TECHNOLOGY

Integrated Method for Performing Scheduling, Routing and Access Control in a Computer Network

OVERVIEW

Computer networks based upon a series of nodes and servers interconnected by physical wiring have been well known for some time (e.g. Ethernet or Token-ring network). With the rapid development of the Internet, these computer networks must not only communicate effectively within their own domain or environment, but also must communicate between networks of different types.

A reference model for Open Systems Interconnection (OSI) has been defined by the International Standardization Organization (ISO) to assign names to the different tasks a computer network has to fulfill in order to perform these inter-network types of communications. The ISO model defines seven layers, providing a logical grouping of the network functions. Scheduling, routing and access control functions are typically performed by the corresponding physical, link and network layer in the ISO model on an independent basis. Unfortunately conventional wire-based and wireless networking schemes that make independent scheduling, routing and access control decisions are unable to adapt efficiently to an ad hoc wireless network environment. These schemes cannot adapt adequately to the dynamic reconfiguration of an ad hoc wireless network and they are unable to account for the wide variations of the physical medium, namely a wireless channel.

An integrated, highly adaptive method has been developed to perform scheduling, routing and access control in a computer network or an ad hoc wireless network. The network is made up of a plurality of nodes interconnected by links between at least some nodes wherein at least one path interconnects all of the plurality of nodes. The nodes are organized into at least one of a cluster and a clique and the network has a network-wide capacity to send data packets in slots delineating time frames on the network between the nodes on the network defined by the links. The plurality of nodes can be configured to process at least one flow comprising at least a portion of a transmitted and received data packet for which the plurality of nodes must manage to get the data packets to a desired node on the network.

For further information, please contact the Office of Technology Commercialization, (301) 405-3947, Email: otc@umd.edu.

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PATENT STATUS

Issued

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CATEGORIES

- Information Technology

EXTERNAL RESOURCES

- US Patent 6,894,991

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