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iSeries™

Routed

Version 5 Release 3





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RouteD

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Note

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Fourth Edition (August 2005)

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RouteD

The Route Daemon, or RouteD, provides support for the Routing Information Protocol, or RIP, on the system. RIP is the most widely used routing protocol today. It is an Interior Gateway Protocol, or IGP, that assists TCP/IP in the routing of IP data packets within an autonomous domain. Dynamic routing protocols allow you to handle networks with multiple routers or to switch automatically to redundant routes.

- **RouteD configuration commands**

This topic describes the RouteD configuration commands and how to access them. You can use these commands to configure RouteD.

- **RouteD attribute commands**

This topic describes the Change RouteD Attributes (CHGRTDA) command and how to access this command. You can use this command to change RouteD attributes.

- **RouteD work with configuration command**

This topic describes the Work with RouteD Configuration (WRKRTDCFG) command and how to access this command. You can use this command to work with the RouteD configuration.

- **RouteD configuration scenario**

This topic describes a configuration scenario that shows how RouteD configuration entries work in a sample network. You can use this scenario as an example for your own RouteD configuration

- **RIP_INTERFACE statement**

This topic describes RIP_INTERFACE statement. It allows you to specify all of the routing options that you configure on a per-interface basis.

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RouteD configuration commands

Use the Configure TCP/IP RouteD (CFGTCPRTD) command to configure the RouteD server. The following are two different ways to access this command prompt:

- Specify CFGTCPRTD (Configure TCP/IP RouteD) command from the command line.
- Specify CFGTCPAPP (Configure TCP/IP Applications) command from the command line. Select option 2 (Configure RouteD).

After you specify the command, you see the following display:

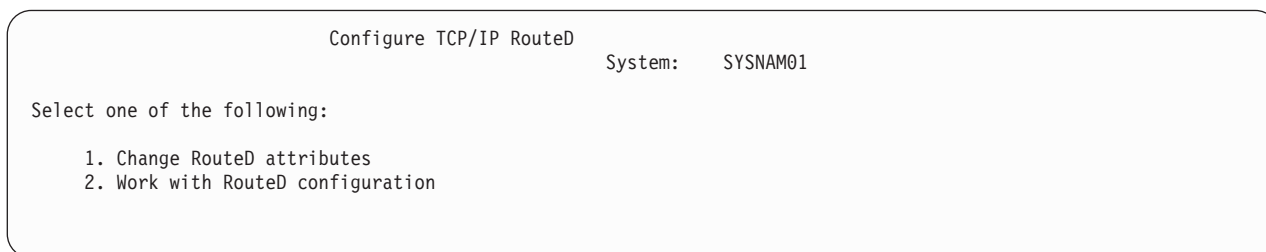


Figure 1. Configure TCP/IP RouteD

The following two commands control the RouteD server:

- The Change RouteD Attributes (CHGRTDA) command allows an administrator to set the configurable attributes for the RouteD server.
- The Work with RouteD Configuration (WRKRTDCFG) command allows an administrator to work with the RouteD configuration.

RouteD attribute commands

Use the Change RouteD Attributes (CHGRTDA) command to change the RouteD server attributes. The following are two different ways to access this command prompt:

- Specify the CHGRTDA (Change RouteD Attributes) command from the command line.
- Select option 1 on the Configure TCP/IP RouteD (CFGTCPRTD) display.

Note: You must have *IOSYSCFG special authority to make changes to the RouteD attributes with the CHGRTDA command.

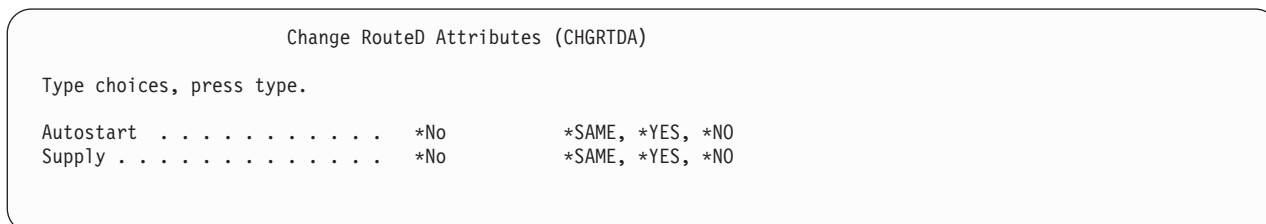


Figure 2. Change RouteD Attributes (CHGRTDA)

RouteD work with configuration command

Use the Work with RouteD Configuration (WRKRTDCFG) command to change the RouteD configuration. The following are two different ways to access this command prompt:

- Specify WRKRTDCFG (Work with RouteD Configuration) from the command line.
- Select option 2 on the Configure TCP/IP RouteD (CFGTCPRTD) display.

Note: You must have *IOSYSCFG special authority to make changes to the RouteD configuration with the WRKRTDCFG command.

```

Work with RouteD Configuration
System:  SYSNAM01
Type options, press Enter.
  1=Add  2=Change  3=Copy  4=Remove  5=Display  13=Insert

Sequence
Opt  Number  Entry
-----
00010 # * * * * * >
00020 # RTD DEFAULT CONFIGURATION >
00030 # * * * * * >
00040 # >
00050 # RouteD Interface Definitions >
00060 # ----- >
00070 # TCP/IP will learn about a route to network 9.0.0.0 th >
00080 # means external to RouteD, therefore do not allow Rout >
00090 # route to this network. >
00100 # >
00110 # RIP_INTERFACE * SUPPLY RIP1 METRIC 1 BLOCK 9.0.0.0 MA >
00120 # >
00130 # >
More...
F3=Exit  F5=Refresh  F6=Print List  F12=Cancel  F17=Top  F18=Bottom

```

Figure 3. Work with RouteD Configuration

Scenario: RouteD configuration

The preceding figure shows how the RouteD configuration entries work in a sample network. The routers know that every route within every network, including networks X, Y, Z, A, and W.

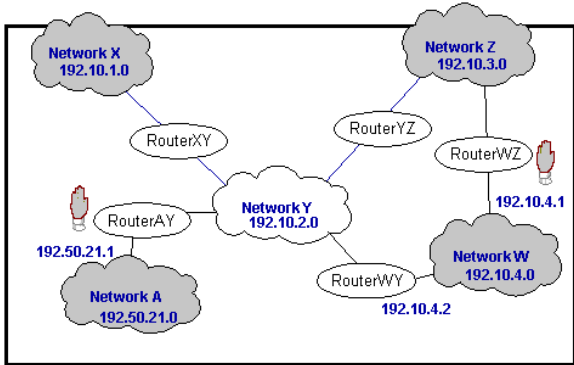


Figure 4. RouteD configuration scenario

- **Case 1** – If router AY has an interface of 192.10.2.1, a metric of 1, and a NOFORWARD parameter of 192.50.21.0, then none of the hosts in the networks reach network A.
- **Case 2** – If router WZ has an interface of 192.10.3.1, a metric of 1, and a NOFORWARD parameter of 192.10.4.0, then none of the IP packets go through router WZ to get to network W. IP packets can still reach network W, however, because router WY provides a route to that network.

Note: If you set the parameter option of any interface to Passive, then no routing takes place across the interface.

RIP_INTERFACE statement

Use the RIP_INTERFACE statement to specify all of the routing options that you configure on a per-interface basis. The RIP_INTERFACE statement now contains the functionality for defining routes and creating static routes. Prior to Version 4 Release 2, this functionality existed in the NET statement and HOST statement.

You can specify multiple interface options on a single entry in the configuration file. You can accomplish this only if one of those options that requires a destination address appears on a given statement. Options include the following:

- BLOCK
- FORWARD
- FORWARD.COND
- NOFORWARD

For example, a statement can use the forward and metric options on a single line. However, the forward and noforward options cannot appear on the same line. Use only one option on a given line and use multiple lines to specify multiple options for a given interface.

You can specify interfaces on the system in the following methods:

Network

Specified as an IP address and either a mask or an IP address and bit number. The bit number *n* indicates which bit in the 0 – *n* bits of the IP address (counting left to right) is the last bit of the IP address' network portion. If the MASK and bit number are missing, the system calculates a network by using the subnet mask of the interface specified through the ADDTCPIFC command.

Interface name

Logical Interface name that identifies a PPP interface with an IP address that is assigned dynamically when the PPP connection becomes active.

Hostname

The Host name of the system, which is resolvable through DNS.

- * Refers to all of the interfaces on the system and is useful for setting default values that apply to all interfaces. You can override these defaults by providing a RIP_INTERFACE statement for a specific interface with different values for selected parameters.

Supply values

The following is a list of possible values for a RIP_INTERFACE supply value:

PASSIVE

The system does not receive or generate any RIP traffic on the specified interface.

SUPPLY RIP1

Indicates which version of the RIP protocol the system uses to send and receive routing information to and from neighboring routers. For SUPPLY RIP1, the system processes only IPv1 packets.

SUPPLY RIP2

Indicates which version of the RIP protocol the system uses to send and receive routing information to and from neighboring routers. For SUPPLY RIP2, the system uses the multicast address 224.0.0.9 to process only IPv2 packets, as specified in the RFC1723 sect.3.5.

SUPPLY OFF

Indicates that the system receives both IPv1 and IPv2 on the specified interface. However, the system does not send RIP packets.

Note: The default supply value for interfaces that you do not specify is SUPPLY RIP1. The system does not support RIP Version 1 Compatibility mode.

DIST_ROUTES_IN

DIST_ROUTES_IN controls how RouteD redistributes routes that it receives from this RIP_INTERFACE network to Wide Area Networks, or WANs. This parameter does not affect redistribution of routes to Local Area Networks, or LANs. The following is a list of values and their definitions:

***CALC**

RouteD determines a value of FULL or LIMITED by whether the RIP_INTERFACE network is a LAN or a WAN. If the specified interface is broadcast-capable, it is assumed local, and a value of FULL is given. Otherwise, the system uses a value of LIMITED.

FULL

Indicates that RouteD redistributes routes that it receives from the specified interface to all of the other interfaces that use normal RIP algorithm. Specify this value only for local networks.

LIMITED

Indicates that the server is not to redistribute routes that it receives from the RIP_INTERFACE network to other LIMITED interfaces. Specify this value only for some type of WAN. You cannot set this value for a LAN.

Metric

This parameter specifies the metric that the system adds to routes that it receives through the specified interface. Possible values are 1 through 15.

Community

This parameter specifies the community name used by this interface for authentication purposes as specified in RFC 1723 section 3.1. It is valid for interfaces with a SUPPLY value of RIP2. The rip_community_name is a character string of 1 to 16 characters in length.

If you specify the community option, then the system indicates that this interface needs authentication. The community name that is specified with the community option must match the community name sent in all RIP2 message blocks for this interface. If you do not specify the community option, then the system does not indicate any authentication for this interface.

Additional parameters

You can also encounter the following RIP_INTERFACE parameters:

- BLOCK
- FORWARD
- FORWARD.COND
- NOFORWARD

BLOCK

The BLOCK parameter prevents the network route received on the specified interface from being included in the RouteD routes table. Consequently, the network is unknown and not forwarded to any other routers. Specify networks that you want to block by one of the following methods:

Network

A network that is specified as an IP address and a mask or as an IP address and a bit number. The bit number *n* indicates which bit in the 0 – *n* bits of the IP address (counting left to right) is the last bit of the network portion of the IP address. If the MASK and bit number are missing, the system calculates a network by using the subnet mask of the interface specified through the ADDTCPIFC CL command.

PRIVATE

The PRIVATE keyword refers to the sets of IP addresses that are designated for use by the Internet Assigned Number Authority (IANA) only within private internets. For more information, see RFC 1918, section 3.

- 10.0.0.0 to 10.255.255.255 (10/8 prefix) – 1 class A network.
- 172.16.0.0 to 172.31.255.255 (172.16/12 prefix) – 16 class B networks.
- 192.168.0.0 to 192.168.255.255 (192.168/16 prefix) – 256 class C networks.

When the RouteD server tries to send a route, it processes multiple forward parameters in the supplied order. The first forward parameter that allows the system to send the route over the specified interface ends the processing. The default is not to forward.

FORWARD

Use of the FORWARD keyword forwards the specified network route exclusively over the specified interface. If the specified interface is inactive, RoutedD takes no special action to forward this network.

Specify a network as both an IP address and a mask or as both an IP address and a bit number. The bit number n indicates which bit in the 0 – n bits of the IP address (counting left to right) is the last bit of the network portion of the IP address. If the MASK and bit number are missing, the system calculates a network by using the subnet mask of the interface specified through the ADDTCPIFC CL command.

FORWARD.COND

Use of the FORWARD.COND keyword forwards the specified network route exclusively over the specified interface. If the specified interface is inactive, RoutedD forwards the network over all of the other interfaces.

Specify a network as both an IP address and a mask or as both an IP address and a bit number. The bit number n indicates which bit in the 0 – n bits of the IP address (counting left to right) is the last bit of the network portion of the IP address. If the MASK and bit number are missing, the system calculates a network by using the subnet mask of the interface specified through the ADDTCPIFC CL command.

NOFORWARD

When you use the NOFORWARD parameter, the system does not send out RIP information about the specified network to the specified interface. Specify networks in one of the following two methods:

Network

Specify a network as both an IP address and a mask or as both an IP address and a bit number. The bit number n indicates which bit in the 0 – n bits of the IP address (counting left to right) is the last bit of the network portion of the IP address. If the MASK and bit number are missing, the system calculates a network by using the subnet mask of the interface specified through the ADDTCPIFC CL command.

PRIVATE

The PRIVATE keyword refers to the sets of IP addresses that are designated for use by the IANA within private internets. For more information, see RFC 1918, section 3.

- 10.0.0.0 to 10.255.255.255 (10/8 prefix) – 1 class A network.
- 172.16.0.0 to 172.31.255.255 (172.16/12 prefix) – 16 class B networks.
- 192.168.0.0 to 192.168.255.255 (192.168/16 prefix) – 256 class C networks.

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