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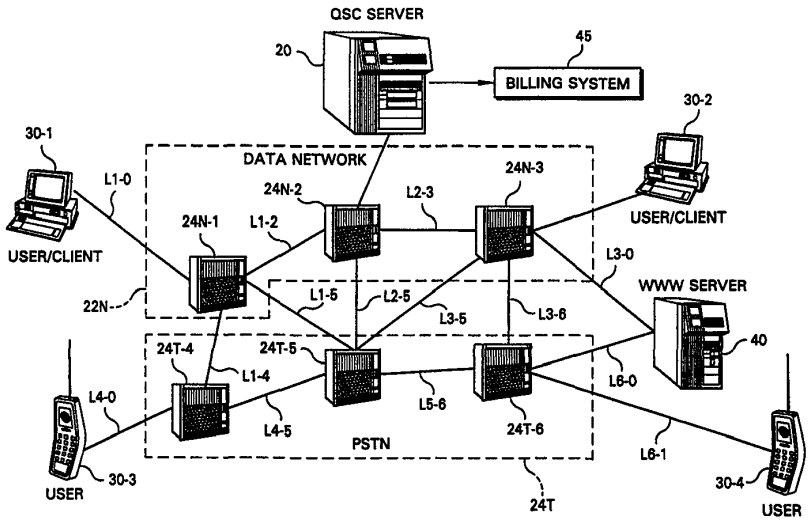

(57) Abstract

A network connection between an origination node (30–1) and a destination node (40) is dynamically determined and established during a tele/datacommunications session. At commencement of the session the originating node provides (i) an address of the destination node, and (ii) a set of prescribed quality connection parameters. During the session, the set of prescribed quality connection parameters is used by a quality connection server (20) to determine an acceptable sequence of links between the originating node and the destination node. In accordance with the determination, the quality connection server sets up connections over the acceptable sequence of links whereby data packets are transmitted between the originating node and the destination node during the session.

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DYNAMIC QUALITY CONTROL NETWORK ROUTING

This patent application claims the benefit and priority of United States Provisional Patent Application Serial No. 60/049,778 filed June 16, 1997, which is incorporated herein by reference.

BACKGROUND

1. Field of Invention

This invention pertains to tele/datacommunications networks, and particularly to obtaining quality connections over such networks.

2. Related Art and Other Considerations

The advent of the internet, also known as the world wide web (WWW), affords enhanced access to information. Today persons with internet-connected computers can communicate with other similarly connected computers. Some institutions maintain large computers which function as web servers for providing web pages to internet surfers. Transmissions in the form of data packets are routed between computers over links of the internet.

With increased popularity, the internet is becoming more crowded. For some links comprising the internet, delay times for packet transmission are considerably long. Similar phenomena afflicts other data networks, with the result that quality of connection is often degraded.

Various schemes have been developed to avoid congestion over a network. For example, United States Patent 5,485,455 to Dobbins et al. discloses a fast packet switching network which determines a path between two nodes based upon "metrics". United States Patent 5,021,164 to Goldstein discloses a network using ATM-type cells and which employs a bandwidth allocation scheme to avoid congestion. Neither of these schemes appear to involve a direct interface with a user, nor does there appear to be any express discussion of financial accounting or charging of the user for the requested quality of service.

United States Patent 5,557,320 to Krebs discloses a sender-subscriber based, transmission traffic control system for video mail, which includes the transmission of bulk electronic data primarily in the form of still or motion picture images. The Krebs system schedules video mail transmissions in advance, not contemporaneously at the time of transmission.

What is needed therefore, and an object of the present invention, is dynamic optimization of quality assured connections when such quality service is requested.

SUMMARY

A network connection between an origination node and a destination node is dynamically determined and established during a tele/datacommunications session. At commencement of the session the originating node provides (i) an address of the destination node, and (ii) a set of prescribed quality connection parameters. During the session, the set of prescribed quality connection parameters is used by a quality connection server to determine an

acceptable sequence of links between the originating node and the destination node. In accordance with the determination, the quality connection server sets up connections over the acceptable sequence of links whereby data packets are transmitted between the originating node and the destination node during the session.

The quality connection server determines the acceptable sequence of links by consulting a link current status database and/or sending solicitations for bids to a plurality of nodes intermediate the origination node and the destination node. Bids received in response to the solicitations are processed to determine the acceptable sequence of links. In one embodiment, prior to setting up the connections the server prompts the originating node for confirmation of the acceptable sequence of links.

The acceptable sequence of links can comprise links which constitute differing networks. For example, some of the links included in the acceptable sequence of links are links of a data network and others of the links included in the acceptable sequence of links are links of a public switched telephony network.

A billing system is utilized to bill customers for utilization of links.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other objects, features, and advantages of the invention will be apparent from the following more particular description of preferred embodiments as illustrated in the accompanying drawings in which reference characters refer to the same parts throughout the various views. The drawings are not

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