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GB 2362009 A

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UK CL (Edition T) **G4A AUXF**
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(54) Abstract Title

Retail transaction processing method and apparatus

(57) A retail, financial transaction method and apparatus which aid integration of customer-based internet transaction systems and EPOS transaction systems. An EPOS till(s) (21, 22) and an online customer(s) (12) are both coupled to the same transaction sever (10), over internet links (11). The transaction server has a transaction processing unit and a transaction database common to both EPOS transactions and online customer transactions. A second database may be available via a second server for interrogation. Also a till unit and/or an internet processing unit may be provided on the server.

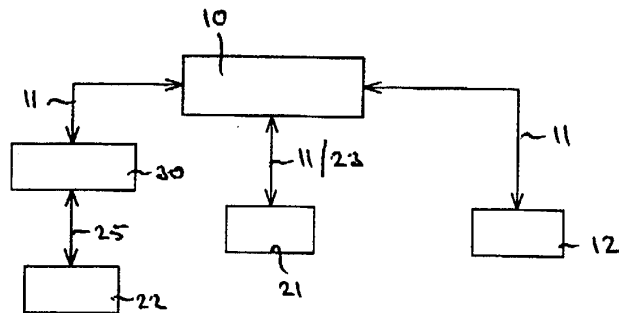


Fig 2

The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

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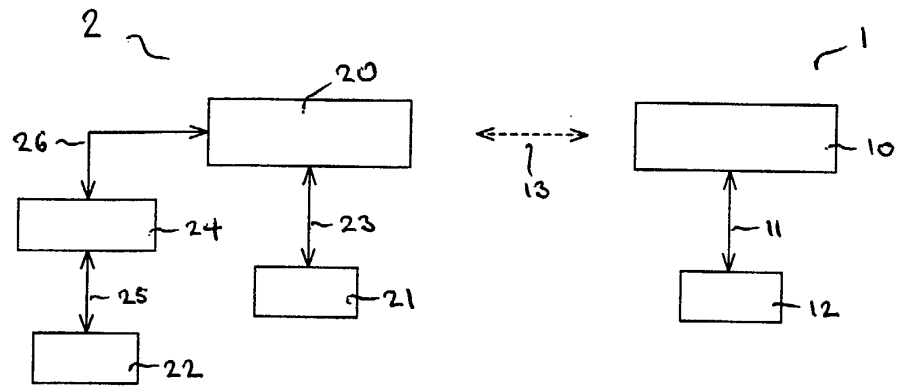


Fig. 1

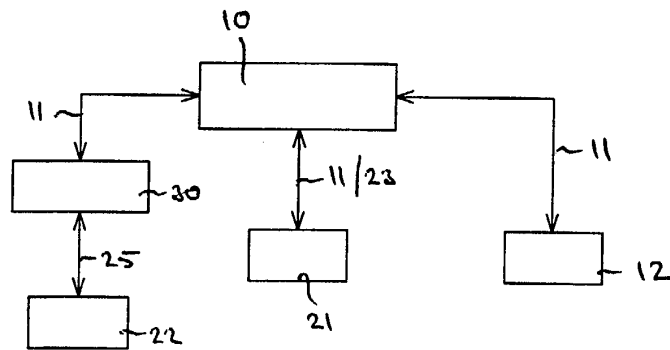


Fig 2

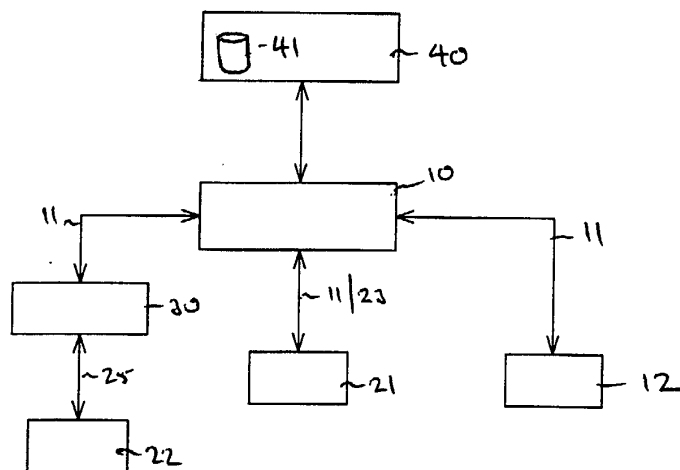


Fig 5

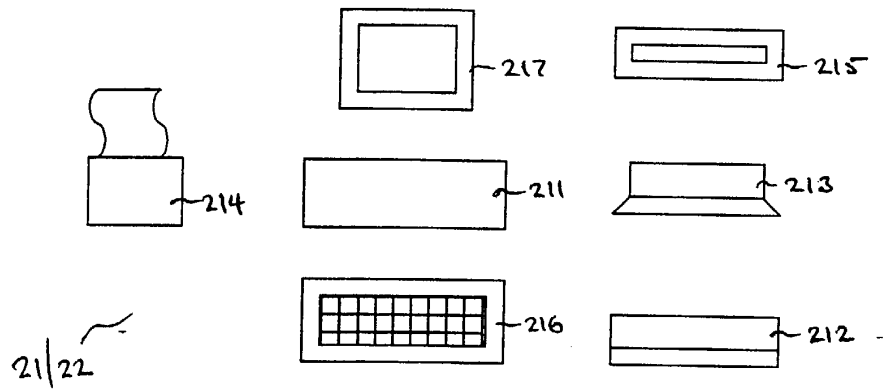


Fig 3

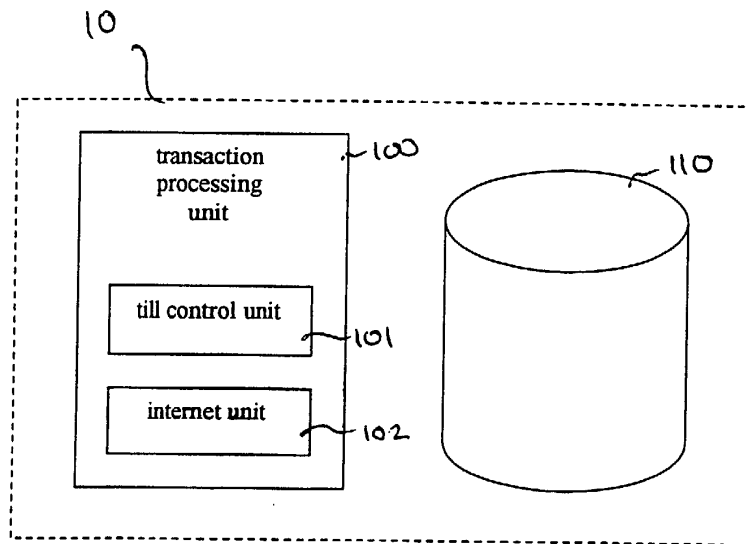


Fig 4

Transaction Processing Method and Apparatus

The present invention relates in general to a method and apparatus for processing commercial transactions and in particular, but not exclusively, to a method and apparatus for processing retail transactions by a retailer.

It is known to provide simple transaction processing capabilities over a global computer network such as the internet, where the user may browse a catalogue of goods and place an order. More advanced systems provide payment facilities such as credit card authorisation. The customer order is transmitted to a despatch centre such as a retail store or a warehouse and the goods are despatched to the customer. More advanced systems then provide feedback to the user confirming that the goods have been despatched.

It also known to process transactions occurring at a retail store (or similar) using an electronic point of sale (EPOS) transaction system including one or more till apparatus. However, a problem arises in that the internet transaction system and the EPOS transaction system are inherently incompatible and it has proved very difficult to effectively integrate the two systems. Some degree of synchronisation is known, with the internet transaction system typically holding a subset of the stock and price data available in the EPOS transaction system and updated at regular intervals such as every twenty four hours. However, data clashes frequently occur, for example with the last item of stock being sold both on the internet

transaction system and in-store over the EPOS transaction system - resulting in at least one disappointed customer.

An aim of the present invention is to provide a transaction processing method and apparatus addressing the problems of the prior art described above or otherwise. A preferred aim of the present invention is to provide a transaction processing method and apparatus for simultaneously providing both internet transactions and EPOS transactions. Other features and advantages of the invention will be apparent from the description which follows.

According to a first aspect of the present invention there is provided a transaction processing method, comprising the steps of: providing a transaction server including a transaction processing unit and a transaction database; coupling at least one EPOS till to the server and performing an EPOS transaction by entering data at the till, transmitting the data to the server, processing the data at the server and returning a result to the till; and coupling an online customer apparatus to the server and performing an internet transaction by entering data at the customer apparatus, transmitting the data to the server, processing the data at the server, and returning a result to the customer apparatus.

Preferably, the till and the customer apparatus are both coupled to the server by the internet. Preferably, a plurality of tills are coupled to the server, and a plurality of customer apparatus are coupled to the server. Preferably, data received from a till, and data received from a customer apparatus are both processed by the

transaction processing unit with reference to the transaction database.

Also according to the present invention there is
5 provided a transaction processing apparatus, comprising: a transaction server including a transaction processing unit and a transaction database, the server being couplable to at least one EPOS till for performing an EPOS transaction by entering data at the till, transmitting the data to the
10 server, processing the data at the server, and returning a result to the till, the server also being couplable to an online customer apparatus for performing an internet transaction by entering data at the customer apparatus, transmitting the data to the server, processing the data
15 at the server, and returning a result to the customer apparatus.

Preferably, the apparatus comprises a second server containing a second database coupled to the server, for
20 performing a database interrogation using both the transaction database and the second database.

Preferably, the server comprises a till control unit for controlling operations of the till during an EPOS
25 transaction. Also, the server comprises an internet transaction unit for controlling operations of the customer apparatus during processing of an internet transaction.

30 According to a second aspect of the present invention there is provided a transaction processing method for use with a transaction server and at least one EPOS till both coupled to the internet, the method comprising the steps

of: performing an EPOS transaction by entering data at the till, transmitting the data to the server over the internet, processing the data at the server, and returning a result to the till over the internet.

5

This aspect of the invention is particularly suited for use where the server is remote from the till. For example, the till is provided in a retail store at a physical location remote from the transaction server
10 located in a data processing centre. Preferably, a plurality of tills, and ideally a large number of tills, are each coupled to the transaction server over the internet for the processing of transactions. Conveniently, each till only incurs local call costs for
15 connection to the internet as does the transaction server, substantially reducing the costs of communications.

For a better understanding of the invention, and to show how embodiments of the same may be carried into
20 effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings in which:

Figure 1 is a schematic view of a prior art EPOS and internet transaction system;

25

Figure 2 is a schematic view of a transaction processing system according to a first preferred embodiment of the present invention;

30 Figure 3 is a schematic view of an EPOS till;

Figure 4 is a schematic view of a server;

Figure 5 is a schematic view of a transaction processing system according to a second embodiment of the present invention.

5 The preferred embodiments of the present invention will be described with reference to the example environment of a retail store selling goods both to customers making transactions in person whilst visiting the store, and to customers ordering online over a global
10 computer network such as the internet. The teachings of the present invention are not limited solely to this environment, and are applicable to other practical embodiments.

15 Referring to Figure 1, a typical prior art transaction system is shown for processing EPOS transactions and internet transactions. An internet transaction system 1 includes an internet server 10 coupled to the internet 11 for access by online customers 12 using customer apparatus
20 such as a home PC. An EPOS transaction system 2 includes an EPOS server 20 typically provided in the headquarters of the retailer coupled to one or more EPOS tills 21 in a main retail site over a local area network 23, and optionally coupled to remote EPOS tills 22 such as in a
25 second retail site controlled by a remote EPOS server 24 and a separate local area network 25 with a dedicated communications link 26 to the main EPOS server 21.

Where it is desired to sell the same goods both from a
30 retail site using the EPOS transaction system 2 and over the internet using the internet transaction system 1, then some form of data synchronisation must take place using a link 13 between the EPOS server 20 and the internet server

10. Typically, the internet server 10 holds a subset of a stock database controlled by the EPOS server 20 and is periodically updated such as every twenty-four hours, giving rise to potential data inconsistency. Hence, in the prior art, orders placed using the internet transaction system 1 are subject to confirmation and must wait for synchronisation with the EPOS transaction system 2.

10 In the prior art EPOS transaction system 2, a problem arises in that the communications link 26 between the main EPOS server 20 and a remote EPOS server 24 is relatively expensive to use and maintain, requiring, for example, a leased line or call-charged ISDN line. Further, 15 communications between the remote tills 22 and the EPOS server 20 can suffer unacceptable delay.

Referring to Figure 2, the transaction processing system of the present invention comprises a server 10 20 coupled via the internet 11 to online customers 12, to EPOS tills 21 in a main store, and to EPOS tills 22 in a remote store. As will be explained below, the network topography of the transaction system of the present invention has many advantages.

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The server 10 holds an integrated transaction database suitable for use in both internet transactions and EPOS transactions. Further, the server 10 provides application software for processing both internet transactions and 30 EPOS transactions.

To perform EPOS transactions, the or each till 21, 22 comprises an internet access application suitable for

communication over the internet and displaying web pages (for example written in HTML or SHTML). As shown in Figure 3, each till 21 is configured appropriate for use by a till operator in a retail store and includes, for example, a general purpose processing unit 211 coupled to a cash drawer 212, a bar code reader 213, a receipt printer 214 and a customer display unit 215, together with a keyboard 216 and operator display unit 217. The processing unit 211 is coupled to the server 10 by an internet communications link 11. The remote EPOS tills 22 are configured similar to the EPOS tills 21 with a suitable internet communications link 11 employed according to the location thereof. Conveniently, the communications link 11 includes access to the internet through a local internet server 30 over a local area network 25.

Where the EPOS tills 21 are provided in the vicinity of the server 10, such as in the same retail store, then the communications link 11 is suitably a local area network 23 such that the server and the tills 21 form a local intranet. However, any suitable communications link may be employed, and there is no need for the tills 21 to remain in the vicinity of the server 10. In a preferred embodiment, the operations of the server 10 are performed, for example, at a remote data processing and web hosting facility. Advantageously, the server 10 need not be owned or managed by the retailer. Further, the server 10 need not be dedicated to one particular system, and many logically separate transaction processing systems may share the same server 10, such that several different retailers or other commercial entities each employ a third

party data management and data processing service to host their transaction processing server.

Referring to Figure 4, EPOS transactions are processed
5 at the server 10 by a transaction processing unit 100 with reference to a transaction database 110. The transaction processing unit 100 includes a till control unit 101 for controlling the or each till 21, 22 during a transaction. In use, one of the tills 21 accesses the till control unit
10 101 of the server 10 over the communications link 11 with data appropriate to a transaction, such as a list of goods scanned by a barcode reader 213. The till control unit 101 receives the incoming data and the transaction processing unit 100 processes the transaction with
15 reference to the transaction database 110 returning processed transaction data to the till 21 for display on the operator till display unit 217 and/or the user display unit 215 as appropriate. Hence, processing of the transaction takes place at the server 10 with relatively
20 minimal processing taking place at the till 21. The till 21 acts as a data input and output device to collect data for transmission to the server 10, and to display results of transaction processing taking place at the server 10.

25 Referring again to Figure 2, internet transactions requested by an online customer 12 are processed by an internet processing unit 102 of the transaction processing unit 100 of the server 10. Conveniently, the internet processing unit 102 and the till control unit 101 share
30 access to the same transaction database 110. Hence, there is no data inconsistency between EPOS transactions and internet transactions. Advantageously, an online customer can receive immediate confirmation that an order will be

fulfilled, since there is no longer any delay waiting for database synchronisation. Further, the delay before goods are despatch to the customer is substantially reduced.

5 Access to the transaction database 110 is limited by permissions granted to each till 21, 22, and to each online customer 12. For example, a relatively limited set of transaction data from the transaction database 110 is available to an online customer 12, such as only a
10 catalogue of goods with retail prices plus account information appropriate to that customer. By contrast, greater information is available to each till 21, 22, for example allowing interrogation of all or many selected customer accounts, together with transaction data, stock
15 levels, and more detailed pricing information.

 The transaction processing unit 100 suitably includes a stock control unit for monitoring stock levels in the store which can be interrogated on request by any of the
20 tills 21, 22 and/or by an online customer 12 to check stock levels at this store or any other store. The transaction processing unit 100 also includes an accounting unit for receiving and recording transaction data and producing accounting reports. Conveniently, the
25 accounting reports provide powerful management information, including customer history and contact management records, stock control records, and sales analysis. Further, the accounting unit is coupled to the internet 11, such that the accounting reports are
30 available for access remotely from any suitable internet terminal including, for example, a WAP phone. Hence, a user with management access to the transaction processing system can obtain information from the transaction

processing unit 100 online over the internet. Further, such management and accounting reports produced by the accounting unit cover both transactions occurring through the tills 21,22 and occurring through online customers 12.

5 Previously, forming a comprehensive set of accounts has required a large quantity of data transfer, often performed manually.

In the preferred embodiment, the transaction processing unit 100 includes a credit card authorisation unit (not shown) for authorising credit card transactions. Advantageously, the credit card authorisation unit is common to both EPOS transactions and internet transactions.

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Referring to Figure 5, in a second preferred embodiment of the present invention the server 10 of the transaction processing system 1 is coupled, suitably by an internet communications link 11, to a second server 40.

20 The second server 40 provides a second database 41 holding, for example, stock data of a wholesaler or of a manufacturer of goods sold by the retailer. Hence, stock enquiries processed by the transaction processing unit 100 of the retailer's server 10 are optionally linked to the

25 second database 41 so that, for example, stock levels earlier in the supply chain can be interrogated. In another example, orders placed by an online customer 12 or at a till 21, 22 can be fulfilled by reference to the second database 41. If desired, goods are despatched from

30 the manufacturer or other commercial entity responsible for the second server 40, direct to the online customer 12 or the store appropriate to the till 21,22 or any other suitable location, and optionally an appropriate

transaction is entered against the transaction database 110 by the transaction processing unit 100. In one example embodiment, the customer receives their goods direct from the manufacturer, whilst payment and invoicing
5 is handled through the retailer.

A transaction processing method and apparatus have been described which enable both EPOS transactions and internet transactions to be performed quickly and
10 efficiently without requiring any data synchronisation. Further, the communications network for the EPOS transactions is simplified and takes advantage of lower cost communications routes.

15 The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and
20 documents are incorporated herein by reference.

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or
25 process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification
30 (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise,

each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the
5 foregoing embodiment(s). The invention extend to any novel
one, or any novel combination, of the features disclosed
in this specification (including any accompanying claims,
abstract and drawings), or to any novel one, or any novel
combination, of the steps of any method or process so
10 disclosed.

Claims

1. A transaction processing method, comprising the steps of:

5

providing a transaction server including a transaction processing unit and a transaction database;

coupling at least one EPOS till to the server and
10 performing an EPOS transaction by entering data at the till, transmitting the data to the server, processing the data at the server and returning a result to the till; and

coupling an online customer apparatus to the
15 server and performing an internet transaction by entering data at the customer apparatus, transmitting the data to the server, processing the data at the server, and returning a result to the customer apparatus.

20 2. A method as claimed in claim 1, wherein the till and the customer apparatus are both coupled to the server by the internet.

3. A method as claimed in claim 1 or 2, wherein a
25 plurality of tills are coupled to the server, and a plurality of customer apparatus are coupled to the server.

4. A method as claimed in any of claims 1 to 3,
wherein data received from a till, and data received from
30 a customer apparatus are both processed by the transaction processing unit with reference to the transaction database.

5. A method as claimed in any of claims 1 to 4, comprising coupling the server to a second server containing a second database, and performing a database interrogation using both the transaction database and the
5 second database.

6. A method as claimed in any of claims 1 to 5, comprising providing a till control unit on the server for controlling operations of the till during an EPOS
10 transaction.

7. A method as claimed in any of claims 1 to 6, comprising providing an internet transaction unit on the server for controlling operations of the customer
15 apparatus during processing of an internet transaction.

8. A transaction processing apparatus, comprising:

a transaction server including a transaction
20 processing unit and a transaction database, the server being couplable to at least one EPOS till for performing an EPOS transaction by entering data at the till, transmitting the data to the server, processing the data at the server, and returning a result to the till, the
25 server also being couplable to an online customer apparatus for performing an internet transaction by entering data at the customer apparatus, transmitting the data to the server, processing the data at the server, and returning a result to the customer apparatus.

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9. An apparatus as claimed in claim 8, wherein the till and the customer apparatus are both couplable to the server by the internet.

10. An apparatus as claimed in claim 8 or 9, wherein a plurality of tools are couplable to the server, and a plurality of customer apparatus are couplable to the
5 server.

11. An apparatus as claimed in any of claims 8 to 10, wherein the server is arranged to process data received from a till and data received from a customer apparatus
10 both by the transaction processing unit with reference to the transaction database.

12. An apparatus as claimed in any of claims 8 to 11, comprising a second server containing a second database
15 coupled to the server, for performing a database interrogation using both the transaction database and the second database.

13. An apparatus as claimed in any of claims 8 to 12,
20 wherein the server comprises a till control unit for controlling operations of the till during an EPOS transaction.

14. An apparatus as claimed in any of claims 8 to 13,
25 wherein the server comprises an internet transaction unit for controlling operations of the customer apparatus during processing of an internet transaction.

15. A transaction processing method substantially as
30 hereinbefore described with reference to Figure 2 or Figure 5 of the accompanying drawings.

16. A transaction processing apparatus substantially as hereinbefore described with reference to Figures 2, 4 or 5 of the accompanying drawings.



Application No: GB 0014363.6
Claims searched: 1 - 16

Examiner: David P Maskery
Date of search: 18 March 2002

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): G4A (AUXF)

Int Cl (Ed.7): G06F 17/60

Other: Online: EPODOC, JAPIO, WPI.

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X, E	GB 2362009 A (INSITU) See Fig 4, page 5 lines 15 - 18, page 6 line 12 to page 9 line 14, page 13 lines 6 - 8, and page 14 line 17 to page 15 line 20.	1 - 14

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.