AN APPARATUS AND METHOD FOR ALLOCATING A PRIZE

FIELD OF THE INVENTION

The present invention relates to an apparatus and a method for allocating a prize.

The invention has been developed primarily for use with a plurality of interlinked gaming terminals in one or more gaming establishments and will be described hereinafter predominantly with reference to this application. However, the invention is not limited to that particular field of use and is also suitable for use with online gaming, lotto, pools, lotteries, art unions, bingo, raffles and other games involving one or more wagers being placed upon an outcome having a finite probability of occurring. Additionally, the invention is applicable to any type of electronic transaction, such as those processed by electronic cash registers and those that may be entered into on a personal computer via the internet, for example.

BACKGROUND TO THE INVENTION

Any discussion of the prior art throughout the specification should in no way be considered as an admission that such prior art is widely known or forms part of common general knowledge in the field.

It is known to "link" gaming terminals to provide a number of additional functionalities. This includes the ability to control the awarding of a prize, as the pool of available funds is greater and the amount of funds available is known rather than having to be estimated. Another functionality of interlinked gaming terminals is that secondary gaming is possible. For example, for a given group of interlinked gaming terminals, a central display provides the gamers with a visual indication of a presently available jackpot prize that is being incrementally increased as the gamers operate the interlinked gaming terminals. It is known by the gamers that the prize will be awarded when it is incremented to a randomly selected value that is less than a predefined value. Typically, the predefined value will also be visually indicated to the gamers by the display.

The use of such functionality is intended to provide additional impetus to the gamers to play the terminals and thereby win the jackpot prize in addition to any prize available to be awarded by the respective terminal. However, prior art implementations of such inter-linked terminals typically require high bandwidth communications because of the large amount of data communicated between the

various gaming terminals and a primary controller. Additional problems may be encountered in prior art systems due to the requirement for the primary controller to analyse the large amount of data collected from the gaming terminals in the short periods of time typically available between subsequent games.

A partial solution is to use an auxiliary controller to mediate between the gaming terminals and the primary controller. Known implementations of this solution continue to suffer from bandwidth related difficulties.

SUMMARY OF THE INVENTION

It is an object of the present invention to overcome or ameliorate at least one of the disadvantages of the prior art, or to provide a useful alternative.

According to a first aspect of the invention there is provided a method of allocating a prize using a gaming apparatus, the apparatus including:

a primary controller for determining the award of a prize; and

an auxiliary controller capable of communication with the primary controller, the auxiliary controller being further capable of communication with one or more gaming terminals,

the method including the steps of:

receipt by the auxiliary controller of data from one or more of the gaming terminals, the data including at least one gaming terminal identifier and associated gaming terminal accumulated amount;

storage of the data in a memory accessible to the auxiliary controller;

being responsive to the gaming terminal accumulated amounts for deriving a total contributory amount;

communication from the auxiliary controller to the primary controller of the total contributory amount;

determination by the primary controller of whether or not to award a prize based upon the total contributory amount;

where the determination is to award a prize, communication from the primary controller to the auxiliary controller of data associated with the determination; and

analysis by the auxiliary controller of the data associated with the determination and the data stored in the memory to determine to which of the gaming terminals the prize is to be allocated.

Preferably, the method includes the step of being responsive to each gaming terminal accumulated amount for deriving a respective contributory amount. More preferably, the total contributory amount is the sum of the respective contributory amounts in a predetermined period.

Preferably, the method includes the step of being responsive to the gaming terminal accumulated amounts to derive a total accumulated amount. More preferably, the total accumulated amount is the sum of the accumulated amounts in a predetermined period and the total contributory amount is a portion of the total accumulated amount. More preferably, the total contributory amount is any one of a proportion, fraction or percentage of the total accumulated amount. In a preferred embodiment the fraction or percentage is calculated by a comparison of a portion of the total accumulated amount and the total accumulated amount.

In other embodiments, the contributory amounts are determined with reference to the respective gaming terminals. That is, in these other embodiments, the contributory amounts need not be the same, either in quantum or as a proportion to the respective gaming terminal accumulated amounts.

Preferably, the auxiliary controller communicates with the primary controller via a wide area network (WAN) having a bandwidth of less than or equal to 10,000 bits per second. More preferably, the auxiliary controller communicates with the gaming machines via a local area network (LAN) having a bandwidth approximately equal to 10 mega bits per second.

Preferably, the apparatus includes a plurality of auxiliary controllers each capable of communication with the primary controller and each capable of communication with a respective set of one or more gaming machines.

Preferably, the auxiliary controllers and the primary controller are geographically separate and each of the auxiliary controllers are disposed at separate venues.

Preferably, the method includes the step of communication from the auxiliary controller to the primary controller of an auxiliary controller identifier.

Preferably, the step of storage of the data in a memory accessible to the auxiliary controller includes storing a list of the gaming terminal identifiers and the associated

gaming terminal accumulated amounts ordered chronologically as received by the auxiliary controller.

Preferably, the auxiliary controller maintains an inventory of gaming terminal identifiers and is responsive to a signal from the primary controller for transmitting changes in the inventory to the primary controller.

Preferably, a contributory amount is communicated to the primary controller once for each of a predefined polling period. In a preferred embodiment, the predefined polling period is at least 2 seconds. More preferably, the predefined polling period is at least 1 second.

Preferably, the method includes the step of communicating a win message from the auxiliary controller to the gaming terminal to which the prize is to be allocated.

Preferably, the method includes the step of communicating a win message from the auxiliary controller to the primary controller.

Preferably, the method is performed at least once every 5 seconds. More preferably, the method according to any one of the preceding claims wherein the method is performed at least once every 2 to 3 seconds.

Preferably, the gaming terminals include any one or more of the following:

a poker machine;

a point of sale register;

a mobile phone;

a personal computer;

an access control point; and

a television.

According to a second aspect of the invention there is provided an apparatus for allocating a prize, the apparatus including:

a primary controller, an auxiliary controller and a plurality of gaming terminals,

the auxiliary controller having first communication means for receipt of data from one or more of the gaming terminals, the data including one or more gaming terminal identifier and associated gaming terminal accumulated amount,

the auxiliary controller having a memory for storage of the data;

the auxiliary controller having a processor for deriving a total contributory amount from the gaming terminal accumulated amount;

the auxiliary controller having second communication means for communication to the primary controller of the total contributory amount;

the primary controller having a comparator for determination of whether or not to award a prize based at least in part upon the total contributory amount;

the primary controller having access to the second communication means so as to communicate data associated with the determination to the auxiliary controller; and

the auxiliary controller being responsive to the data associated with the determination and the data stored in the memory so as to determine to which of the gaming terminals the prize is to be allocated.

Preferably the first communication means is a local area network and the second communication means is a wide area network.

According to a third aspect of the invention there is provided a method of allocating a prize in a gaming system having a primary controller, an auxiliary controller and a plurality of gaming terminals, the method including the steps of:

collating and storing data at the auxiliary controller indicative of accumulated amounts associated with one or more of the gaming terminals;

calculating a total contributory amount at the auxiliary controller;

communicating the total contributory amount to the primary controller;

using the primary controller to determine whether or not to award a prize and to determine data associated with the determination;

communicating the data associated with the determination to the auxiliary controller; and

using the auxiliary controller to determine to which of the gaming terminals the prize should be awarded.

According to a fourth aspect of the present invention there is provided a method of allocating a prize using an electronic apparatus, wherein said apparatus includes:

a primary controller for determining the award of a prize; and

an auxiliary controller capable of communication with said primary controller, the auxiliary controller being further capable of communication with one or more terminals;

the method including the steps of:

a) receipt by the auxiliary controller of data from one or more of the terminals, the data including one or more terminal identifier and associated terminal accumulated amount;

b) storage of the data in a memory accessible to said auxiliary controller;

c) calculation by the auxiliary controller of a total contributory amount that is derived, at least in part, from the data;

d) communication from the auxiliary controller to the primary controller of the total contributory amount;

e) determination by the primary controller of whether or not to award a prize based at least in part upon the total contributory amount;

f) if the determination in step e) is positive, communication from the primary controller to the auxiliary controller of data associated with the determination; and

g) analysis by the auxiliary controller of the data associated with the determination and the data stored in the memory to determine to which of the terminals the prize is to be allocated.

Preferably at least one of the terminals is a point of sale terminal and an accumulated amount associated with the point of sale terminal is representative of a dollar value of purchases at the point of sale terminal. In another preferred embodiment the accumulated amount associated with the point of sale terminal is representative of a number of products sold in transactions processed at the point of sale terminal.

According to a fifth aspect of the present invention there is provided an apparatus for allocating a prize including:

a primary controller, an auxiliary controller and a plurality of terminals,

the auxiliary controller having first communication means for receipt of data from one or more of the terminals, the data including one or more terminal identifier and associated terminal accumulated amount,

the auxiliary controller having a memory for storage of the data;

the auxiliary controller having a calculator for calculation of a total contributory amount derived, at least in part, from the data;

the auxiliary controller having second communication means for communication to the primary controller of the total contributory amount;

the primary controller having a comparator for determination of whether or not to award a prize based at least in part upon the total contributory amount;

the primary controller having access to said second communication means so as to communicate data associated with the determination to the auxiliary controller; and

said auxiliary controller being responsive to the data associated with the determination and the data stored in said memory so as to determine to which of the terminals the prize is to be allocated.

According to a sixth aspect of the invention there is provided a method of allocating a prize in a system having a primary controller, an auxiliary controller and a plurality of gaming terminals, said method including the steps of:

collating and storing data at the auxiliary controller indicative of accumulated amounts associated with one or more of the terminals;

being responsive to the data for calculating a total contributory amount at the auxiliary controller;

communicating the total contributory amount to the primary controller;

using the primary controller to determine whether or not to award a prize and to determine data associated with said determination;

communicating the data associated with said determination to the auxiliary controller; and

using said auxiliary controller to determine to which of the terminals the prize should be awarded.

According to a seventh aspect of the invention there is provided a method of allocating a prize using a gaming apparatus, wherein said apparatus includes:

a primary controller for determining the award of a prize; and

an auxiliary controller capable of communication with said primary controller, said auxiliary controller being further capable of communication with one or more gaming terminals;

said method including the steps of:

a) receipt by the auxiliary controller of data from one or more of the gaming terminals, said data including one or more gaming terminal identifier and associated gaming terminal contribution amount;

b) storage of said data in a memory accessible to said auxiliary controller;

c) calculation by said auxiliary controller of a total contributory amount;

d) communication from said auxiliary controller to the primary controller of the total contributory amount;

e) determination by the primary controller of whether or not to award a prize based at least in part upon the total contributory amount;

f) if the determination in step e) is positive, communication from the primary controller to the auxiliary controller of data associated with the determination; and

g) analysis by the auxiliary controller of the data associated with the determination and the data stored in said memory to determine to which of the gaming terminals the prize is to be allocated.

According to an eighth aspect of the invention there is provided a method of allocating a prize in a system having a primary controller, an auxiliary controller and a plurality of gaming terminals, said method including the steps of:

collating and storing data at the auxiliary controller indicative of contributory amounts associated with one or more of the terminals;

being responsive to the data for calculating a total contributory amount at the auxiliary controller;

communicating the total contributory amount to the primary controller;

using the primary controller to determine whether or not to award a prize and to determine data associated with said determination;

communicating the data associated with said determination to the auxiliary controller; and

using said auxiliary controller to determine to which of the terminals the prize should be awarded.

According to a ninth aspect of the invention there is provided a method of allocating a prize using a gaming apparatus, the apparatus including:

a primary controller for determining the award of a prize; and

an auxiliary controller capable of communication with the primary controller, the auxiliary controller being further capable of communication with one or more gaming terminals,

the method including the steps of:

receipt by the auxiliary controller of data from one or more of the gaming terminals;

storage of the data in a memory accessible to the auxiliary controller;

communication from the auxiliary controller to the primary controller of a contributory amount derived from the data;

determination by the primary controller of whether or not to award a prize based upon the contributory amount;

where the determination is to award a prize, communication from the primary controller to the auxiliary controller of data associated with the determination; and

analysis by the auxiliary controller of the data associated with the determination and the data stored in the memory to determine to which of the gaming terminals the prize is to be allocated.

Preferably, the data from one or more of the gaming terminals includes at least one gaming terminal identifier and associated gaming terminal accumulated amount. More preferably, the contributory amount is derived from the gaming terminal accumulated amount. In another embodiment, the data is indicative of a contribution from the respective gaming terminal, and the contributory amount is derives from the contributions from the respective terminals. In one embodiment, the contributory amount is the sum of the contributions from the separate terminals.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a schematic depiction of a first preferred embodiment of the present invention;

Figure 2 is a flow chart showing steps performed by an auxiliary controller when polling the gaming terminals;

Figure 3 is a flow chart showing steps performed by a primary controller when determining whether or not to award a prize;

Figure 4 is a flow chart showing steps performed by an auxiliary controller once the primary controller has determined that a prize should be awarded; and

Figure 5 is a schematic depiction of a first preferred embodiment of the present invention.

PREFERRED EMBODIMENT OF THE INVENTION

Referring to the drawings, the first preferred embodiment of a gaming apparatus as illustrated in Figure 1 includes a primary controller (1) for determining the award of a prize. The primary controller (1) is typically a server, for example a personal computer running a windows advanced server program and using an SQL database. Such hardware and software is readily commercially available and its use is well known to those skilled in the art.

The logic used by the primary controller (1) to determine whether or not a prize is awarded will vary in different implementations, however in the illustrated preferred embodiment the prize is awarded once an incrementally increased accrued input amount tracked by the primary controller (1) has reached or exceeded a randomly selected value. In other embodiments, alternative schemes are used, for example that described in co-pending Australian Provisional Patent Application No. 2003903769, the contents of which are hereby incorporated in their entirety by way of reference.

The auxiliary controller (2) is capable of communication with the primary controller (1) via a wide area network (3). As will be appreciated by those skilled in the art, such a network is referred to as a WAN. Routers (43 and 44) provide an interface between the wide area network (3) and the primary controller (1) and the auxiliary controllers (2) respectively in a manner which is well known to those skilled in the art. The bandwidth of communications across the wide area network (3) is typically limited, for example in the preferred embodiment the data communications baud rate is 9600 bits per second. In other embodiments alternative baud rates are used.

The auxiliary controller (2) is also capable of communication with one or more gaming terminals (4) via a local area network (5) having a data communications baud rate of 10 mega bits per second. As will be appreciated by those skilled in the art, such a network is referred to as a LAN.

In other embodiments the LAN uses different baud rates. Notwithstanding, it is more typical that the baud rate for the LAN will be much greater than the baud rate for the WAN that links the LAN to the central controller.

In the preferred embodiment this LAN (5) is in the form of a serial network, for example an RS-485, or the like. Each of the gaming terminals (4) interfaces with the serial network via interface cards (45) in a known manner. Each of the gaming machines (4) include a display (46) upon which the game is displayed. It is worth noting that the terms "gaming terminals" and "gaming machines" are taken to be interchangeable for the purpose of the specification.

The gaming terminals (4) are typically poker machines, however the invention is also applicable to other types of games involving one or more wagers being placed upon an outcome having a finite probability of occurring. Yet other embodiments of the invention are applicable to retail transactions and associated marketing schemes, such as loyalty schemes. For example, a trader may choose to offer a prize once a certain amount of revenue has been received in total sales, once a given number of a predefined product line has been sold, or once a predetermined milestone has been achieved. In one embodiment, where the terminals are in the form of point of sale terminals such as electronic cash registers, a prize is awarded to every hundredth consumer who enters into a transaction. In such cases, the gaming is the marketing promotion from which the prize is derived. Consumers will typically have a range of degrees of awareness of their level of participation in such gaming. In other embodiments the gaming terminals include personal computers, mobile phones and access control points. For example, a prize is awarded when a website is visited under set conditions, when a cellular telephone call satisfies a given criteria, or once a predetermined number of people have used an access control point. Digital television technology is also presently contemplated as interfaces for gaming terminals.

Returning to an exemplary poker machine gaming application of a preferred embodiment, a single auxiliary controller (2) is typically disposed at each gaming venue and is connected to the local area network (5) so as to communicate with all of the gaming terminals (4) at that venue. However, it will be appreciated that other embodiments of the invention utilise more than one auxiliary controller (2) at a given venue or, alternatively, a single auxiliary controller (2) to service a number of venues.

For ease of reference, the group of gaming terminals (2) to which any given auxiliary controller (2) is connected via the local area network (5) shall be referred to as that auxiliary controller's "associated group" (8). Additionally, the venues at which the auxiliary controllers (2) are disposed (6) are typically geographically separate from each other and from the venue (7) at which the primary controller (1) is disposed. For ease of reference, the venue at which the auxiliary controllers (2) are disposed may be referred to as "remote sites" (6) and the venue at which the primary controller is disposed may be referred to as the "central site" (7), as shown in Figure 1. A progressive display (47) is disposed at the gaming venue to display information to the gamers regarding the jackpot prize. Some embodiments of the gaming machines (4) include separate displays, referred to as "tablets", which are also used to display information to the gamers regarding the jackpot prize.

A database server (40) and a workstation (41) are disposed at the central site and are connected to the primary controller (1) via a local area network (42). This local area network (42) may be in the form of an Ethernet making use of category 5 cables, hubs, etc, in a known manner. However other types of LAN's, such as wireless LAN's, and the like, are utilised in alternative embodiments. The database server (42) is utilised by the primary controller (1) for the storage and retrieval of data. The workstation (41) allows an administrator to interface with the apparatus.

Each of the gaming terminals (4) include meters which track various parameters associated with the performance and usage of the gaming terminal (4). In particular, each of the gaming terminals (4) include a meter which tracks the total amount of revenue which has been received by the gaming terminal (4). This is one of the main parameters used in the preferred embodiment of this invention, however it will be appreciated that other parameters may also be utilised, for example parameters which track the number of games played, the number or monetary value of prizes awarded, the contribution that a game played at that terminal makes to a linked jackpot, etc. In general, whichever of these parameters is used shall be referred to as an "accumulated amount".

The auxiliary controllers (2) are each responsive to a polling period, which in the preferred embodiment is 1 second. This period is chosen to be large enough to enable an auxiliary controller (2) to receive data from the maximum possible number of

gaming terminals (4) which may be in its associated group (8). In one preferred embodiment this maximum possible number is 128, however it will be appreciated that this Figure may be higher or lower in other embodiments. Within each polling period, the auxiliary controllers (2) receive data from at least some of the gaming terminals (4), as shown at step 20 of Figure 2. The data includes one or more gaming terminal identifiers and associated gaming terminal accumulated amount. In some embodiments each auxiliary controller (2) obtains this data from each of the gaming terminals (4) to which it is connected via the local area network (5). In other words, each auxiliary controller (2) obtains this data from each member of the associated group (8) of gaming terminals (2). Preferably, however, each of the auxiliary terminals (2) only receive data from those gaming terminals in their respective groups (8) for which the accumulated amount has altered since the last polling period. This is advantageous since, in a 1 second polling period, it is likely that only a small sub-set of the associated group (8) of a given auxiliary controller (2) will experience an alteration in their accumulated amount, such as an increase in their revenue amounts. And where there is a change in an accumulated amount it will typically only be due to a single game having been initiated or played at a given terminal. That is, the system is set up to provide, in effect, real time operation.

This data as received by the auxiliary controller (2) within any given polling period is stored a memory accessible to the auxiliary controller (2), as shown at step 21 of Figure 2. For the sake of illustrative example, we shall base a running example on the preferred embodiment illustrated in Figure 5, wherein the gaming apparatus has five auxiliary controllers (2), identified as Server Nos. 1 to 5. We shall further assume, for the sake of illustrative example, that Server No. 4 (also known at auxiliary controller No. 4) has 25 gaming terminals in its associated group (8), identified by gaming terminal identifier Nos. 1 to 25. In one polling period auxiliary controller No. 4 receives and stores the following data in its memory:

Gaming Terminal Identifier Nos.	**Associated Accumulated Amount**
Machine No. 12	$2
Machine No. 20	$5
Machine No. 3	$1

(Table 1)

This data is expressed in the above list, and stored in the memory, in the chronological order in which it was received from the gaming terminals (2). In other words, gaming terminal No. 12 was the first to experience a change in its accumulated amount whereby its revenue increased by $2. This was followed by gaming terminal no. 20 and so on. In other words, the sequence of entries in this list is indicative of the order in which the entries were received by Server No. 4 (2) from the various gaming terminals (4). In some embodiments additional time and date data is also stored in association with the data shown in table 1. All communication of data between the gaming terminals (4) and the auxiliary controllers (2) takes place across the local area network (5) and therefore benefits from its high baud rate as compared to that of the wide area network (3). This contrasts with typical prior art systems in which the gaming terminals communicate directly with the primary controller via the wide area network.

In the running example of the operation of a preferred embodiment, the gaming terminals (4) communicate to their auxiliary controller (2) an accumulated amount which is the amount by which their revenue has altered. However, in other embodiments the gaming machines simply communicate an updated total revenue Figure to the auxiliary controller (2), which then subtracts the previous revenue Figure for the relevant gaming terminal to calculate the amount by which the revenue has altered.

The next step is for each of the auxiliary controllers (2) to calculate a total contributory amount, as shown at step 22 of Figure 2. It will be appreciated that the revenue from each machine includes only a small proportion that will contribute to the major prize. In a preferred embodiment, the total contributory amount is derived from the accumulated amount by determining the proportion of the accumulated amount from each machine that will contribute to the determination by primary controller (1) of whether to award a prize.

In some embodiments the total contributory amount is calculated from a total accumulated amount, being the sum of each of the machines' accumulated amounts. In other embodiments the total contributory amount is calculated by summing the contributory amounts derived from each machine, these being proportions of the respective machines' accumulated amounts. In further embodiments, the machines

provide the contributory amounts – that is, the accumulation amount provided by a machine is the respective contributory amount, that having been calculated by the machine in the first place – and the auxiliary controller sums those amounts for a given polling period.

In any event, the contributory amount, while typically derived from the accumulated amount, is a separately calculated number. In the embodiments, the calculation occurs either at the auxiliary controller or the terminals – that is, not at the central or primary controller.

In the present embodiment, 1% of each machines accumulated amount will contribute to the determination by primary controller (1) of whether to award a prize. Therefore, the contributory amount is 1% of the accumulated amount. In other embodiments, alternative percentages or flat amounts are used. In still further embodiments, the percentage varies between machines at a given site. In some embodiments, the percentage or amount is determined, at least in part, by the gamer using a respective machine.

In the above example, Server No. 4 would calculate a total contributory amount of $0.08 for the polling period under consideration. This respective total is then communicated from each of the auxiliary controllers (2) to the primary controller (1) via the wide area network, as shown at step 23 of Figure 2. In the running example, auxiliary controller No. 4 would communicate the following data to the primary controller:

Auxiliary Controller Identifier No.	**Total Contributory Amount in Polling Period**
4	$0.08

(Table 2)

Hence, rather than receive data from each independent gaming terminal (4) as in the majority of the prior art, the primary controller (1) only has to receive data from each of the auxiliary controllers (2). This results in an advantageous reduction in the amount of data that must be communicated across the relatively slower wide area network (3) since the number of auxiliary terminals (2) is typically far lower than the number of individual gaming terminals (4).

It will be appreciated that, in practice, by processing the accumulated amounts to derive the total contributory amounts, a much smaller number is communicated to the primary controller (1). This results in a further reduction in the amount of data that must be communicated across the relatively slower wide area network (3). This advantage is more fully realized when it is appreciated that the polling period is quite short, and the number of auxiliary controller is typically quite large to allow large prizes to be quickly accumulated and awarded. In more practical scenarios, the accumulated amounts are in excess of 10 digits, whilst the related contributory amounts are generally less than 5 digits.

There is a further advantage in the running example, in that there is an increase in the processing at the auxiliary controllers, and a decrease in processing at the primary controller. That is, the processing is being distributed to better allow the primary controller to perform its key function, to determine which contributions gave rise to the prize being awarded, and to inform the respective site accordingly.

Referring now to Figure 3, once the primary controller (1) has received data from each of the auxiliary controllers (2) at step 24, it then determines whether or not to award a prize at step 25. In this embodiment the prize is awarded once the total contributory revenue received by all of the gaming terminals (2) exceeds a randomly selected value. For example, assume that the running value of total contributory revenues at tracked by the primary controller (1) is $1,072.10 prior to processing by the primary controller (1) of the data received from auxiliary controller No. 4. Further, assume that the randomly selected trigger value at which the prize is awarded is $1,072.14. Once the primary processor (1) increments the running total by the $0.08 amount communicated by Server No. 4, the running value of total contributory revenues equals $1,072.18, which exceeds the randomly selected trigger value of $1,072.14. Hence, the primary controller (1) determines that the prize is to be awarded to one of the gaming terminals (2) in the group (8) associated with Server No. 4.

If it is determined that no prize is to be awarded, the primary controller (1) returns to step 24 to receive data from another of the auxiliary controllers (2). However, if the primary controller (1) determines that a prize is to be awarded, it communicates "data associated with said determination" to the relevant auxiliary

controller (2), as shown at step 26 of Figure 3. In one preferred embodiment the "data associated with said determination" is the portion of the total contributory amount identified by the relevant auxiliary controller (2) that would have been required to increment the running value to the trigger value. In the running example, this portion is $0.04, since this is the amount that would have been required to increment the running value from $1,072.10 to the trigger value, $1,072.14. Hence, in the running example, the primary controller (1) communicates the following data to Server No. 4 via the wide area network (3):

Data Associated with said Determination
$0.04

(Table 3)

Turning now to Figure 4, the "data associated with said determination" is received by Server No 4 at step 27. This data is then analysed by the auxiliary controller (2) in conjunction with the data stored in its memory (that is, the data illustrated in Table 1) to determine to which of the gaming terminals (2) the prize is to be allocated, as shown in step 28 of Figure 4. In the running example, auxiliary controller No 7 refers to the information previously stored in its memory to determine that if the "data associated with said determination" is between or equal to $0 and $0.02 (that is, the $2 identified by gaming terminal No. 12 was the accumulated amount which triggered the jackpot), then gaming terminal No. 12 is the winning terminal (2). If the amount is greater than$0.02 and less than or equal to $0.07 (that is, the $5 identified by gaming terminal No. 20 was the accumulated amount which triggered the jackpot) then the winning terminal is No. 20. Finally, if the "data associated with said determination" is greater than $0.07 and less than or equal to $0.08 (that is, the $1 identified by gaming terminal No 3 was the accumulated amount which triggered the jackpot), then the winning terminal is No. 3. In this example the "data associated with said determination" is $0.04, which is between $0.02 and $0.07, and therefore the winning terminal is No. 20.

As shown in step 29 of Figure 4, the auxiliary controller (2) then communicates a win message to the gaming terminal (4) to which the prize is to be allocated. In the running example, auxiliary controller No. 4 sends a win message to gaming terminal No. 20 via the local area network (5), thereby causing gaming terminal No. 20 to

notify the gamer operating that terminal of the win. Additionally, as shown at step 30 of Figure 4, the auxiliary controller (2) communicates a win message to the primary controller (1). This win message includes the gaming terminal identifier of the gaming terminal (2) to which the prize was allocated, which in the running example is gaming terminal identifier No. 20. This enables the primary controller (1) to keep a log of the prizes awarded by the gaming apparatus.

In comparison to at least some prior art systems, the preferred embodiment of the invention advantageously streamlines the amount of processing which must take place at the primary controller (1). Instead, a proportion of the processing takes place at each of the auxiliary controllers (2). The preferred embodiment also substantially reduces the amount of data which must flow between the primary processor (1) and each of the gaming machines (4) as compared to at least some of the prior art systems. This is achieved by making use of the faster communications performance of the LAN (5) as compared to the WAN (3) and also by the implementation of a means by which the auxiliary controller can determine the winning gaming machine (4) upon receipt of the "data associated with the determination". These features help to ensure that the preferred embodiment of the current invention processes the necessary data within the relatively short time available between games, which is typically approximately 2.5 to 3 seconds.

In the interests of security and efficiency, it is necessary for primary controller (1) to have an accurate list of contributing machines. To that end, the primary controller maintains a separate list of the contributing machines associated with each auxiliary controller. The lists are updated each time the respective auxiliary controller comes online. However, the updating is performed in a manner to also reduce the bandwidth requirements from the WAN. To achieve this, each time an auxiliary controller (2) comes online, primary controller (1) communicates to the auxiliary controller a cyclic redundancy code (CRC) of the list relevant to the auxiliary controller (2). This CRC is an algorithmically generated compressed code for the relevant list, and is of far lesser size than the list from which it is derived. . Auxiliary controller (2) has, stored in the memory, a real-time current list of the machine identifiers of machines presently contributing to the prize. Auxiliary controller (2) generates a CRC from the locally stored list, and compares that CRC with the CRC

communicated by the primary controller. If the two CRCs differ, the auxiliary controller informs the primary controller accordingly. In response, the primary controller sequentially generates and sends a CRC for the separate items in the list for that auxiliary controller. These CRCs are progressively received and compared with the corresponding CRC for the list held locally by the auxiliary controller until such time as the differences between the lists are identified by the auxiliary controller. Once identified, the differences are reconciled to ensure that the list at the primary controller is an accurate representation of the relevant devices that are connected with auxiliary controller (2).

The use of CRCs in the manner described above further reduces the amount of data being transferred across the WAN when compared with the approaches of known systems. That is, initially only a compressed code is communicated, and only if this identifies a difference is any further investigation undertaken into the differences. And even then, the lists themselves are not directly compared to obviate the need to send the complete list. Once the investigation of the differences is finalised, the communication of the relevant entry in the locally held list is also communicated to the primary controller as a CRC. It also allows further processing to be distributed to the auxiliary controllers. That is, in this embodiment, the comparison of the CRC's occurs at the auxiliary controller.

In the above embodiment, the CRCs are all generated with a common protocol of CRC32. However, in other embodiments, alternative protocols are used.

A preferred embodiment of the invention as applied in a retail context has a similar layout to that shown in either Figure 1 or Figure 5, however with point of sale terminals (4), such as cash registers for example, taking the place of the gaming terminals (4). In one exemplary application of such a preferred embodiment, the merchant may choose to award a prize every time total sales across all of the terminals (4) in the network (hereinafter referred to as the "global sales total") exceed a predefined target amount, say $1,000,000. In this embodiment, the contributory amount for each terminal is equal to the accumulated amount. It will be appreciated, however, that the value of the prize will typically be far less than the total accumulated amount. In each polling cycle, each of the auxiliary controllers (2) obtains data from each of the terminals (4) in its associated group (8). This data includes terminal

identifiers and "accumulated amounts" in the form of sales Figures. This data is stored by the auxiliary controller (2) in a list that is compiled in the order of receipt of the data from the terminals (4) (and therefore in the same order as the sales took place at the terminals (4)). The sales Figures are summed by each the auxiliary controllers (2) such that each of the auxiliary controllers (2) calculates the total sales that have taken place for its associated group (8) of terminals (2) within the polling period (hereinafter referred to as the "local sales total").

Each of the auxiliary controllers (2) then transmits its local sales total to the primary controller (1) which keeps track of the global sales total and determines whether or not the prize is to be awarded. Once the global sales total exceeds the target amount of $1,000,000, the primary controller (1) determines that a prize should be awarded. The primary controller also determines the portion of money from the local sales total that was required to increment the global sales total over the target amount. For example, if a particular auxiliary controller (2) communicates a local sales total of $10 to the primary controller (1) and this increments the global sales total from $999,993 to $1,000,003, then the portion of money required to increment the global sales total over the target amount was $7.

This Figure of $7 is then communicated from the primary controller (1) to the auxiliary controller (2) responsible for triggering the prize. This information is used by the auxiliary controller (2) in conjunction with the previously stored data to determine to which of the terminals (4) the prize is to be awarded.

Another application of this preferred embodiment as used in a retail context is to award a prize once a predefined number of specified products have been sold. For example, a merchant may decide to award a prize to the customer who purchases the $10{,}000^{th}$ hamburger. In this embodiment the polling cycle is preferably equal to or less than 1 second. In this way, it is highly unlikely or impossible that more than one customer could be served on any one terminal (4) within any given polling period. Hence, in each polling cycle each of the auxiliary controllers (2) use their respective LANs to poll each of the terminals (4) in their associated group (8) to receive a contribution amount representative of the number of hamburger sales processed by each of the terminals (4) during the polling cycle.

In other embodiments, the terminals provide to the auxiliary controller during each polling cycle predetermined details of each transaction that has occurred in that cycle. The auxiliary controller is then responsive to those predetermined details for deriving a total contribution amount that corresponds to the number of hamburger sold via the terminals in the polling cycle.

In further embodiments, the terminals provide contribution amounts that correspond to the number of hamburgers sold at respective terminals in the polling cycle. The auxiliary controller then being responsive to the contribution amounts for determining a total contribution amount that is to be communicated to the primary controller. In this embodiment, the total contribution amount is a sum of the separate contribution amounts. Moreover, in this embodiment, the contribution amount equals 1 for each hamburger. In other embodiments, the contribution amount is weighted in accordance with one or more characteristics of the hamburger (or other good and/or service being sold).

Each of the auxiliary controllers (2) store the data received from the terminals (4) in a list in the order of receipt of that data. This list includes terminal identifiers and individual terminal sales data. For example, in one polling cycle, auxiliary controller no. 2 may store the following data:

Terminal Identifier	Individual Accumulated Amounts (i.e. Number of Hamburger Sales in Polling Period)
Terminal No. 12	3 hamburgers
Terminal No. 3	2 hamburgers
Terminal No. 7	4 hamburgers
Terminal No. 5	1 hamburger

Auxiliary controller no. 2 then calculates the total hamburgers sold by its associated terminals (2) and communicates this data via the WAN to the primary controller (1) as follows:

Total Accumulated Amount
10 hamburgers

The primary controller (1) keeps a running tab of the total number of hamburgers sold across the whole network. For the sake of the example, we shall assume that this global total is, say 9994 prior to the processing of the data from

auxiliary controller no. 2. Once the 10 hamburgers communicated by auxiliary controller no. 2 have been added, this global total is 10,004 and therefore the primary controller (1) determines that the prize should be awarded. The primary controller (1) calculates that the number of hamburger sales required to trigger the prize was 6 (i.e. 10,000 – 9994) and this Figure becomes the "data associated with the determination" and is communicated to auxiliary controller no. 2 as follows:

Data Associated with said Determination
6 hamburgers

This data is then used by auxiliary controller no. 2, in conjunction with the data in the list stored previously, to determine that it is the customer at terminal no. 7 to whom the prize should be awarded.

The advantages of the preferred embodiments of the invention, as presently contemplated, have arisen, at least in part, from an appreciation by the inventor of both minimising the quantum of data sent between the central controller and the auxiliary controllers, as well as increasing the refinement of the minimal data that is sent. This data includes not only data associated with the award of a centrally determined prize, but also other data about the type or status of the terminals that are hosted by a given auxiliary controller.

Although the invention has been described with reference to specific examples, it will be appreciated by those skilled in the art that it may be embodied in many other forms.

CLAIMS

1. A method of allocating a prize using a gaming apparatus, the apparatus including:

a primary controller for determining the award of a prize; and

an auxiliary controller capable of communication with the primary controller, the auxiliary controller being further capable of communication with one or more gaming terminals,

the method including the steps of:

receipt by the auxiliary controller of data from one or more of the gaming terminals, the data including at least one gaming terminal identifier and associated gaming terminal accumulated amount;

storage of the data in a memory accessible to the auxiliary controller;

being responsive to the gaming terminal accumulated amounts for deriving a total contributory amount;

communication from the auxiliary controller to the primary controller of the total contributory amount;

determination by the primary controller of whether or not to award a prize based upon the total contributory amount;

where the determination is to award a prize, communication from the primary controller to the auxiliary controller of data associated with the determination; and

analysis by the auxiliary controller of the data associated with the determination and the data stored in the memory to determine to which of the gaming terminals the prize is to be allocated.

2. A method according to claim 1 including the step of being responsive to each gaming terminal accumulated amount for deriving a respective contributory amount.

3. A method according to claim 1 or claim 2 including the step of being responsive to the gaming terminal accumulated amounts to derive a total accumulated amount.

4. A method according to claim 3 wherein the total contributory amount is a portion of the total accumulated amount.

5. A method according to claim 3 or claim 4 wherein the total contributory amount is any one of a proportion, fraction or percentage of the total accumulated amount.

6. A method according to claim 5 wherein the proportion, fraction or percentage is calculated by a comparison of a portion of the total accumulated amount and the total accumulated amount.

7. A method according to any one of the preceding claims wherein the auxiliary controller communicates with the primary controller via a wide area network having a bandwidth of less than or equal to 10,000 bits per second.

8. A method according to any one of the preceding claims wherein the auxiliary controller communicates with the gaming terminals via a local area network having a bandwidth approximately equal to 10 mega bits per second.

9. A method according to any one of the preceding claims wherein the apparatus includes a plurality of auxiliary controllers each capable of communication with the primary controller and each capable of communication with a respective set of one or more gaming machines.

10. A method according to any one of the preceding claims wherein the auxiliary controllers and the primary controller are geographically separate and each of the auxiliary controllers are disposed at separate venues.

11. A method according to any one of the preceding claims including the step of communication from the auxiliary controller to the primary controller of an auxiliary controller identifier.

12. A method according to any one of the preceding claims wherein the step of storage of the data in a memory accessible to the auxiliary controller includes storing a list of the gaming terminal identifiers and the associated gaming terminal accumulated amounts ordered chronologically as received by the auxiliary controller.

13. A method according to any one of the preceding claims wherein the auxiliary controller maintains an inventory of gaming terminal identifiers and is responsive to a signal from the primary controller for transmitting changes in the inventory to the primary controller.

14. A method according to any one of the preceding claims wherein a contributory amount is communicated to the primary controller once for each of a predefined polling period.

15. A method according to claim 14 wherein the predefined polling period is at least 2 seconds.

16. A method according to claim 14 or claim 15 wherein the predefined polling period is at least 1 second.

17. A method according to any one of the preceding claims including the step of communicating a win message from the auxiliary controller to the gaming terminal to which the prize is to be allocated.

18. A method according to any one of the preceding claims including the step of communicating a win message from the auxiliary controller to the primary controller.

19. A method according to any one of the preceding claims wherein the method is performed at least once every 5 seconds.

20. A method according to any one of the preceding claims wherein the method is performed at least once every 2 to 3 seconds.

21. A method according to any one of the preceding claims wherein the gaming terminals include any one or more of the following:

a poker machine;

a point of sale register;

a mobile phone;

a personal computer;

an access control point; and

a television.

22. An apparatus for allocating a prize, the apparatus including:

a primary controller, an auxiliary controller and a plurality of gaming terminals,

the auxiliary controller having first communication means for receipt of data from one or more of the gaming terminals, the data including one or more gaming terminal identifier and associated gaming terminal accumulated amount,

the auxiliary controller having a memory for storage of the data;

the auxiliary controller having a processor for deriving a total contributory amount from the gaming terminal accumulated amount;

the auxiliary controller having second communication means for communication to the primary controller of the total contributory amount;

the primary controller having a comparator for determination of whether or not to award a prize based at least in part upon the total contributory amount;

the primary controller having access to the second communication means so as to communicate data associated with the determination to the auxiliary controller; and

the auxiliary controller being responsive to the data associated with the determination and the data stored in the memory so as to determine to which of the gaming terminals the prize is to be allocated.

23. An apparatus according to claim 21 wherein the first communication means is a local area network and the second communication means is a wide area network.

24. A method of allocating a prize in a gaming system having a primary controller, an auxiliary controller and a plurality of gaming terminals, the method including the steps of:

collating and storing data at the auxiliary controller indicative of accumulated amounts associated with one or more of the gaming terminals;

calculating a total contributory amount at the auxiliary controller;

communicating the total contributory amount to the primary controller;

using the primary controller to determine whether or not to award a prize and to determine data associated with the determination;

communicating the data associated with the determination to the auxiliary controller; and

using the auxiliary controller to determine to which of the gaming terminals the prize should be awarded.