A gaming system including: a network component; a network; a gaming device; and a peripheral device co-located with the gaming device, the peripheral device comprising a first port arranged in data communication with the network component via the network and a second port arranged in direct data communication with the gaming device.
FIG. 3

Memory 103

RNG

Processor

I/O 105

Meters 104

Displays 106

Touch Screen and/or Buttons 107

Card/ticket Reader 108

Printer 109

Coin input/bill acceptor 110

Coin Output 111
FIG. 4

Dual Port Bank Note Acceptor
Dual Port Printer
FIG. 6

1. Fit peripheral device to gaming device
2. Connect first part of peripheral to a network via an interface board
3. Connect second part of peripheral to gaming device
GAMING SYSTEM AND A GAMING PERIPHERAL

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the benefit of priority to Australian Provisional Patent Application No. 2008605086, filed on Sep. 30, 2008, entitled "A GAMING SYSTEM AND A GAMING PERIPHERAL", which is herein incorporated by reference in its entirety.

FIELD

[0002] The disclosure relates generally to a gaming system and a gaming peripheral.

BACKGROUND

[0003] Gaming machines are typically fitted with a number of peripheral devices, the actual peripheral devices may vary depending on machine design and/or the requirements of the venue at which they are installed. Exemplary peripheral devices include bank note acceptors, coin acceptors, video displays, and ticket printers. The peripheral devices are connected to ports of a main board of the gaming machine and are operated under the control of a processor mounted to the main board.

[0004] Within some gaming venues, gaming machines are connected in a network arrangement. The purposes of connection varies and can include one or more of enabling machines to participate in a jackpont game, allowing players to accrue loyalty points, collecting financial data etc. These functions are carried out by one or more components in the network.

[0005] There is a need for techniques to enable network components to employ the peripheral devices of gaming machines.

BRIEF SUMMARY

[0006] In a first aspect, there is provided a gaming system including:

[0007] a network component;
[0008] a network;
[0009] a gaming device; and
[0010] a peripheral device co-located with the gaming device, the peripheral device including a first port arranged in data communication with the network component via the network and a second port arranged in direct data communication with the gaming device.

[0011] In an embodiment, the second port is arranged in direct data communication with the gaming device by being coupled to a main board of the gaming device.

[0012] In an embodiment, the gaming system includes an interface board co-located with the gaming device and wherein the second port is arranged in data communication with the network via the interface board so as to be in data communication with the network component.

[0013] In an embodiment, the peripheral device is arranged to communicate at least one status report on both of the first and second ports.

[0014] In an embodiment, the peripheral device is arranged to give priority to actions related to one of the first and second ports over actions related to the other of the first and second ports.

[0015] In an embodiment, the peripheral device includes a buffer for buffering communications of at least one of the first and second ports.

[0016] In an embodiment, the gaming system includes a plurality of peripheral devices each including a first port arranged in data communication with the network component via the network and a second port arranged in direct data communication with the gaming device.

[0017] In an embodiment, the peripheral device is adapted to process inserted bank notes.

[0018] In an embodiment, the peripheral device is adapted to process inserted tickets.

[0019] In an embodiment, the peripheral device is adapted to print tickets.

[0020] In an embodiment, the first port is a USB port.

[0021] In an embodiment, the second port is a serial port.

[0022] In a second aspect, there is provided a peripheral device for a gaming system including:

[0023] a first port adapted to be placed in data communication with a network component via a network; and

[0024] a second port adapted to be placed in direct data communication with a gaming device.

[0025] In an embodiment, the peripheral device is arranged to communicate at least one status report on both of the first and second ports.

[0026] In an embodiment, the peripheral device is arranged to give priority to actions related to one of the first and second ports over actions related to the other of the first and second ports.

[0027] In an embodiment, the peripheral device includes a buffer for buffering communications of at least one of the first and second ports.

[0028] In an embodiment, the peripheral device is adapted to process inserted bank notes.

[0029] In an embodiment, the peripheral device is adapted to process inserted tickets.

[0030] In an embodiment, the peripheral device is adapted to print tickets.

[0031] In an embodiment, the first port is a USB port.

[0032] In an embodiment, the second port is a serial port.

[0033] In a third aspect, there is provided a kit for retrofitting a gaming machine, the kit including:

[0034] a peripheral device including:

[0035] a first port adapted to be placed in data communication with a network component via a network; and

[0036] a second port adapted to be placed in direct data communication with a gaming device; and

[0037] an interface board adapted to be coupled between the first port and the network.

[0038] In an embodiment, the interface board is adapted to communicate with the first port with a first protocol and the network with a second protocol.

[0039] In an embodiment, the peripheral device is arranged to communicate at least one status report on both of the first and second ports.

[0040] In an embodiment, the peripheral device is arranged to give priority to actions related to one of the first and second ports over actions related to the other of the first and second ports.

[0041] In an embodiment, the peripheral device includes a buffer for buffering communications of at least one of the first and second ports.

[0042] In an embodiment, the peripheral device is adapted to process inserted bank notes.
In an embodiment, the peripheral device is adapted to process inserted tickets.

In an embodiment, the peripheral device is adapted to print tickets.

In an embodiment, the first port is a USB port.

In an embodiment, the second port is a serial port.

In a fourth aspect, there is provided a method of retrofitting a gaming machine including:

- a peripheral device to the gaming machine, the peripheral device including:
  - a first port adapted to be placed in data communication with a network component via a network; and
  - a second port adapted to be placed in direct data communication with a gaming device;
- coupling the first port of the peripheral device to be in data communication with the network component via a network; and
- coupling the second port of the peripheral device to the gaming device.

In an embodiment, the method includes coupling the first port to the network via an interface board.

In a fifth aspect, there is provided a gaming machine including:

- a peripheral device including:
  - a first port in data communication with a network component via a network; and
  - a second port in direct data communication with a main board of the gaming machine; and
- an interface board coupled between the first port and the network.

In an embodiment, the second port is arranged in direct data communication with the gaming device by being coupled to the gaming device.

In an embodiment, the peripheral device is arranged to communicate at least one status report on both of the first and second ports.

In an embodiment, the peripheral device is arranged to give priority to actions related to one of the first and second ports over actions related to the other of the first and second ports.

In an embodiment, the peripheral device includes a buffer for buffering communications of at least one of the first and second ports.

In an embodiment, the peripheral device is adapted to process inserted bank notes.

In an embodiment, the peripheral device is adapted to process inserted tickets.

In an embodiment, the peripheral device is adapted to print tickets.

In an embodiment, the first port is a USB port.

In an embodiment, the second port is a serial port.

**BRIEF DESCRIPTION OF DRAWINGS**

Certain exemplary embodiments will now be described with reference to the accompanying drawings in which:

- FIG. 1 is a diagram of a plurality of gaming devices coupled in a gaming system by a network;
- FIG. 2 is a perspective view of a stand alone gaming machine;
- FIG. 3 is a block diagram of the functional components of a gaming machine;
- FIG. 4 is a schematic diagram of a peripheral connection technique of an embodiment;
- FIG. 5 is a schematic diagram of a peripheral device of an embodiment; and
- FIG. 6 is a flowchart of a retrofitting method.

**DETAILED DESCRIPTION**

Although the following discloses example methods, systems, articles of manufacture, and apparatus including, among other components, software executed on hardware, it should be noted that such methods and apparatus are merely illustrative and should not be considered as limiting. For example, it is contemplated that any or all of these hardware and software components could be embodied exclusively in hardware, exclusively in software, exclusively in firmware, or in any combination of hardware, software, and/or firmware. Accordingly, while the following describes example methods, systems, articles of manufacture, and apparatus, the examples provided are not the only way to implement such methods, systems, articles of manufacture, and apparatus.

When any of the appended apparatus claims are read to cover a purely software and/or firmware implementation, in at least one embodiment, at least one of the elements is hereby expressly defined to include a tangible medium such as a memory, DVD, CD, etc. storing the software and/or firmware.

Referring to the FIG. 1, there is shown a gaming system 1 where a plurality (N) of gaming devices 2A, 2B, ..., 2N are connected to a plurality (M) of network components 3A, 3B, ..., 3M via network 4. In this context, the gaming devices may be connected in the sense that a co-located component for operation with the gaming device is connected to the network (for example, a component mounted within or to the cabinet of the gaming device) For example, in many existing gaming systems, a player tracking module mounted to the cabinet of a standalone gaming machine is connected to the network and, in turn, connected to the gaming machine to report data over the network 4 about play of the gaming machine. The network component may be, for example, a jackpots controller, a player tracking system (which may incorporate a loyalty system), an accounting system, a promotional system etc. In one embodiment, at least one network component 3 is an update server adapted to download firmware updates to peripherals of the gaming machines 1.

Herein, the term "gaming device" is used to refer to any device which can be deployed to the floor of a venue and which has a peripheral devices to which a network component may require access, for example devices used by a player to play a game and can include stand alone gaming machines, interactive video terminals (terminals having the outward appearance of a gaming machine but operating in a client server based environment) and electronic gaming tables. Another exemplary gaming device is a cash redemption terminal which can be used to insert tickets to receive a cash payout; a promotional system could access a printer of such a device to print a promotional voucher.
An exemplary gaming device in the form of a stand alone gaming machine 10 is illustrated in FIG. 2. The gaming machine 10 includes a console 12 having a display 14 on which are displayed representations of a game 16 that can be played by a player. A mid-trim 20 of the gaming machine 10 houses a bank of buttons 22 for enabling a player to interact with the gaming machine, in particular during game play. The mid-trim 20 also houses a credit input mechanism 24 which in this example includes a coin collector 24A and a bank note acceptor 24B both of which are peripheral devices. In this example, the bank note acceptor is also adapted to read tickets having computer readable indicia (such as bar codes) which can be used to encode value such as amount of credit. The gaming machine also has a ticket printer 25. A player tracking module (not shown) having a reading device may also be provided for the purpose of reading and/or writing to a player tracking device, for example as part of a loyalty program or for cashless transactions. The player tracking device may be in the form of a card, flash drive or any other portable storage medium capable of being read by the reading device.

A top box 26 may carry artwork 28, including, for example, pay tables and details of bonus awards and other information or images relating to the game. Further artwork and/or information may be provided on a front panel 29 of the console 12. A coin tray 30 is mounted beneath the front panel 29 for dispensing cash payouts from the gaming machine 10.

The display 14 shown in FIG. 2 is in the form of a video display unit, particularly a cathode ray tube screen device. Alternatively, the display 14 may be a liquid crystal display, plasma screen, any other suitable video display unit, or the visible portion of an electromechanical device. The top box 26 may also include a display, for example a video display unit, which may be of the same type as the display 14, or of a different type.

FIG. 3 shows a block diagram of operative components of a typical gaming machine which may be the same as or different to the gaming machine of FIG. 2.

The gaming machine 100 includes a main board 101 which provides a game controller. The main board 101 has a processor 102. Instructions and data to control operation of the processor 102 are stored in a memory 103, which is in data communication with the processor 102. Typically, the gaming machine 100 will include both volatile and non-volatile memory and more than one of each type of memory, with such memories being collectively represented by the memory 103.

The gaming machine has hardware meters 104 for purposes including ensuring regulatory compliance and monitoring player credit, an input/output (I/O) interface 105 for communicating with peripheral devices of the gaming machine 100. The I/O interface 105 and/or the peripheral devices may be intelligent devices with their own memory for storing associated instructions and data for use with the I/O interface or the peripheral devices. There may also be a plurality of separate I/O interfaces. The I/O interface includes a plurality of ports including a plurality of serial ports. A random number generator module 113 generates random numbers for use by the processor 102. Persons skilled in the art will appreciate that the reference to random numbers includes pseudo-random numbers.

In the example shown in FIG. 3, a player interface 120 includes peripheral devices that communicate with the game controller 101 including one or more displays 106, a touch screen and/or buttons 107 (which provide a game play mechanism), a ticket reader 108, a ticket printer 109, a bank note acceptor (which if a dedicated ticket reader 108 is not provided may also be configured to read tickets) and/or coin input mechanism 110 and a coin output mechanism 111. Additional hardware may be included as part of the gaming machine 100, or hardware may be omitted based on the specific implementation.

In an embodiment, at least one of the peripherals is a dual port peripheral having one port which communicates with the main board 101 as described above and is adapted to receive command and control signals from the main board 100 and another port which is adapted for communication with a network component via a network, for example an Ethernet network.

FIG. 4 shows an exemplary embodiment of a gaming system 400 where there are two dual port peripherals, in the form of a dual port bank note acceptor 420 and a dual port printer 430. Each peripheral has a universal serial bus (USB) port and a serial port. A smart interface board 411 is mounted within the cabinet of the electronic gaming machine 410. Smart interface board 411 is adapted to receive communications over the network 440 via network connection 412 from network components such as the promotional system 450 illustrated in FIG. 4. The smart interface board 411 is adapted to interpret the commands, determine for which peripheral they are intended and to direct them either via USB cable 431 to dual port printer 430 or via USB cable 421 to dual port bank note acceptor 420. In this way, network communications are directed via smart interface board 411 to the dual port peripherals. In this respect, it will be appreciated that the smart interface board 411 converts data in the network protocol format 412 to the USB protocol format for transmission.

The serial ports are coupled respectively by serial cables 422 and 432 to the main board of the electronic gaming machine 410. This enables the electronic gaming machine 410 to send or receive data directly to/from the dual port peripherals 420, 430. An exemplary block diagram of the generic components of a dual port peripheral device of one exemplary embodiment are illustrated in FIG. 5, from which it will be seen that each dual port peripheral device 500 has a USB port 510 and a serial port 520, a USB buffer 515 for buffering communications to and from the USB port as necessary in a serial buffer 525 for buffering communications to and from the serial port 520 as necessary. The device 500 is controlled by controller 530 based on instructions stored in controller memory 535. The actual functions performed by the dual port peripheral 500 are not shown in FIG. 5 as these will be specific to the actual peripheral.

The dual port peripheral 500 is arranged to prioritize particular requests. For example, dual port printer 430 may be arranged to give higher priority to a printing request from the electronic gaming machine 410 and from the promotional system 450. The controller is arranged to report printing progress only on the requested port. Statues such as error conditions, jams and paper status are reported as detected on both ports. The gaming system is arranged such that during printing of a promotional ticket, the electronic gaming machine 410 functionality is not changed. The buffers 515, 525 described in FIG. 5 allow a request which is initiated later in time to be buffered until there is capacity to carry out the requested function. It will be appreciated from the above, that one advantage of an embodiment is that a promotional system can communicate directly with the dual port printer 430 to print a promotional ticket to provide the player with a bonus...
without interrupting play on the gaming machine or for the gaming machine to be capable of handling such printing requests.

[0091] During some functions the electronic gaming machine may need to be disabled, for example during an upgrade of the functionality of one of the devices. In an example where the EGM also has a player tracking module, this can be achieved by the player tracking module sending a busy signal to the gaming machine to effectively lock the gaming machine while the function is implemented. In this example, the interface board may communicate with the player tracking module to get it to lock the gaming machine while an upgrade is being performed. In an embodiment, the interface board 411 can communicate with both the peripherals and the gaming machine and hence can act as the arbitrator if both the network and the gaming machine want to access the peripheral. The interface board can further be configured to act as a generic interface to all peripherals of the gaming machine including the display and any touch screen.

[0092] In another embodiment, the gaming machine may be configured to lock up automatically in response to receipt of a particular status from a peripheral via a USB port.

[0093] From the above, it will appreciated that one advantage is that the USB port is dedicated for communication over the network whereas the serial port is dedicated for communication with the gaming machine 410. An embodiment involves using the USB connections to perform firmware upgrades of the dual port peripherals 420, 430. That is, an update server located on the network 440 can send a request to upgrade the firmware directly to a peripheral. Additionally or alternatively, the firmware may be downloaded to the interface board 411 by the network and the interface board 411 may be configured to update the peripheral immediately, at a scheduled time or in response to a trigger from the network.

[0094] A benefit of this configuration is that it allows the upgradeability of peripherals to be retrofitted to gaming machines by providing a dual port peripheral and an interface board. Accordingly, an embodiment provides a method of retrofitting a gaming machine by adding a dual port peripheral and coupling one port of the peripheral to the electronic gaming machine for direct communication and another port to the network 440 to place the peripheral in data communication with a network component. In one embodiment this allows the retrofitted peripherals to be updated on a regular basis without physically visiting the gaming machines.

[0095] From the above, it will also be appreciated that an embodiment provides a method 600 of retrofitting a gaming machine as shown in FIG. 6, including fitting 610 at least one dual port peripheral to a gaming device, connecting 620 a first port of the peripheral to a network via an interface board and connecting a second port to the gaming device.

[0096] It will be understood to persons skilled in the art of the invention that many modifications may be made without departing from the spirit and scope of the invention, in particular it will be apparent that certain features of embodiments of the invention can be employed to form further embodiments.

[0097] It is to be understood that, if any prior art is referred to herein, such reference does not constitute an admission that the prior art forms a part of the common general knowledge in the art in any country.

[0098] In the claims which follow and in the preceding description of the invention, except where the context requires otherwise due to express language or necessary implication, the word “comprise” or variations such as “comprises” or “comprising” is used in an inclusive sense, i.e. to specify the presence of the stated features but not to preclude the presence or addition of further features in various embodiments of the invention.

[0099] It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive. Several embodiments are described above with reference to the drawings. These drawings illustrate certain details of specific embodiments that implement the systems and methods and programs of the present invention. However, describing the invention with drawings should not be construed as imposing on the invention any limitations associated with features shown in the drawings. It will be understood that the invention disclosed and defined in this specification extends to all alternative combinations of two or more of the individual features mentioned or evident from the text or drawings. All of these different combinations constitute various alternative aspects of the invention.

[0100] The present invention contemplates methods, systems and program products on any electronic device and/or machine-readable media suitable for accomplishing its operations. Certain embodiments of the present invention may be implemented using an existing computer processor and/or a special purpose computer processor incorporated for this or another purpose or by a hardwired system, for example.

[0101] Embodiments within the scope of the present invention include program products comprising machine-readable media for carrying or having machine-executable instructions or data structures stored thereon. Such machine-readable media can be any available medium that can be accessed by a general purpose or special purpose computer or other machine with a processor. By way of example, such machine-readable media may comprise RAM, ROM, PROM, EPROM, EEPROM, Flash, CD-ROM or other optical disk storage, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to carry or store desired program code in the form of machine-executable instructions or data structures and which can be accessed by a general purpose or special purpose computer or other machine with a processor. When information is transferred or provided over a network or another communications connection (either hardwired, wireless, or a combination of hardwired or wireless) to a machine, the machine properly views the connection as a machine-readable medium. Thus, any such a connection is properly termed a machine-readable medium. Combinations of the above are also included within the scope of machine-readable media. Machine-executable instructions comprise, for example, instructions and data which cause a general purpose computer, special purpose computer, or special purpose processing machines to perform a certain function or group of functions.

1. A gaming system comprising:
   a network component;
   a network;
   a gaming device; and
   a peripheral device co-located with the gaming device, the peripheral device comprising a first port arranged in data communication with the network component via the
network and a second port arranged in direct data communication with the gaming device.

2. A gaming system as claimed in claim 1, wherein the second port is arranged in direct data communication with the gaming device by being coupled to a main board of the gaming device.

3. A gaming system as claimed in claim 1, further comprising an interface board co-located with the gaming device and wherein the second port is arranged in data communication with the network via the interface board so as to be in data communication with the network component.

4. A gaming system as claimed in claim 1, wherein the peripheral device is arranged to communicate at least one status report on both of the first and second ports.

5. A gaming system as claimed in claim 1, wherein the peripheral device is arranged to give priority to actions related to one of the first and second ports over actions related to the other of the first and second ports.

6. A gaming system as claimed in claim 1, wherein the peripheral device comprises a buffer for buffering communications of at least one of the first and second ports.

7. A gaming system as claimed in claim 1, further comprising a plurality of peripheral devices each comprising a first port arranged in data communication with the network component via the network and a second port arranged in direct data communication with the gaming device.

8. A gaming system as claimed in claim 1, wherein the peripheral device is adapted to process inserted bank notes.

9. A gaming system as claimed in claim 1, wherein the peripheral device is adapted to process inserted tickets.

10. A gaming system as claimed in claim 1, wherein the peripheral device is adapted to print tickets.

11. A gaming system as claimed in claim 1, wherein the first port is a USB port.

12. A gaming system as claimed in claim 1, wherein the second port is a serial port.

13. A peripheral device for a gaming system comprising: a first port adapted to be placed in data communication with a network component via a network; and a second port adapted to be placed in direct data communication with a gaming device.

14. A peripheral device as claimed in claim 13, arranged to communicate at least one status report on both of the first and second ports.

15. A peripheral device as claimed in claim 13, arranged to give priority to actions related to one of the first and second ports over actions related to the other of the first and second ports.

16. A peripheral device as claimed in claim 13, comprising a buffer for buffering communications of at least one of the first and second ports.

17. A peripheral device as claimed in claim 13, adapted to process inserted bank notes.

18. A peripheral device as claimed in claim 13, adapted to process inserted tickets.

19. A peripheral device as claimed in claim 13, adapted to print tickets.

20. A peripheral device as claimed in claim 13, wherein the first port is a USB port.

21. A peripheral device as claimed in claim 13, wherein the second port is a serial port.

22. A kit for retrofitting a gaming machine, the kit comprising:

   a peripheral device comprising:
       a first port adapted to be placed in data communication with a network component via a network; and
       a second port adapted to be placed in direct data communication with a gaming device; and
       an interface board adapted to be coupled between the first port and the network.

23. A kit as claimed in claim 22, wherein the interface board is adapted to communicate with the first port with a first protocol and the network with a second protocol.

24. A kit as claimed in claim 22, wherein the peripheral device is arranged to communicate at least one status report on both of the first and second ports.

25. A kit as claimed in claim 22, wherein the peripheral device is arranged to give priority to actions related to one of the first and second ports over actions related to the other of the first and second ports.

26. A kit as claimed in claim 22, wherein the peripheral device comprises a buffer for buffering communications of at least one of the first and second ports.

27. A kit as claimed in claim 22, wherein the peripheral device is adapted to process inserted bank notes.

28. A kit as claimed in claim 22, wherein the peripheral device is adapted to process inserted tickets.

29. A kit as claimed in claim 22, wherein the peripheral device is adapted to print tickets.

30. A kit as claimed in claim 22, wherein the first port is a USB port.

31. A kit as claimed in claim 22, wherein the second port is a serial port.

32. A method of retrofitting a gaming machine comprising: fitting a peripheral device to the gaming machine, the peripheral device comprising:
       a first port adapted to be placed in data communication with a network component via a network; and
       a second port adapted to be placed in direct data communication with a gaming device; and
       coupling the first port of the peripheral device to be in data communication with the network component via a network; and
       coupling the second port of the peripheral device to the gaming device.

33. A method as claimed in claim 32, further comprising coupling the first port to the network via an interface board.

34. A gaming machine comprising:
       a peripheral device comprising:
           a first port in data communication with a network component via a network; and
           a second port in direct data communication with a main board of the gaming machine; and
       an interface board coupled between the first port and the network.

35. A gaming machine as claimed in claim 34, wherein the second port is arranged in direct data communication with the gaming device by being coupled to the gaming device.

36. A gaming machine as claimed in claim 34, wherein the peripheral device is arranged to communicate at least one status report on both of the first and second ports.

37. A gaming machine as claimed in claim 34, wherein the peripheral device is arranged to give priority to actions related to one of the first and second ports over actions related to the other of the first and second ports.

38. A gaming machine as claimed in claim 34, wherein the peripheral device comprises a buffer for buffering communications of at least one of the first and second ports.
39. A gaming machine as claimed in claim 34, wherein the peripheral device is adapted to process inserted bank notes.

40. A gaming machine as claimed in claim 34, wherein the peripheral device is adapted to process inserted tickets.

41. A gaming machine as claimed in claim 34, wherein the peripheral device is adapted to print tickets.

42. A gaming machine as claimed in claim 34, wherein the first port is a USB port.

43. A gaming machine as claimed in claim 34, wherein the second port is a serial port.

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