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(54) DUPLICATE IGNORE DELAY TIMER FOR ARP LIKE PROTOCOL MESSAGES USING ARE PROTOCOL

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(56) References Cited

U.S. PATENT DOCUMENTS

5,805,594 A	*	9/1998	Kotchey et al	370/401
5,844,902 A	*	12/1998	Perlman	370/401
6,272,112 B1	*	8/2001	Orita	370/243

OTHER PUBLICATIONS

Perlman, Radia, *Interconnections*, Bridges and Routers, 1992, pp. 1–8; 31–33; 99–125 and 149–164. Tanenbaum, Andrew, *Computer Networks*, Third Edition, Prentice Hall, 1996, pp. 28–34 and 420–242. Comer, Douglas E., *Computer Networks and Internets*, Prentice Hall, 1997, Chapter 18, pp. 239–249.

Comer, Douglas E., *Internetworking with TCP/IP*, vol. 1, Third Edition, Prentice Hall, 1995, pp. 89–107.

Comer, E and Stevens, David L., *Internetworking with TCP/IP*, vol. 2, Design Implementation, and Internal, Prentice Hall, 1991, pp. 37–58.

RFC–791. RFC–793.

RFC-1122.

Lewis, Chris, Cisco TCP/IP Routing Professional Reference, McGraw Hill, 1998, pp. 188–205.

International Business Business Corporation, *Token–Ring Network*, MAC Frame Format, Chapter 2, pp. 2–1, 2–12.

* cited by examiner

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(57) ABSTRACT

A router transmits an ARP Explorer request packet onto a subnetwork in order to learn the route (RIF information) from the router to an end station. The end station receives a plurality of ARP Explorer request packets from the router because of multiple paths in an SRB network, and the end station transmits an ARP Explorer response packet in response to each ARP Explorer request packet received. The invention adopts the path of the first ARP Explorer response packet received by the router from the end station for the RIF information from the router to the end station, and uses a "duplicate ignore" timer in order to avoid freezing this route into the router tables. The timer begins running upon receipt of the first ARP Explorer response packet, and expires after an "update time interval". No further ARP Explorer response packet is processed until after expiration of the update time interval.

16 Claims, 12 Drawing Sheets



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FIG. 2



FIG. 3



402	404	406	408
	ر	,	v
DSAP	SSAP	CTRL	DATA

IEEE 802.2 LLC FIELDS





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FIG. 6B

DOCKET



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