*network-number*] **area-max-cost** *value*

To set the maximum cost specification value for *interarea* routing, use the **decnet area-max-cost** global configuration command.

<i>network-number</i>	(Optional) Network number in the range 0 through 3. Specified when using Address Translation Gateway (ATG). The default is network 0.
<i>value</i>	Maximum cost for a route to a distant area that the router may consider usable; the router treats as unreachable any route with a cost greater than the value you specify. A valid range for cost is from 1 through 1022. This parameter is only valid for area routers. The default is 1022.

**decnet** [*network-number*] **area-max-hops** *value*

To set the maximum hop count value for *interarea* routing, use the **decnet area-max-hops** global configuration command.

<i>network-number</i>	(Optional) Network number in the range 0 through 3. Specified when using Address Translation Gateway (ATG). If not specified, the default is network 0.
<i>value</i>	Maximum number of hops for a usable route to a distant area. The router treats as unreachable any route with a count greater than the value you specify. A valid range for the hop count is from 1 through 30. The default is 30 hops.

**decnet congestion-threshold** *number*  
**no decnet congestion-threshold**

Use the **decnet congestion-threshold** interface configuration command to set the congestion-experienced bit if the output queue has more than the specified number of packets in it. A *number* value of zero or the **no** form of this command prevents this bit from being set. Use the **no** form of this command to remove the parameter setting and set it to 0.

*number*      Number of packets that are allowed in the output queue before the system will set the congestion experience bit. This value is an integer between 0 and 0x7fff. The value zero prevents this bit from being set. Only relatively small integers are reasonable. The default is 1 packet.

**[no] decnet conversion** *nsap-prefix*

To allow Phase IV routers (running Software Release 9.1 or later) to run in a Phase V network and vice versa, enable conversion with the **decnet conversion** global configuration command. To disable conversion, use the **no** form of this command.

*nsap-prefix*      Value used for the IDP field when constructing NSAPs from a Phase IV address

**decnet cost** *cost-value*  
**no decnet cost**

To set a cost value for an interface, use the **decnet cost** interface configuration command. Use the **no** form of this command to disable DECnet routing for an interface.

*cost-value*      Integer from 1 through 63. There is no default cost for an interface, although a suggested cost for FDDI is 1, for Ethernet is 4, and for serial links is greater than 10.

### **decnet encapsulation {pre-dec | dec}**

To provide DECnet encapsulation over Token Ring, use the **decnet encapsulation** interface configuration command.

- pre-dec** Configures routers for operation on the same Token Ring with routers running software versions prior to Release 9.1. In this mode, Cisco routers cannot communicate with non-Cisco equipment. Referred to as Cisco-style encapsulation.
- dec** Provides encapsulation that is compatible with other Digital equipment. All Cisco routers must be running Software Release 9.1 or later. The default is **dec**.

### **decnet hello-timer** *seconds* **no decnet hello-timer**

To change the interval for sending broadcast hello messages, use the **decnet hello-timer** interface configuration command. To restore the default value, use the **no** form of this command.

- seconds* Interval at which the router sends hello messages. It can be a decimal number in the range 1 through 8191 seconds. The default is 15 seconds.

### **decnet in-routing-filter** *access-list-number* **no decnet in-routing-filter**

To provide access control to hello messages or routing information received on an interface, use the **decnet in-routing-filter** interface configuration command. Use the **no** form of this command to remove access control.

- access-list-number* Standard DECnet access list. This list applies to destination addresses. The value can be in the range 300 through 399.

**decnet** *first-network* **map** *virtual-address* *second-network* *real-address*

To establish an address translation for selected nodes, use the **decnet map** global configuration command.

<i>first-network</i>	DECnet network numbers in the range 0 through 3.
<i>virtual-address</i>	Numeric DECnet address (10.5, for example).
<i>second-network</i>	DECnet network number you map to; DECnet numbers range from 0 through 3.
<i>real-address</i>	Numeric DECnet address (10.5, for example).

**decnet** [*network-number*] **max-address** *value*

To configure the router with a maximum number of node addresses, use the **decnet max-address** global configuration command.

<i>network-number</i>	(Optional) Network number in the range 0 through 3. Specified when using Address Translation Gateway (ATG). If not specified, the default is network 0.
<i>value</i>	A number less than or equal to 1023 that represents the maximum node address possible on the network. In general, all routers on the network should use the same value for this argument. The default is 1023.

**decnet** [*network-number*] **max-area** *area-number*

To set the largest number of areas that the router can handle in its routing table, use the **decnet max-area** global configuration command.

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| <i>network-number</i> | (Optional) Network number in the range 0 through 3. Specified when using Address Translation Gateway (ATG). If not specified, the default is network 0.   |
| <i>area-number</i>    | Area number from 1 through 63. Like the <b>decnet max-address</b> global configuration command value, this argument controls the sizes of internal routing tables and of messages sent to other nodes. All routers on the network should use the same maximum address value. The default is 63. |

**decnet** [*network-number*] **max-cost** *cost*

To set the maximum cost specification for *intra-area* routing, use the **decnet max-cost** global configuration command.

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| <i>network-number</i> | (Optional) Network number in the range 0 through 3. Specified when using Address Translation Gateway (ATG). If not specified, the default is network 0. |
| <i>cost</i>           | Cost from 1 through 1022. The default is 1022.  |

**decnet** [*network-number*] **max-hops** *hop-count*

To set the maximum hop count specification value for *intra-area* routing, use the **decnet max-hops** global configuration command.

- network-number* (Optional) Network number in the range 0 through 3. Specified when using Address Translation Gateway (ATG). If not specified, the default is network 0.
- hop-count* Hop count from 1 through 30. The router ignores routes that have a hop count greater than the corresponding value of this parameter. The default is 30 hops.

**decnet** [*network-number*] **max-paths** *value*

To define the maximum number of equal-cost paths to a destination that the router will keep in its routing table, use the **decnet max-paths** global configuration command.

- network-number* (Optional) Network number in the range 0 through 3. Specified when using Address Translation Gateway (ATG). If not specified, the default is network 0.
- value* Decimal number equal to the maximum number of equal-cost paths the router will save. The valid range is from 1 through 31. The default is 1.

**decnet** [*network-number*] **max-visits** *value*

To set the limit on the number of times a packet can pass through a router, use the **decnet max-visits** global configuration command.

<i>network-number</i>	(Optional) Network number in the range 0 through 3. Specified when using Address Translation Gateway (ATG). If not specified, the default is network 0.
<i>value</i>	Number of times a packet can pass through a router. It can be a decimal number in the range 1 through 63. If a packet exceeds <i>value</i> , the router discards the packet. Digital recommends that the value of the <b>max-visits</b> parameter be at least twice that of the <b>max-hops</b> parameter, to allow packets to still reach their destinations when routes are changing. The default is 63 times.

**[no] decnet multicast-map** *multicast-address-type functional-address*

Use the **decnet multicast-map** interface configuration command to specify a mapping between DECnet multicast addresses and Token Ring functional addresses, other than the default mapping. The **no** form of this command deletes the specified information.

<i>multicast-address-type</i>	Type of multicast address that is used. The following are valid values: <b>iv-all-routers</b> All Phase-IV routers <b>iv-all-endnodes</b> All Phase-IV endnodes <b>iv-prime-all-routers</b> All Phase IV Prime routers
<i>functional-address</i>	Functional MAC address that this multicast ID will map to. In the form of "c000.xxxx.yyyy." See Table 15-2 of the <i>Router Products Command Reference</i> publication for the default mapping.

**decnet** [*network-number*] **node-type** {**area** | **routing-iv**}

To specify the node type, use the **decnet node-type** global configuration command.

<i>network-number</i>	(Optional) Network number in the range 0 through 3. Specified when using Address Translation Gateway (ATG). If not specified, the default is network 0.
<b>area</b>	Router participates in the DECnet routing protocol with other area routers, as described in the Digital documentation, and routes packets from and to routers in other areas. This is sometimes referred to as Level 2, or interarea, routing. An area router does not just handle interarea routing; it also acts as an intra-area or Level 1 router in its own area.
<b>routing-iv</b>	Router acts as an intra-area (standard DECnet Phase IV, Level 1 router) and ignores Level 2 routing packets. In this mode, it routes packets destined for other areas to a designated interarea router, exchanging packets with other end-nodes and routers in the same area.

**decnet out-routing-filter** *access-list-number*  
**no decnet out-routing-filter**

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

<i>access-list-number</i>	Standard DECnet access list applying to destination addresses. The value can be in the range 300 through 399.
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### **decnet path-split-mode { normal | interim }**

To specify how the router will split the routable packets between equal-cost paths, use the **decnet path-split-mode** global configuration command with the appropriate keyword.

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|----------------|--|
| <b>normal</b>  | Normal mode, where equal-cost paths are selected on a round-robin basis. This is the default.  |
| <b>interim</b> | 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. |

### **[no] decnet route-cache**

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

### **decnet router-priority** *value*

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

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| <i>value</i> | Priority of the router. This can be a number in the range 0 through 127. The larger the number the higher the priority. The default priority is 64. |
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**decnet** [*network-number*] **routing** [**iv-prime**] *decnet-address*  
**no decnet routing**

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

<i>network-number</i>	(Optional) Network number in the range 0 through 3. Specified when using Address Translation Gateway (ATG). If not specified, the default is network 0.
<b>iv-prime</b>	(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.

**decnet routing-timer** *seconds*  
**no decnet routing-timer**

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

<i>seconds</i>	Time, in seconds, from 1 through 65535. The default is 40 seconds.
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## **ping**

Use the DECnet **ping** privileged EXEC command to send DECnet echo packets to test the reachability of a remote host over a DECnet network.

**ping decnet** {*host* | *address*}

Use the **ping decnet** user EXEC command to send DECnet echo packets to test the reachability of a remote host over a DECnet network.

<i>host</i>	DECnet host of system to ping
<i>address</i>	DECnet address of system to ping

### **show decnet**

Use the **show decnet** privileged EXEC command to display the global DECnet parameters.

### **show decnet interface** [*type number*]

Use the **show decnet interface** EXEC command to display the global DECnet status and configuration for all interfaces, or the status and configuration for a specified interface.

<i>type</i>	(Optional) Interface type
<i>number</i>	(Optional) Interface unit number

### **show decnet map**

Use the **show decnet map** EXEC command to display the address mapping information used by the DECnet Address Translation Gateway.

### **show decnet neighbors**

Use the **show decnet neighbors** privileged EXEC command to display all Phase IV and Phase IV Prime adjacencies and the MAC address associated with each neighbor.

### **show decnet route** [*decnet-address*]

Use the **show decnet route** EXEC command to display the DECnet routing table.

<i>decnet-address</i>	(Optional) DECnet address and, when specified, the first hop route to that address is displayed.
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### **show decnet traffic**

The **show decnet traffic** EXEC command shows the DECnet traffic statistics, including datagrams sent, received, and forwarded.