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Chiruvolu

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(54) **DOMAIN BASED CONGESTION MANAGEMENT**

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(52) **U.S. Cl.** **370/230.1; 370/231; 370/235.1**

(58) **Field of Search** **370/229-236, 370/400, 401, 410, 412-416, 352-354; 710/52-57**

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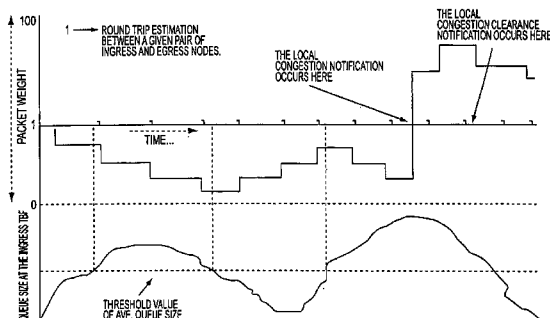
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(57) **ABSTRACT**

The Domain-based Congestion Management method and apparatus detects and regulates congestion in a Diff-serv network. It use an improvRED method for congestion detection at the core routers and token bucket filters for traffic regulation at the ingress nodes. In addition, improvRED also provides feedback control. ImprovRED uses three thresholds for detecting congestion: a minth, a maxth and a FeedbackThreshold, which lakes a value between the minth and the maxth thresholds. Whenever the average queue size is greater than minth and less than Feedback-Threshold, all outgoing packets are marked appropriately to indicate a potential onset of a congestion period. When the average queue size is greater th FeedbackThreshold (but less than maxth) packets are dropped probabilistically and all the outgoing packets are marked appropriately to denote the dropping phase. When the average queue size is greater than the maximum threshold, all incoming packets are dropped.

42 Claims, 16 Drawing Sheets



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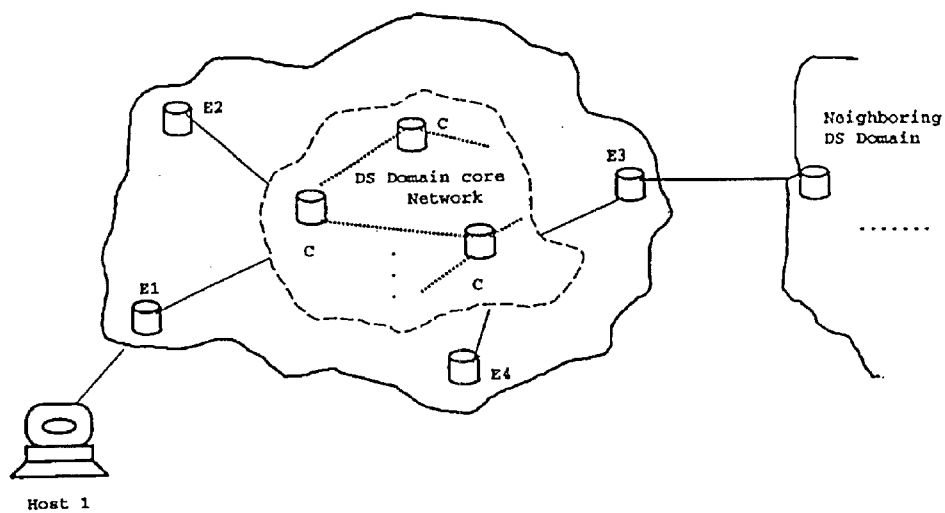
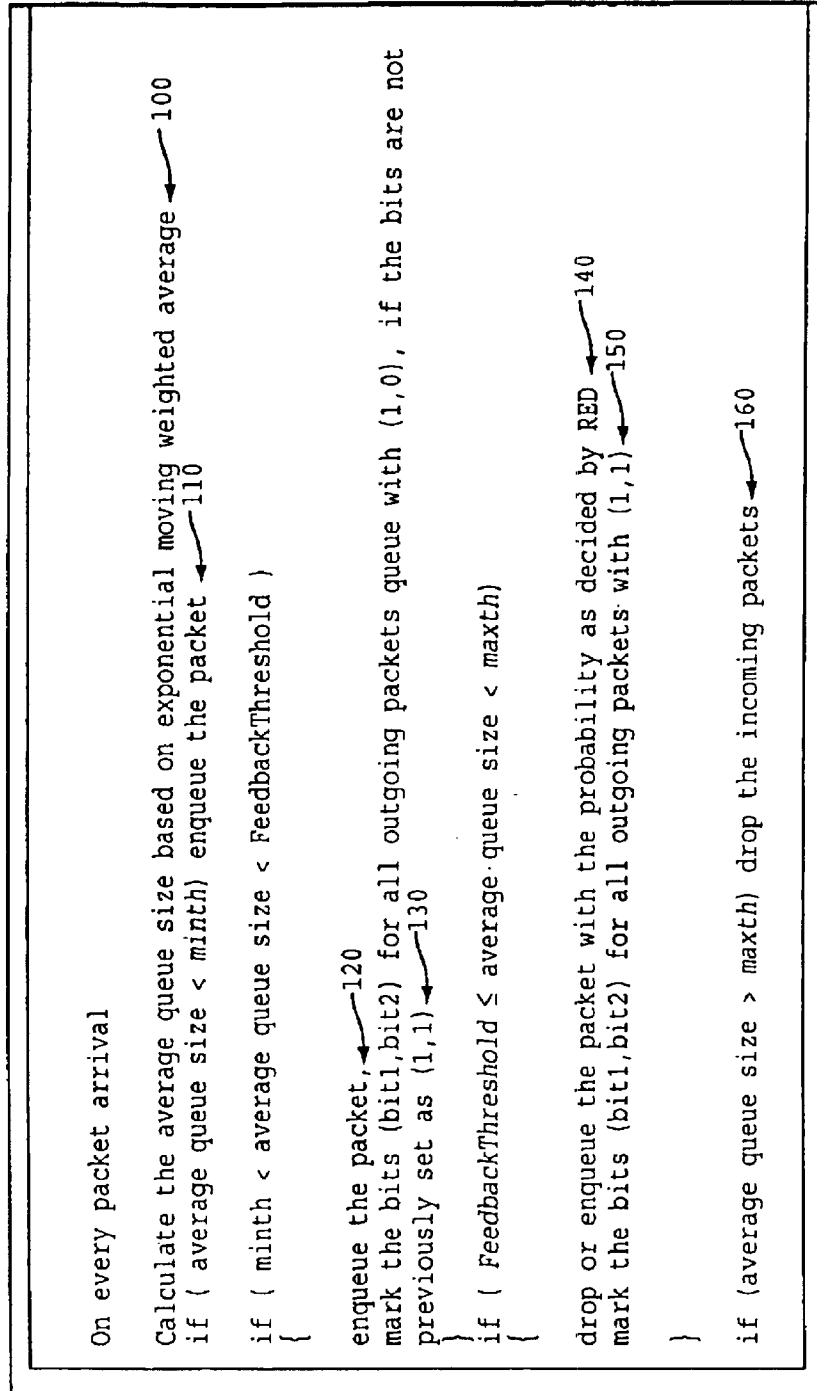


Fig. 1
DIFF-SERV DOMAIN
(PRIOR ART)



MODIFICATIONS TO THE RED ALGORITHM AT CORE NODES

FIG. 2

Bit1	Bit2	Inference at the egress node
0	0	No congestion detected so far up to this domain
0	1	No local congestion, but Congestion occurred in a prior domain
1	0	Local congestion occurred, but no packet loss phase
1	1	Local congestion occurred and in packet loss phase

A SIMPLE TWO-BIT SCHEME FOR REPRESENTING LOCAL DOMAIN CONGESTION

FIG. 3

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