TITLE

DATA DISSEMINATION SYSTEM FOR COMPUTER NETWORKS

FIELD OF THE INVENTION

This invention relates to a system for conveniently disseminating data in a wide area communications network, in particular for distributing digital data to computer systems at terminals of a global packet-switched computer network such as the Internet.

BACKGROUND TO THE INVENTION

A major problem suffered by users of wide area networks is the limitation imposed by the maximum reliable data transfer rate for conveniently accessible communications channels. This problem can be acute for those using voice channels available in the public switched telephone network to transmit data, especially when attempting to access files containing high resolution graphics, audio or video data characteristic of multimedia works.

The transfer rates utilised on voice channels for digital data typically range from 14,400 bps up to approximately 56,000 bps when employing advanced modulation schemes. Whilst a nominal data transfer rate of 33,600 bps is adequate for dealing with text or low resolution graphics files, a voice channel operating at this rate continuously can take around 5 minutes to transfer 1 MB of digital data. Data files containing multimedia works can typically range from a few megabytes to hundreds of megabytes in size. Accordingly, time and associated cost constraints become an overriding factor for users wishing to access large data files over voice communications channels.

One method for addressing this problem, frequently utilised by the publishers of journals relating to computer technology, is to distribute portable storage media such as a magnetic or optical disc containing samples of software products or other promotional material with printed journals. Such storage media might contain large data files ranging in size up to hundreds of megabytes, particularly if marketing techniques involving multimedia audio-visual presentations are utilised. Whilst this overcomes the considerable time delays associated with down-loading large data files, the material contained in such storage media can date quickly and is generally not

conveniently updated. Furthermore, the publisher has limited control over the use to which material might be put by users.

Other prior art systems based on portable storage media provided by the publishers of reference works, such as encyclopaedia or commercial directories, provide an update service. The update information may be transferred or "down loaded" from the publishers computer system or "remote site" via the Internet. However, this approach generally requires a software application dedicated to the publisher's service to be installed on a user's computer. Other drawbacks involve the consumption of storage space in the user's computer to store the application and update data for later reference. Furthermore, any executable software down loaded from the Internet has a finite risk of including destructive renegade code, colloquially known as a computer "virus", which may compromise the correct and reliable operation of the local computer system.

There is a system described in International Patent Document No. WO 96/41445 in the name of Spyrus, Inc. which enables the secure periodic distribution of data on portable storage media, including CD-ROMs and the like, to end users by a publisher. Control of access to different sets of information contained on the data stores is selectively performed at the user's computer terminal through communication with a billing/access centre at the publisher's site. The system involves encryption of the data, wherein each set of information is encrypted using a different key. When certain conditions are met, such as subscription payments and/or the effluxion of time, the decryption keys are distributed to users. The system appears to rely on dedicated hardware and/or software being installed in each user's computer terminal. The update function relates only to the security keys or codes and is only useful for blocking access to out-of-date data, rather than providing new additional and/or replacement information.

Glossary of Terms

To assist in clarity and economy of description, an explanation of usage of certain terms is provided, as follows:

- "local computer system" includes an individual computer terminal or a local area network of such terminals;

- "remote site" includes computer systems operated by information providers and interconnected via a wide area network for interaction with a plurality of local computer systems;
- "storage media" means any and all media devices capable of storing electronic data, including compact disc (CD), CD-R, CD-RW, digital versatile disc (DVD), DVD-RAM, DVD-R, DVD-V and large capacity removable magnetic tape, disc and solid state memory cartridges which may accessed by drives attached to or incorporated into a local computer system.

OBJECT OF THE INVENTION

It is an object of the present invention to provide a method and system for disseminating data which ameliorates or overcomes at least some of the problems associated with the prior art.

It is another object of the invention to provide a method and system for disseminating data and conveniently updating the data via a wide area network which is non-intrusive to local computer systems.

It is a further object of the invention to provide a method for converting Internet source code from a first form suitable for unified data dissemination to a second form suitable for hybrid data dissemination.

Further objects will be evident from the following description.

DISCLOSURE OF THE INVENTION

In one form, although it need not be the only or indeed the broadest form, the invention resides in a method for disseminating data to users of local computer systems connectable to a wide area network, the method including the steps of:

producing portable storage media containing first portions of the data, which first portions are substantially static in nature, for distribution to users;

maintaining second portions of the data, associated with the first portions and substantially dynamic in nature, at a remote site for access by users via the wide area network;

seeking from a user an identifier for the address in the respective local computer system of the distributed storage media, in response to a request for access to the data from the user;

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transmitting a first portion of the requested data from the remote site to the local computer system via the wide area network; and

integrating the first portion of the data with a second portion of the data, from the storage media identified at the local computer system, for utilisation by the user.

Preferably the production of the storage media includes the step of selecting from the data, static first portions of data characterised by an insubstantial requirement for subsequent updating.

Suitably relatively large data files, such as those relating to database tables, high resolution graphics, audio or video presentations and the like, are selected as static first data portions.

If required the production of the storage media includes the further step of encrypting the first portions of the data in accordance with a predetermined key.

Preferably the maintenance of the remote site includes the step of selecting from the data, dynamic second portions of data characterised by a substantial requirement for subsequent updating.

Suitably relatively small data files, such as relating to textual matter, low resolution graphics and the like, are selected as dynamic second data portions.

If required, the step of selecting the second portions of data may include the step of determining a key for encrypting first portions of the data.

Preferably the portable storage media is distributed to users by physical delivery channels.

The step of seeking from a user an identifier for the address of the distributed storage media is suitably performed in response to a request for data including at least a first portion of the data.

In preference, the identifier is an address in the local computer system allocated to a drive means for reading the portable storage media.

Most suitably the dynamic data portions are replicated to facilitate integration with associated static data portions referenced by different identifiers allocated to drive means in the local computer system.

Preferably the integrated data portions are immediately presented to the user at the local computer system.

In another form the invention resides in a system for disseminating data to users of local computer systems connectable to a wide area network, said system including:

production means for producing storage media containing first portions of the data, which first portions are substantially static in nature, for distribution to the users;

a remote site including a processor for processing the data and mass storage means for maintaining second portions of the data, which second portions are substantially dynamic in nature and associated with the first portions and;

a plurality of local computer systems for respective users, each local computer system connectable to the remote site via the wide area network and including communications means for accessing second data portions from the remote site and drive means for reading the distributed storage media containing first data portions;

whereby an identifier of an address of the drive means is communicated to the remote site and access to the second data portions by a user facilitates integration of a second data portion with an associated first data portion for utilisation by the user.

Preferably the production means comprises a device for writing data to portable storage media.

Suitably the production means are coupled to the processor at the remote site.

If required, the production means allows the encryption of the first data portions.

Preferably the static first portions of the data are characterised by an insubstantial requirement for subsequent updating.

Suitably the static first data portions include relatively large data files.

Preferably the dynamic second portions of the data are characterised by a substantial requirement for subsequent updating.

Suitably the dynamic second data portions include relatively small data files.

Most suitably the dynamic data portions are replicated at the remote site to facilitate integration with associated static data portions referenced by different identifiers allocated to drive means in the local computer system.

Preferably, the local computer system integrates the data portions for immediate presentation to the user.

In a further aspect the invention resides in a method for converting files for implementing a Web site from a first form suitable for unified data dissemination to a second form suitable for hybrid data dissemination, including the steps of:

sorting the files according to whether they contain static data or dynamic data;

arranging the static data files into a predetermined directory structure for writing to portable storage media;

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searching the dynamic files to identify references to static data files;

modifying each reference to a static data file in the dynamic files in accordance with the predetermined directory structure;

replicating each reference to facilitate access to the static files by drive means having different identifiers allocated thereto; and

incorporating all dynamic files together for publication on the Internet.

BRIEF DETAILS OF THE DRAWINGS

To assist in understanding the invention preferred embodiments will now be described with reference to the following figures in which:

FIG. 1 is a schematic diagram showing an overview of a data dissemination system of a first embodiment;

FIG. 2 is an overview of the steps involved in the hybrid data dissemination method of the embodiment;

FIG. 3 is a flow chart showing the steps involved in preparing and disseminating the data for to users; and

FIG. 4 is a flow chart of the main steps involved in accessing data using a method of the first embodiment.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring to FIG. 1, there is shown remote site 10 including a server 11 which may be operated in accordance with a method for disseminating digital data to a plurality of users 20. The remote server 11 includes a display unit 12, a processor unit 13, a keyboard 14, a mass storage device 15 (such as a fixed magnetic disc) and a CD-ROM read/write device 16. Each of the users, of which only three are illustrated, has a local computer system 21, 22, 23 interconnected with the server 11 via a wide area network 30. Typically each of the interconnections makes use of a respective voice channel 31, 32, 33 provided by the public switched telephone network (PSTN). The interconnections are typically a pair of wires, although the present invention envisages use in relation to networks including radio transmission for fixed local loop or mobile telephone channels. A typical example of this arrangement is that individual users connect to the site of an Internet service provider (ISP) 34 via the PSTN. The ISP provides a gateway to higher speed communications channels in the network,

such as the high speed channel 35 between ISP 36 and the processor at the remote site 10.

In the embodiment, the digital data for dissemination relates to information in a sales catalog for products available for purchase from a vendor by users. The vendor also happens to operate the remote site 10. The sales catalog contains numerous audio-visual presentations and demonstrations of the available products along with text based information providing current pricing information, product availability information and optionally allowing individual users to place orders for selected products. The data for dissemination may thus be conveniently divided into two categories:

(I) a first category of data portions which are substantially "static" in nature, such as files containing the audio visual presentations and product demonstrations, typically involving large files sized from around one megabyte to hundreds of megabytes; and

(II) a second category of data portions which are substantially "dynamic" in nature, such as files containing the text based information relating to pricing, availability and ordering or smaller images, typically involving files sized below about one megabyte.

In the present context, the terms static and dynamic relate to the relative desirability of amending the information from time to time. Clearly price and availability information may require updating on a weekly, daily or even hourly basis - depending on the nature of the product; whereas the functional details of a product line are generally subject to a relatively insubstantial requirement for updating.

Accordingly, information supplied by the vendor can be distributed to users in a hybrid manner which takes advantage of the particular mode of distribution of the digital data. The static data can be compiled and transferred onto storage media, such as a CD-ROM 40, which is capable of reliably storing a large amount of data. In the embodiment a CD-ROM read/write device 12 coupled to the remote server 11 may be used for this purpose. The CD-ROM may then be reproduced and distributed to users either free of charge as a marketing exercise, noting that the unit cost of reproducing CD-ROMs is of the order of one dollar, or sold in response to user requests.

The reproduction and distribution of the CD-ROMs is undertaken by a separate entity 17 contracted for this purpose in the embodiment. The physical distribution

channels, such as delivery by the postal service, are represented by dashed lines in the drawing figure. In contrast the dynamic data, which is subject to a substantial requirement for updating, is maintained at the vendor site 10. Suitably the dynamic data is stored in a secondary memory device, such as the magnetic disc 15, for direct access by users 20 via the network 30. It will be appreciated that a change in pricing of certain products can be made available to users as soon as the price information held on the magnetic disc in the remote server 11 can be updated.

In alternative embodiments, a product vendor or service provider may chose to produce and replicate their own CD-ROMs containing the static data, but rely on an Internet service provider (ISP) 34 to mount the dynamic data on a mass storage device attached to the ISP's server. Any amendments to the dynamic data would then be forwarded to the ISP for consequential updates. A further possibility provided by the invention is that the static data on the CD-ROM may also include promotional material for potential future product releases. It will be appreciated that the dynamic data would require only minor changes to introduce pricing information and allow access to the relevant files on the CD-ROM at the time of the product launch.

In overview and with reference to FIG. 2, there is shown an overview flowchart for the steps involved in preparing and disseminating data to users. The source code 51 for a Internet site and particularly a World Wide Web (www or "Web") site is generally coded in hyper text mark-up language (HTML). The source code typically assumes that all of the data will be unified in a set of files accessible at the site. A conversion process 52, discussed below in relation to FIG. 3, is provided for converting code from standard Internet code to modified Internet code suitable for hybrid distribution of data. The process separates, in accordance with configuration settings determined by the site manager or 'web master', the static data from the dynamic data. The static data 53 is written to portable storage media, such as a CD-ROM, for distribution to selected users via physical delivery channels. The dynamic data 54 includes the modified Internet code which is hosted at a remote site. When a user in possession of a distributed CD-ROM accesses the site, the portions of dynamic and static data may be integrated 56 for presentation to the user, as described below in relation to FIG. 4.

The conversion process 60, which is depicted in FIG. 3, begins with all files 61 for a pre-existing Web site. The files are then sorted 62 in accordance with whether

they are static data files on the one hand or dynamic data files on the other. The process in this example has been configured such that all files with extensions *.jpg, *.gif, *.mpg *.avi and *.wav characteristic of image, audio and video data are sorted as static files; whilst text and Internet code files (*.htm, *.vmr *.txt and *.doc) are sorted as dynamic files. The static data files are then stored 63 in a suitable directory structure, where similar type files may be grouped together, from where they may be copied to portable storage media as required. Subsequently, copies of the media can be delivered 64 to users.

The dynamic files 65, particularly the HTML and any VRML files, are each searched 66 to determine whether they reference any of the static data files identified at step 62. The path reference to each file in the source code is then modified in accordance with the directory structure provided at step 63. All dynamic files that refer to static content are replicated 68 and saved for all valid media drive letters, generally A through Z. The replicated files are incorporated 69 with the files which lack references and the dynamic data is published on the Internet 70.

Turning to consider the present embodiment from a user's perspective, FIG. 4 illustrates a flow chart including the steps taken by a user to access the sales catalog example of the embodiment. The flow chart assumes that the user in question has received a distributed CD-ROM 41, containing the static data portions of the product information from the vendor, via the postal service. It is further assumed that the users local computer system 21 includes a suitable CD-ROM drive 24 and general purpose communications software including an Internet browser, whether in the form of a dedicated application (such as Microsoft's Internet Explorer™ or Netscape's Navigator™ suites) or embedded in the computer's operating system.

The user connects 71 to the vendor's remote server 11 using the browser software and internal modem 26. The connection includes a voice channel 31 on the PSTN between the local computer system 21 and an ISP 34. A welcome or "home" page transmitted 72 from the server for display 25 at the local computer system in the conventional manner. The welcome page includes text requesting that the user select the desired mode to view the subsequent pages with product information, one selection is identified as a "CD Enhanced" mode. If the CD Enhanced mode is selected, the user is asked for a letter or other identifier which designates the address of the CD-ROM drive 24 in the local computer system to be entered 74.

In the embodiment the selections available are any one of the letters D through Z, as many personal computers have a magnetic disc drive assigned the letter C and the next available letter D assigned to the CD-ROM drive. However, the situation becomes complicated where there are a number of drives for storage media, whether logical or physical, which may be potentially identified. A typical example is when the user's computer system involves a local area network with multiple drives.

In order to allow for this contingency, the dynamic data on the remote server 11 is preferably arranged according to a particular hierarchical structure. A common file containing the welcome page is contained in an upper directory of the remote server's magnetic disc 15 and lower directories are separated into 26 identically structured subdirectories. Each subdirectory contains almost identical sets of generally text based web pages, the only difference amongst the sets being the referencing of different drive letters for selection of static data files contained on the CD-ROM in the local drive. An example of hyper text mark-up language (HTML) code which might be used to generate a suitable page follows:

```
<HTML>
<HEAD>
        <TITLE>DVDA Home Page</TITLE>
</HEAD>
<BODY BACKGROUND="../biacarr.jpg">
<P><CENTER> </CENTER></P>
<H1><CENTER>Vendor Home Page</CENTER></H1>
<H2><CENTER>Enhanced Website Equiped</CENTER></H2>
<P><HR ALIGN=LEFT></P>
<P><CENTER><B><FONT SIZE=+1>This is an Enhanced
Website. If you have our CD then place <BR> this into your CD-Rom drive and select your
CD-Rom drive letter. </FONT></B></CENTER></P>

<P><FONT SIZE=+1><BR>
<BR>
<BR>

</FONT></P>

<P><CENTER><FONT SIZE=+1>No I do not have the <AHREF= "feedback.html">Enhanced
Website CD</A><BR>
<BR>

Yes I do have the CD and my drive is:<BR>
<A HREF="ddrive/index.html">D <A/>
<A HREF="edrive/index.html">E <A/>
<A HREF="fdrive/index.html">F <A/>
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<A HREF="gdrive/index.html">G <A/>
<A HREF="hdrive/index.html">H <A/>
<A HREF="idrive/index.html">I <A/>
<A HREF="kdrive/index.html">K <A/>
<A HREF="ldrive/index.html">L <A/>
<A HREF="mdrive/index.html">M <A/>
<A HREF="ndrive/index.html">N <A/>
<A HREF="odrive/index.html">O <A/>
<A HREF="pdrive/index.html">P <A/>
<A HREF="qdrive/index.html">Q <A/>
<A HREF="rdrive/index.html">R <A/>
<A HREF="sdrive/index.html">S <A/>
<A HREF="tdrive/index.html">T <A/>
<A HREF="udrive/index.html">U <A/>
<A HREF="vdrive/index.html">V <A/>
<A HREF="wdrive/index.html">W <A/>
<A HREF="xdrive/index.html">X <A/>
<A HREF="ydrive/index.html">Y <A/>
<A HREF="zdrive/index.html">Z</A></FONT></CENTER></P>

<P><CENTER> </CENTER></P>

<P><FONT SIZE=+1><HR ALIGN=LEFT></FONT>

</BODY>
</HTML>
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Accordingly, a selection 75 of "F" by the user links to the set of pages arranged for that drive identifier, which pages contain the dynamic data comprising the catalog information. After the drive identifier has been selected using the above concept, all subsequent references made to the storage device (situated in a CD-ROM drive in the embodiment) may be done using a HTML string which points to a file. In other words, the calls to dynamic data files containing pictures, audio-visual presentations, movies, etc. from within the HTML code preferably uses a string constant "*file:///x|/*" at the start of the file path. The term "x|" can be changed to "*file:///anydrive|/*" to point to the CD-ROM drive. This string reflects each replicated Web page and the variable "*anydrive|*" is substituted for the selected drive letter as required. For example the code:

<BODY BACKGROUND="file:///F|/pictures/biacarr.jpg>

calls a background JPEG encoded file named "biacarr.jpg" from the "pictures" directory of the CD-ROM designated F: by the basic input/output system (BIOS) of a local computer system.

Returning to the example in FIG. 4, the requested dynamic data is sent 76 to the local computer system for display 77. In the example a default product listing is

displayed with options for product demonstrations, ie. portions of the dynamic data are associated with portions of static data. If the demonstration video for a particular product was requested by the user, the appropriate mpg file contained on the CD-ROM in the F drive of the local machine would be activated 80 to display the video. Further user requests 81 are then handled on the basis of whether static or dynamic data is required. This process may be contrasted with prior art arrangements (shown in the inset to FIG. 4) whereby a lengthy video file would first need to be accessed 82 at the remote server and then sent 83 over the communications network to the local computer system prior to be ready for display. Typically an image or audio-visual presentation is displayed in a window in a predetermined position on the user's display unit 25.

The method of the embodiment is thus largely non-invasive in that the user is not required to load vendor specific software nor down-load any active code which may, with or without the users permission, interrogate sensitive system files which can potentially compromise the user's privacy. Whenever any of the static data is requested, such as an high resolution image or audio-visual presentation, the appropriate file contained on the distributed CD-ROM may be accessed directly via F drive for integration with the dynamic data. In other arrangements the static data on the storage media may be encrypted to prevent unauthorised access, the dynamic data would include a decryption key and the step of integrating the data portions would involve decrypting the static data portions for presentation.

This arrangement, with appropriate selection of the files making up the static data, can substantially reduce the time a user might otherwise spend awaiting a large file to be down-loaded from the remote server. Furthermore, the sales catalog includes current price and availability information as this dynamic data, principally textual in nature is obtained from the remote server. In summary, the access and presentation speed of a local CD-ROM or similarly performing storage media is combined with the currency of information provided to users 20 directly from the vendor's site 10. Furthermore, there is marketing advantage in sending the media to prospective customers to draw their attention to both the products and Web site. In contrast, use of a search engine on the Internet generally delivers hundreds of potential vendors, which must be carefully sifted. The product presentations facilitated by the mailed CD-ROM are fast and efficient and represent reduced risk for the user.

Whilst the preferred embodiment was described with reference to the presentation of a sales catalog for the viewing and ordering of products, the method of the invention has numerous other applications. In a distance education application, all the pictures, sounds, video and bulk textual data (ie. reference materials) could be incorporated into storage media for distribution to students. Students could then log into a remote server at a learning site where suitable dynamic data files, for example HTML pages, embodying a program of study in accordance with a predetermined curriculum. When embodied in accordance with the method of the invention, individual students tend to consume less network resources, the dynamic data files can be updated in accordance with teaching changes and the program of study is conveniently standardised for all students.

In a further embodiment, the static data could include sensitive records for individuals (for example medical or financial records) which could distributed without identification to potential users. The identification information could be stored as dynamic information at a secure site, whereby authorised users could only access certain identification information in accordance with their level of authority. Encryption of static data could also be employed as desired.

Other example applications include on-line game playing and remote installation of software into the operating system of a local computer. Throughout the specification the aim has been to describe preferred embodiments of the invention without limiting the invention to any one embodiment or specific collection of features.

CLAIMS

1. A method for disseminating data to users of local computer systems connectable to a wide area network, the method including the steps of:

producing portable storage media containing first portions of the data, which first portions are substantially static in nature, for distribution to users;

maintaining second portions of the data, associated with the first portions and substantially dynamic in nature, at a remote site for access by users via the wide area network;

seeking from a user an identifier for the address in the respective local computer system of the distributed storage media, in response to a request for access to the data from the user;

transmitting a first portion of the requested data from the remote site to the local computer system via a wide area network; and

integrating the first portion of the data with a second portion of the data, from the storage media identified at the local computer system, for immediate utilization by the user.

2. The method claimed in claim 1 wherein the production of the storage media includes the step of selecting from the data, static first portions of data characterised by an insubstantial requirement for subsequent updating.

3. The method claimed in claim 2 wherein relatively large data files are selected as static first data portions.

4. The method claimed in any one of claims 1 to 3 wherein the production of portable storage media includes the further step of encrypting the first portions of the data in accordance with a predetermined key.

5. The method claimed in any one of claims 1 to 4 wherein the maintenance of the remote site includes the step of selecting from the data, dynamic second portions of data characterised by a substantial requirement for subsequent updating.

6. The method claimed in claim 5 wherein relatively small data files are selected as dynamic second data portions.

7. The method claimed in any one of claims 1 to 6 wherein the step of selecting the second portions of data may include the step of determining a key for encrypting first portions of the data.

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8. The method claimed in any one of claims 1 to 7 wherein the portable storage media are distributed to users by physical delivery channels.

9. The method claimed in any one of claims 1 to 8 wherein the step of seeking from a user an identifier for the address of the distributed storage media is performed in response to a request for data which includes at least a first portion of the data.

10. The method claimed in claim 9 wherein the identifier is that address in the local computer system allocated to a drive for reading the portable storage media.

11. The method as claimed in claim 10 wherein the step of maintaining the second data portions includes replication of said portions to facilitate integration with associated static data portions referenced by different identifiers allocated to drive means in the local computer system.

12. The method claimed in any one of claims 1 to 11 wherein the integrated data portions are immediately presented to the user by the local computer system.

13. A system for disseminating data to users of local computer systems connectable to a wide area network, said system including:

production means for producing storage media containing first portions of the data, which first portions are substantially static in nature, for distribution to the users;

a remote site including a processor for processing the data and mass storage means for maintaining second portions of the data, which second portions are substantially dynamic in nature and associated with the first portions; and

a plurality of local computer systems for respective users, each local computer system connectable to the remote site via the wide area network and including communications means for accessing second data portions from the remote site and drive means for reading the distributed storage media containing first data portions;

whereby an identifier of an address of the drive means is communicated to the remote site and access to the second data portions by a user facilitates integration of a second data portion with an associated first data portion for utilisation by the user.

14. The system claimed in claim 13 wherein the production means comprises a device for writing data to portable storage media.

15. The system claimed in either claim 13 or claim 14 wherein the production means are coupled to the processor at the remote site.

16. The system claimed in any one of claims 13 to 15 wherein the production means allows the encryption of the first data portions.

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17. The system claimed in any one of claims 13 to 16 wherein the static first portions of the data are characterised by an insubstantial requirement for subsequent updating.

18. The system claimed in any one of claims 13 to 17 wherein the static first data portions include relatively large data files.

19. The system claimed in any one of claims 13 to 18 wherein the dynamic second portions of the data are characterised by a substantial requirement for subsequent updating.

20. The system claimed in any one of claims 13 to 19 wherein the dynamic second data portions include relatively small data files.

21. The system claimed in any one of claims 13 to 20 wherein the dynamic data portions are replicated at the remote site to facilitate integration with associated static data portions referenced by different identifiers allocated to drive means in the local computer system.

22. The system claimed in any one of claims 13 to 21 wherein the local computer system integrates the data portions for immediate presentation to the user.

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