NAME

in.routed, routed – network routing daemon

SYNOPSIS

/usr/sbin/in.routed [**-s**] [**-q**] [**-t**] [**-g**] [**-S**] [*logfile*]

AVAILABILITY

SUNWcsu

DESCRIPTION

in.routed is invoked at boot time to manage the network routing tables. The routing daemon uses a variant of the Xerox NS Routing Information Protocol in maintaining up-to-date kernel routing table entries.

In normal operation, **in.routed** listens on **udp**(7P) socket 520 (decimal) for routing information packets. If the host is an internetwork router, it periodically supplies copies of its routing tables to any directly connected hosts and networks.

When **in.routed** is started, it uses the **SIOCGIFCONF** **ioctl**(2) to find those directly connected interfaces configured into the system and marked "up" (the software loopback interface is ignored). If multiple interfaces are present, it is assumed the host will forward packets between networks. **in.routed** then transmits a *request* packet on each interface (using a broadcast packet if the interface supports it) and enters a loop, listening for *request* and *response* packets from other hosts.

When a *request* packet is received, **in.routed** formulates a reply based on the information maintained in its internal tables. The *response* packet contains a list of known routes, each marked with a "hop count" metric (a count of 16, or greater, is considered "infinite"). The metric associated with each route returned, provides a metric relative to the sender.

request packets received by **in.routed** are used to update the routing tables if one of the following conditions is satisfied:

- No routing table entry exists for the destination network or host, and the metric indicates the destination is "reachable" (that is, the hop count is not infinite).
- The source host of the packet is the same as the router in the existing routing table entry. That is, updated information is being received from the very internetwork router through which packets for the destination are being routed.
- The existing entry in the routing table has not been updated for some time (defined to be 90 seconds) and the route is at least as cost effective as the current route.
- The new route describes a shorter route to the destination than the one currently stored in the routing tables; the metric of the new route is compared against the one stored in the table to decide this.

When an update is applied, **in.routed** records the change in its internal tables and generates a *response* packet to all directly connected hosts and networks. **in.routed** waits a short period of time (no more than 30 seconds) before modifying the kernel's routing tables to allow possible unstable situations to settle.

In addition to processing incoming packets, **in.routed** also periodically checks the routing table entries. If an entry has not been updated for 3 minutes, the entry's metric is set to infinity and marked for deletion. Deletions are delayed an additional 60 seconds to insure the invalidation is propagated throughout the internet.

Hosts acting as internetwork routers gratuitously supply their routing tables every 30 seconds to all directly connected hosts and networks.

In addition to the facilities described above, **in.routed** supports the notion of "distant" **passive** and **active** gateways. When **in.routed** is started up, it reads the file **gateways** to find gateways which may not be identified using the **SIOCGIFCONF ioctl**. Gateways specified in this manner should be marked **passive** if they are not expected to exchange routing information, while gateways marked **active** should be willing to exchange routing information (that is, they should have a **in.routed** process running on the machine). Passive gateways are maintained in the routing tables forever. Information regarding their existence is not included in any routing information transmitted. Active gateways are treated equally to network interfaces. Routing information is distributed to the gateway and if no routing information is received for a period of time, the associated route is deleted.

The **gateways** is comprised of a series of lines, each in the following format:

< net | host > *filename1* **gateway** *filename2* **metric** *value* **< passive | active >**

The **net** or **host** keyword indicates if the route is to a network or specific host.

filename1 is the name of the destination network or host. This may be a symbolic name located in **networks** or **hosts**, or an Internet address specified in "dot" notation; see **inet**(3N).

filename2 is the name or address of the gateway to which messages should be forwarded.

value is a metric indicating the hop count to the destination host or network.

The keyword **passive** or **active** indicates if the gateway should be treated as passive or active (as described above).

OPTIONS

−g Is used on internetwork routers to offer a route to the ''default'' destination. This is typically used on a gateway to the Internet, or on a gateway that uses another routing protocol whose routes are not reported to other local routers.

−q Is the opposite of the **−s** option.

−s Forces **in.routed** to supply routing information whether it is acting as an internetwork router or not.

−S If **in.routed** is not acting as an internetwork router it will, instead of entering the whole routing table in the kernel, only enter a default route for each internetwork router. This reduces the the memory requirements without losing any routing reliability.

–t All packets sent or received are printed on standard output. In addition, **in.routed** will not divorce itself from the controlling terminal so that interrupts from the keyboard will kill the process. Any other argument supplied is interpreted as the name of the file in which **in.routed**'s actions should be logged. This log contains information about any changes to the routing tables and a history of recent messages sent and received which are related to the changed route.

FILES

/etc/gateways for distant gateways
/etc/networks associations of Internet Protocol network numbers with network names
/etc/hosts Internet host table

SEE ALSO

ioctl(2), **inet**(7P), **udp**(7P)

NOTES

The kernel's routing tables may not correspond to those of **in.routed** for short periods of time while processes that utilize existing routes exit; the only remedy for this is to place the routing process in the kernel.

in.routed should listen to intelligent interfaces, such as an IMP, and to error protocols, such as ICMP, to gather more information.