

ABSTRACT

A complete multi-user game playing environment is described which provides game playing services to cable television subscribers over existing cable networks. A game player located at the end of a cable network connection has a computer or other game playing device attached to the cable network through a front end adapter card. A game playing server is located at the cable headend and is equipped with back end communications cards for full duplex communications over the cable network with a plurality of game players. A plurality of uplink frequencies are used by the servers to communicate with the game players and a pluralities of downlink frequencies are used to communicate from the game players to the server. The communications are controlled by the server to prevent communication collision on the cable network over the same frequencies by having the server control a dynamically-changing time and frequency division multiple access protocol. The multi-user game playing server includes hardware and software where the game server includes a multi-threaded operating system which controls user access to a plurality of concurrently-operating games. The operating system allows users to join, play, change and quit any number of a plurality of provided games. Each of the plurality of concurrently operating games is a separate process in a multitasking environment while each of the operating threads are event-driven context-switched threads to control user access and communications over the cable network. The game playing information and game access information is traded between the server and the plurality of the game players using a predefined packet protocol which is very tolerant of lost packet data. The user's game equipment attached to the cable network includes devices such as personal computers, special set-top game controllers or existing video game playing equipment.

