

[54] ENHANCED DEDICATED TELECONFERENCING SYSTEM

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[58] Field of Search 379/202, 203, 204, 205, 379/206, 130, 112; 370/60, 62

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[57] ABSTRACT

A method and apparatus for enhancing the operation of a teleconferencing system, utilizes a programmed service computer to drive a bridge which has a plurality of ports for establishing communication with a plurality of conferees. The bridge includes a microprocessor which responds to a plurality of commands, each requiring information in the form of plural constant information responses and plural variable information responses. The constant information responses involve the status and identification for a conference and conferees of that conference. The variable response information is specific to each conferee. This may include first and last name for the conferee, as well as the conferee's telephone number. The programming of the service computer supplies the information responses to the microprocessor in the appropriate order for achieving functions, such as the addition, removal and changing of status for conferees. The service computer can also communicate with terminals of the conferees so that data can be passed from one conferee to another.

37 Claims, 2 Drawing Sheets

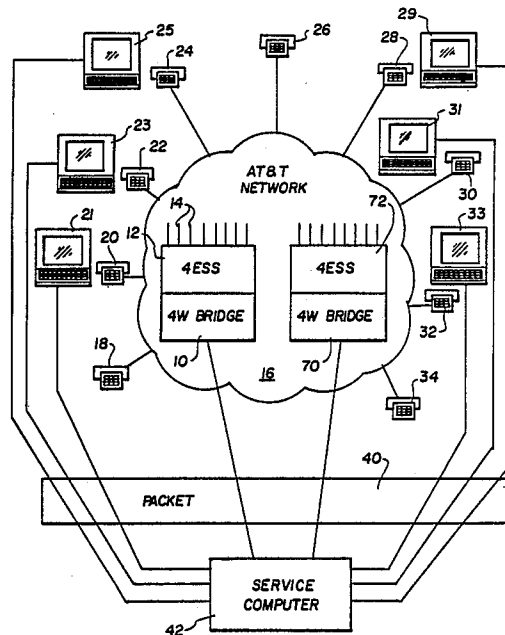


FIG. 1
(PRIOR ART)

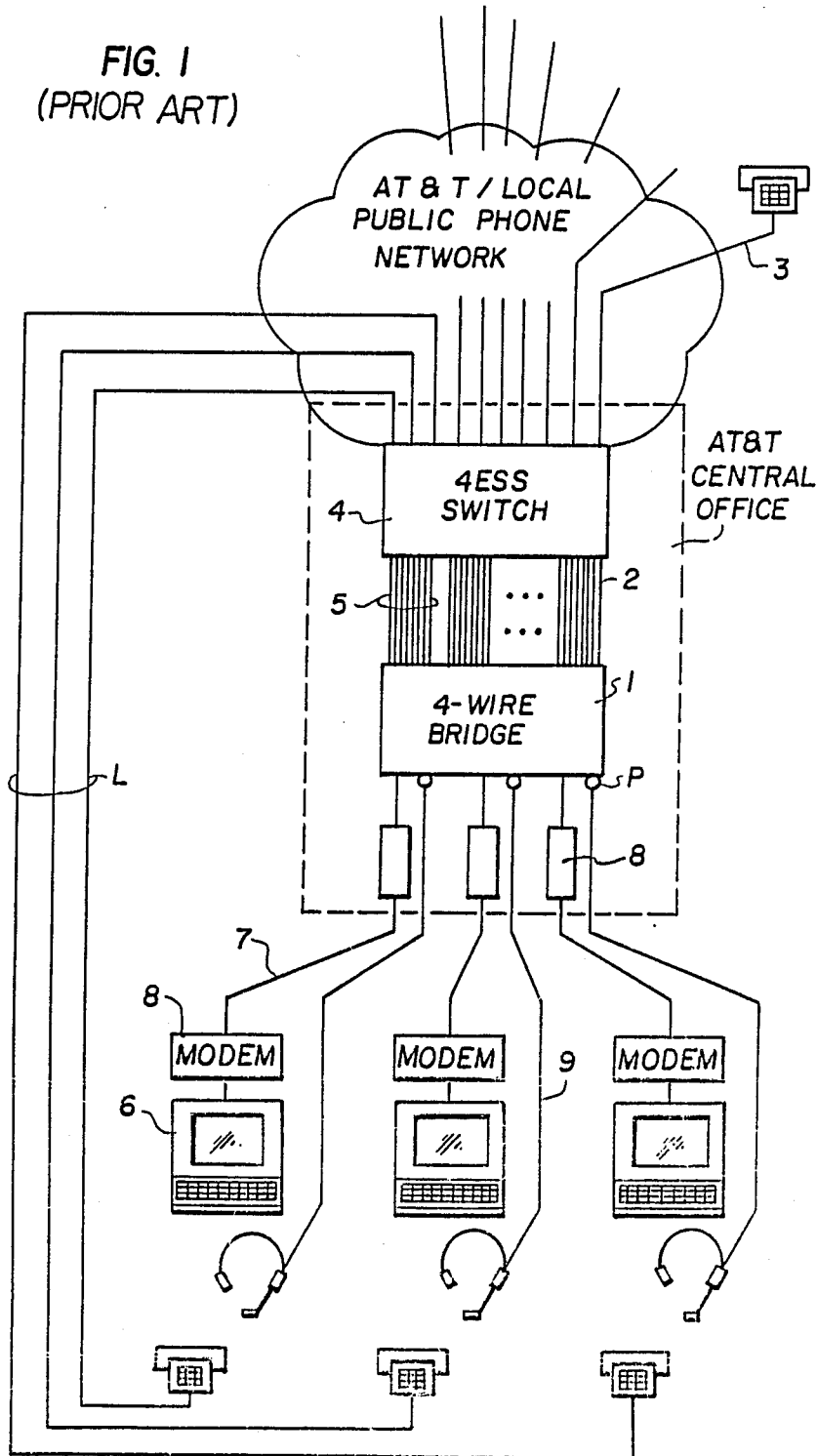
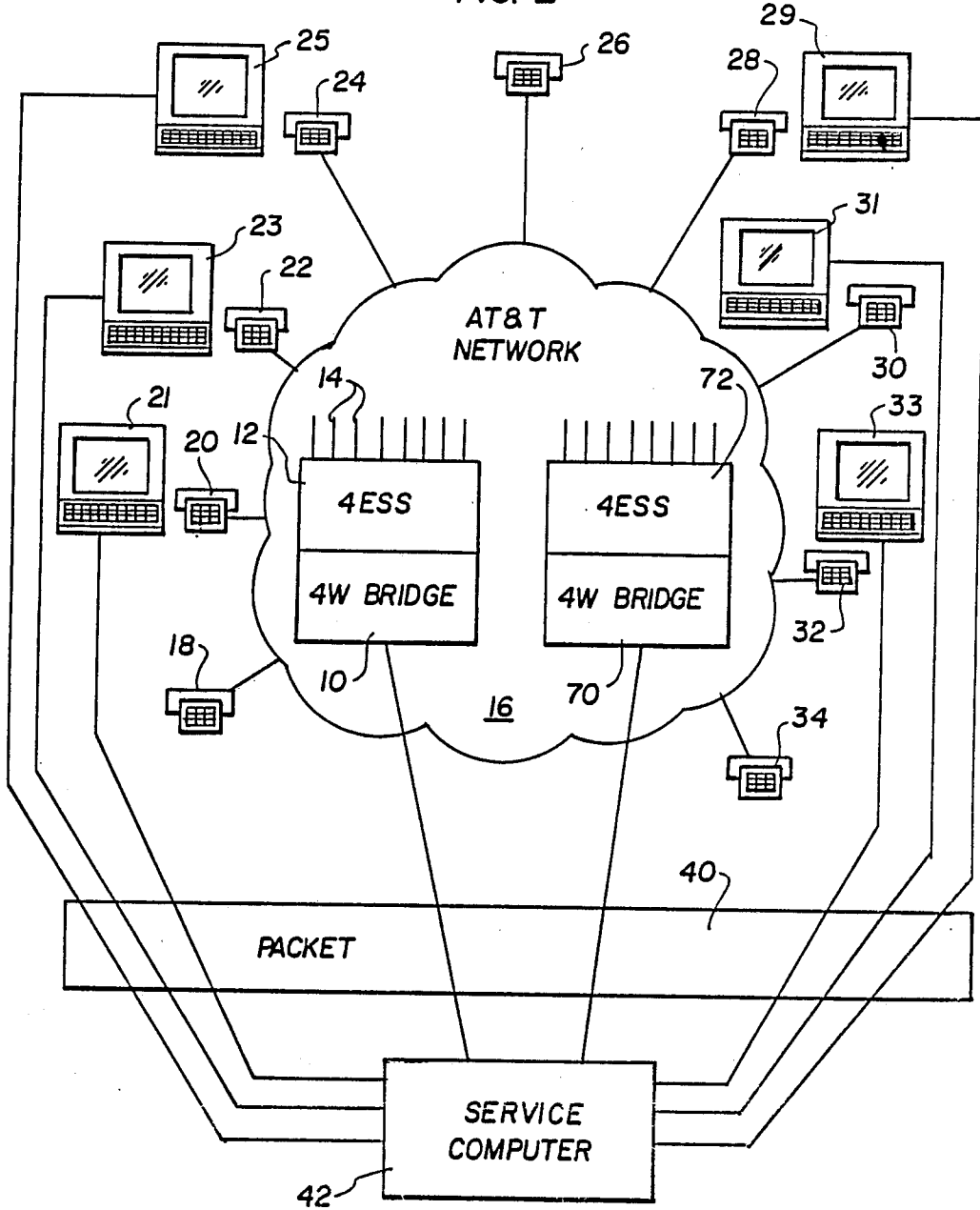


FIG. 2



ENHANCED DEDICATED TELECONFERENCING SYSTEM

FIELD AND BACKGROUND OF THE INVENTION

The present invention relates in general to telephone conferencing techniques, and in particular, to a new and useful method and apparatus of operating a dedicated teleconferencing system to conduct a telephone conference among a plurality of conferees. A teleconferencing service known as the ALLIANCE Dedicated Teleconferencing Service is available from AT&T. ALLIANCE is a trademark of AT&T.

The present invention is best understood by having a knowledge of the characteristics and limitations of the ALLIANCE system.

The words "his" and "him" should be interpreted to include both male and female genders throughout this application.

The ALLIANCE System Configuration

The ALLIANCE system, which is shown at FIG. 1, utilizes a microprocessor controlled device called a bridge 1, which has up to fifty-six ports 2, which can simultaneously connect up to fifty-six telephone lines 3, into a single teleconference, twenty-eight two-party teleconferences, or any number of teleconferences between one and twenty-eight which do not exceed the bridge's fifty-six-port capacity. In order to access lines, the bridge ports are directly connected to a so-called 4ESS toll switch 4, which is a part of the AT&T telephone network. The fifty-six ports are divided into seven groups of eight ports each, shown at 5. A different type of telephone service may be subscribed to by each group. For example, one group may have so-called band 4 WATS service, three groups band 2 WATS service, and all remaining groups regular MTS service. Groups of ports which have the same type of telephone service are known as segments. In the example above, there would be three segments called "1", "2", and "3".

A teleconference can be reserved, initiated ("set-up"), monitored and controlled by an attendant using a terminal or personal computer (PC) using software which allows the PC to emulate a terminal 6. Communication between the attendant terminal and the microprocessor of the bridge is established over a dedicated private data line 7. Modems 8 are used to convert the digital signals of the bridge and attendant terminals to analog signals so that these signals may traverse the

private data line. The bridge can be controlled by up to three attendant terminals.

The bridge also has a provision which allows up to three attendants to place themselves on the audio portion of any active conference. There are two methods by which audio communication between the attendant and the bridge can be established. A dedicated private voice line 9 may be attached to one of the bridge's three dedicated attendant audio ports P. The second method allows the attendant to specify that he be dialed back on a public voice line L, which requires the use of an available bridge port 2.

Some of the most important characteristics of the ALLIANCE system configuration vis-a-vis the present invention is that it is a dedicated system. That is:

- (a) The means of control (attendant terminals) are dedicated to a single bridge;
- (b) Any single bridge may only communicate with a maximum of three attendant terminals; and
- (c) The attendant terminals' location is fixed by the need to use private data lines for his communication with a bridge.

The ALLIANCE System Commands and Displays

Once a communication link between an attendant terminal and the bridge's microprocessor is established, the bridge can be controlled using specific commands sent by the terminal. The bridge microprocessor sends to the terminal three types of data:

1. Prompts requesting particular types of data to be entered by the attendant depending on the situation;
2. Display characters and control characters (Control characters are recognized by the terminal, but not displayed. They control the format of the display characters and other non-displayed functions of the terminal, such as emitting "beep" tones); and
3. Status messages which appear briefly on the twenty-fourth line of the terminal display. Status messages are generated by the bridge every time a change in a conference's or conferee's status changes. For example, the start and end of a conference, conferee on conference, with port number indicated or dropped from a conference, etc.

In practice, the attendant first enters a carriage return which causes the bridge to return the prompt "COMMAND:" in order to request a command. At this prompt, the attendant must type in the first command. If, at this time, or any other time, the "COMMAND:" prompt appears, the attendant enters the letter "H" for HELP, a summary of the ALLIANCE commands is displayed (see Table 1).

TABLE 1

<u>ADMINISTRATIVE COMMANDS</u>	
ATTENDANT dial back/dedicated line is available	line need MAINTENANCE DATE and TIME
<u>STATUS COMMANDS</u>	
ACTIVE conference	attendant requested QUEUE
MONITOR conference	STATUS reports
<u>RESERVATION COMMANDS</u>	
ADLIB conference	MEETME conference
DIRECTORY	PRESET conference
daily LOG	SCHEDULE
<u>CONFERENCE COMMANDS</u>	
BLASTUP a conference	LISTEN to ports on a conference
CALL a number	change MODE of a conf/conferee

TABLE 1-continued

COMBINE two conferences	OFF conference
DIVIDE into sub-conferences	ON a port/conference
DROP a port/conference	SETUP conference
JOIN sub-conference	change-SUB-conf. assignment

COMMAND:

The commands are divided into four categories (as shown in Table 1):

Administrative Commands; Status Commands; Reservation Commands and Conferencing Commands. It is noted that each command can be abbreviated by a unique one, two or three letter string of characters, such as "AT" for ATTENDANT, or "MA" for MAINTENANCE. "MON" is necessary for MONITOR since "MO" is also the first two letters of the MODE command.

The first category is Administrative Commands such as "ATTENDANT" or AT, which gives the attendant his voice/path status. This indicates to the attendant whether the attendant is on a dedicated or dial-back voice path. Another administrative command is MAINTENANCE of MA, which marks a port or group of ports for maintenance. This may be required if one or more ports must be taken out of service, for maintenance. "AVAILABLE" is used to make a port(s) available for use, once maintenance has been completed. "DATE" and "TIME" are used for setting the date and time of the bridge's microprocessor clock/calendar function.

The second group of commands known as Status Commands, return information to the attendant's terminal concerning a conference in progress or the condition of the bridge at any particular time. The most relevant status command to the present invention is the "MONITOR" command. This command allows the attendant to monitor the status of a single specified active conference. The MONITOR command is discussed in detail later on in this section.

Another status command is "ACTIVE" or "AC", which, when typed by the attendant, allows the attendant to see what conferences are currently in progress on the bridge. The information returned to the attendant in response to the "AC" command, includes the type of conference (which will be explained later), the name of the conference, the date therefore, starting and finishing times for the conference, the number of ports

of each port as either in-use, available, or out-of-service for maintenance.

The third group of commands are the Reservation Commands. The Reservation Commands are used to create and maintain a conferee directory, to establish different types of conferences, and to add, change, delete and list conference and directory entries. The "LOG" and "SCHEDULE" commands are for printing lists of which ports and conferences respectively, are reserved for a specified time period.

The "INIT" command erases all conference reservations and conferee directory entries from the microprocessor of the bridge. "INIT" is not displayed on the Help display (Table 1).

As described earlier, the microprocessor of the bridge provides for a single conferee directory with a capacity of up to fifteen hundred unique conferee entries. Using the "DIRECTORY" or "DIR" command, an attendant can add, delete, list and erase directory entries. Each directory entry contains the first name, last name, primary phone number, secondary phone number and segment type for each of the primary and secondary phone numbers.

If the directory is to be manipulated, the attendant types "DI" after the "COMMAND:" prompt. This generates a menu of options (add, change, etc.):

The menu is reproduced below as "MENU 1":

MENU 1

- ADD an entry
- CHANGE an entry
- DELETE an entry
- ERASE the entire file
- LIST entries in the directory
- QUIT the directory

OPTION: _____

At the prompt "OPTION", the attendant types a single letter to request a sub command. The letter "A" for "ADD", for example.

This causes the ALLIANCE bridge micoprocessor to return a second menu labeled "MENU 2" below:

MENU 2

# -- cancel entry	@ -- quit adding entries			
<u>NUMBER</u>	<u>LAST NAME</u>	<u>FIRST NAME</u>	<u>PHONE NUMBER</u>	<u>SEG</u>
			P:	
			S:	

being used by the conference (i.e. the maximum number of conferees involved), a code used for one type of conference (the Meetme conference) and whether the Meetme conference is of the assisted or un-assisted type. Other status commands are "QUEUE" or "Q" which displays the ports that have requested attendant assistance, "STATUS" or "ST", which displays the last one hundred status messages that the attendant has received, and "PORT" or "PO", which displays the current sta-

Each time the operator presses the RETURN or ENTER key on the keyboard of his terminal, the cursor, beginning at "Last Name", advances to the next column corresponding to one of the six fields. At each field, the attendant must enter the appropriate information which is here referred to as variable information reponses.

It should be noted that the next available directory number is assigned by the bridge microprocessor to each newly added conferee. This storage of conferee

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