



US008625799B2

(12) **United States Patent**
McCarthy et al.

(10) **Patent No.:** **US 8,625,799 B2**
(45) **Date of Patent:** **Jan. 7, 2014**

(54) **PRIVACY MANAGEMENT FOR TRACKED DEVICES**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 782 days.

(21) Appl. No.: **12/505,425**

(22) Filed: **Jul. 17, 2009**

(65) **Prior Publication Data**

US 2010/0014676 A1 Jan. 21, 2010

Related U.S. Application Data

(60) Provisional application No. 61/082,130, filed on Jul. 18, 2008.

(51) **Int. Cl.**
H04L 9/00 (2006.01)
G06F 17/00 (2006.01)

(52) **U.S. Cl.**
USPC **380/277; 726/1**

(58) **Field of Classification Search**
USPC 380/277, 278, 279; 726/1, 4, 27, 29
See application file for complete search history.

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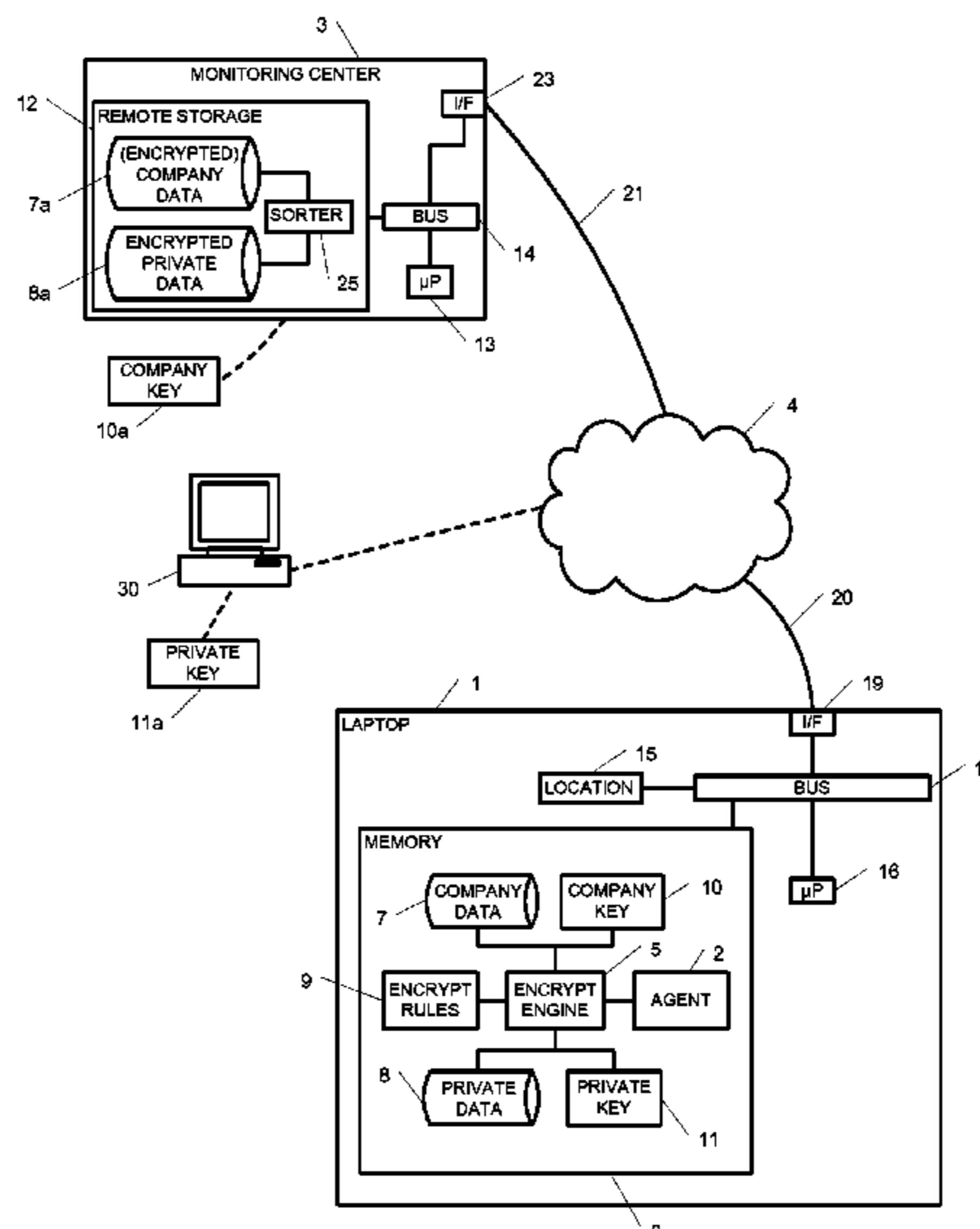
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(57) **ABSTRACT**

A system is disclosed that protects private data of users while permitting the monitoring or tracking of electronic devices that are shared for both business and private purposes. The electronic devices are configured to selectively encrypt location data, and/or other types of data, before such data is transmitted to a monitoring center. For example, data collected or generated on a user device outside of work hours may be encrypted with a private key of the device's user prior to transmission to the monitoring center, so that the data is not accessible to the employer. Data collected or generated during work hours may be transmitted without such encryption.

19 Claims, 3 Drawing Sheets



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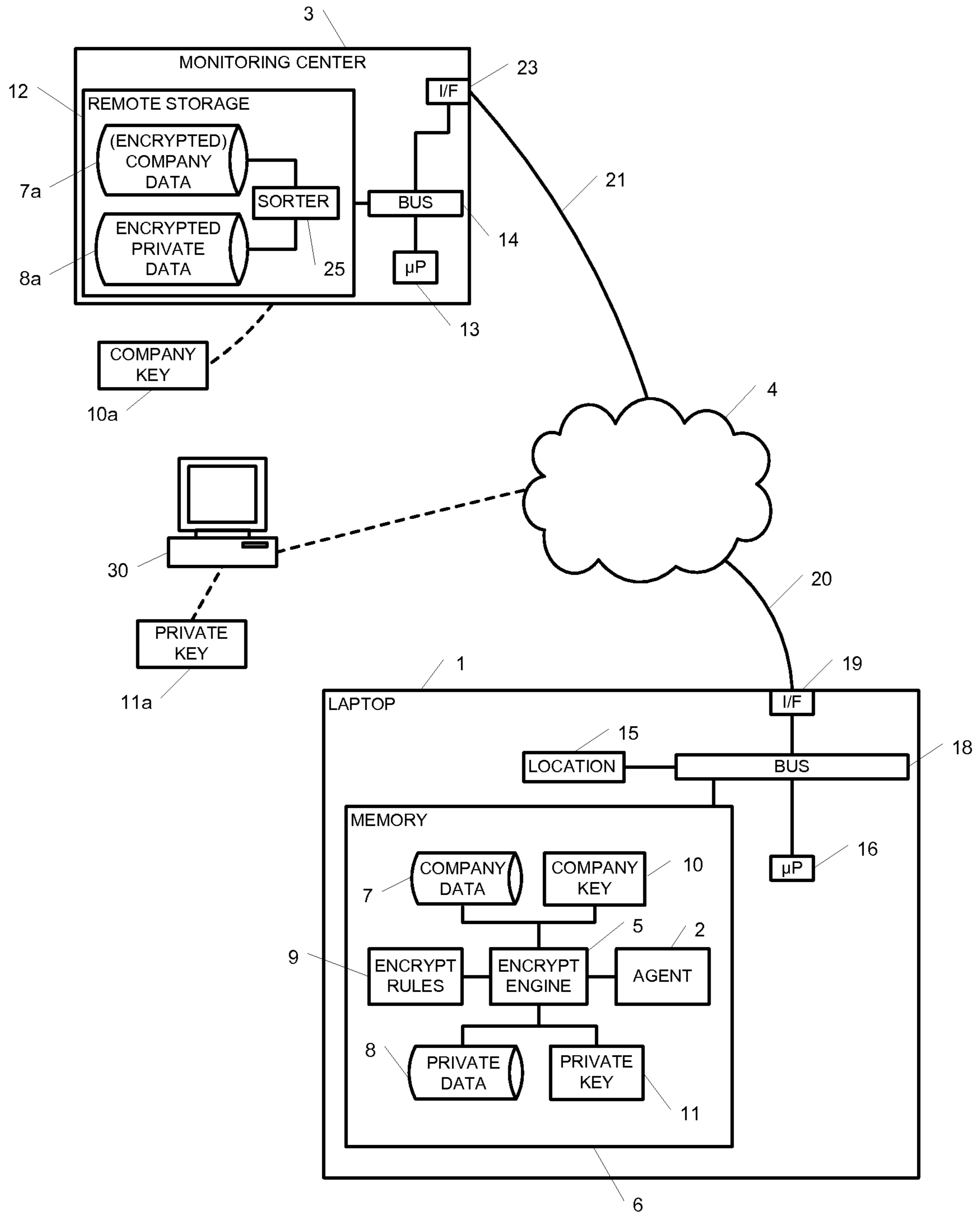


Fig. 1

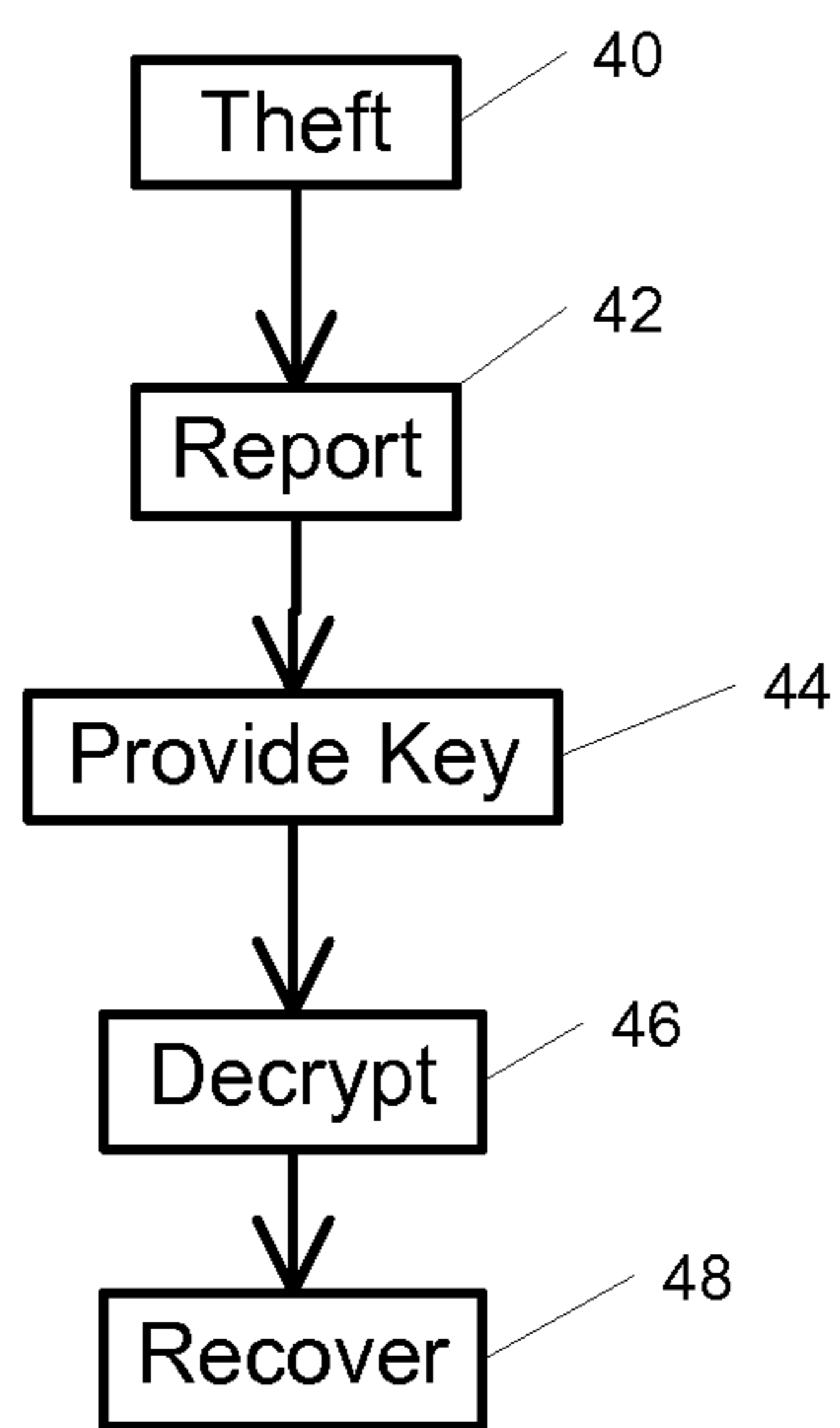


Fig. 2

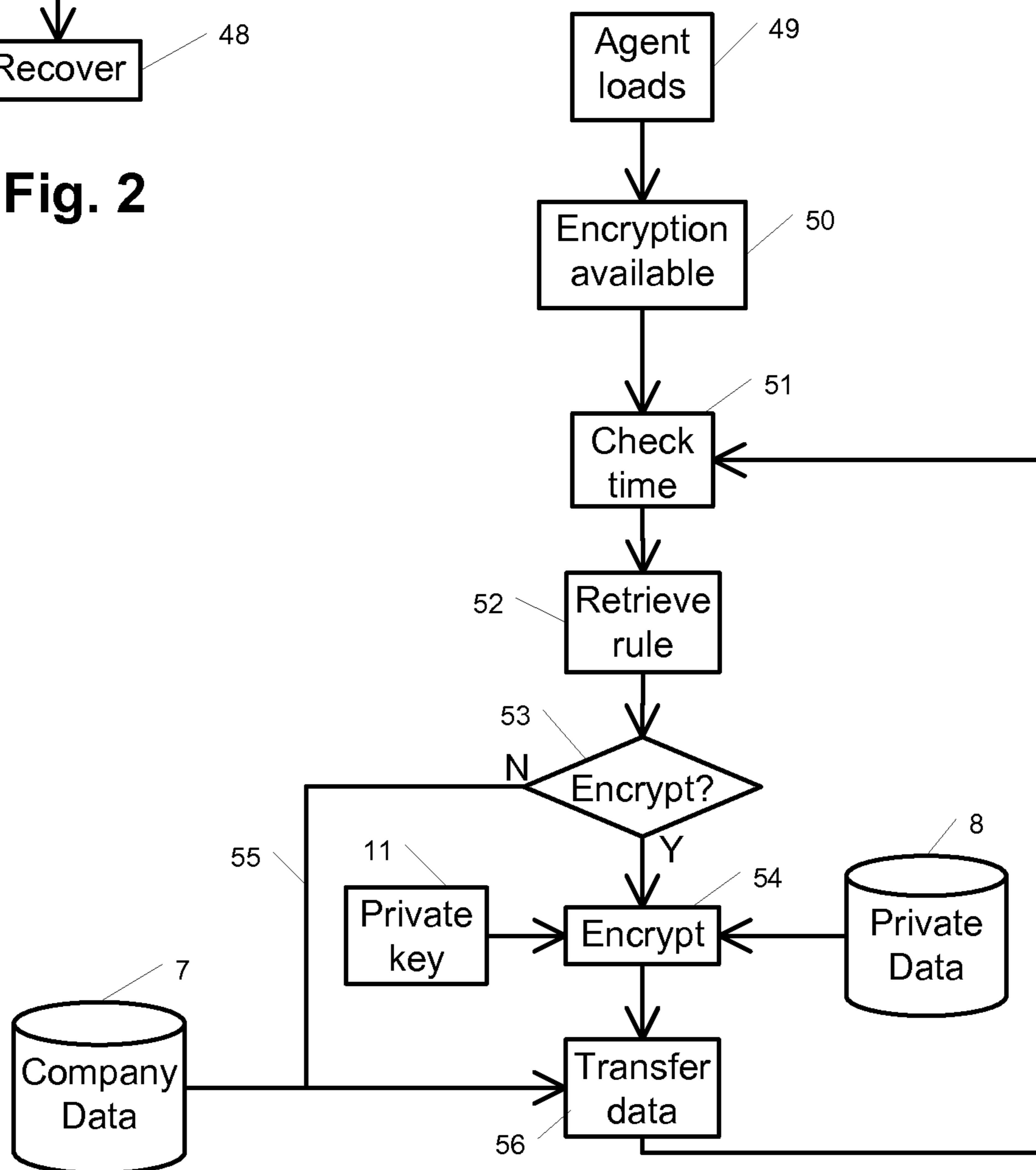


Fig. 3

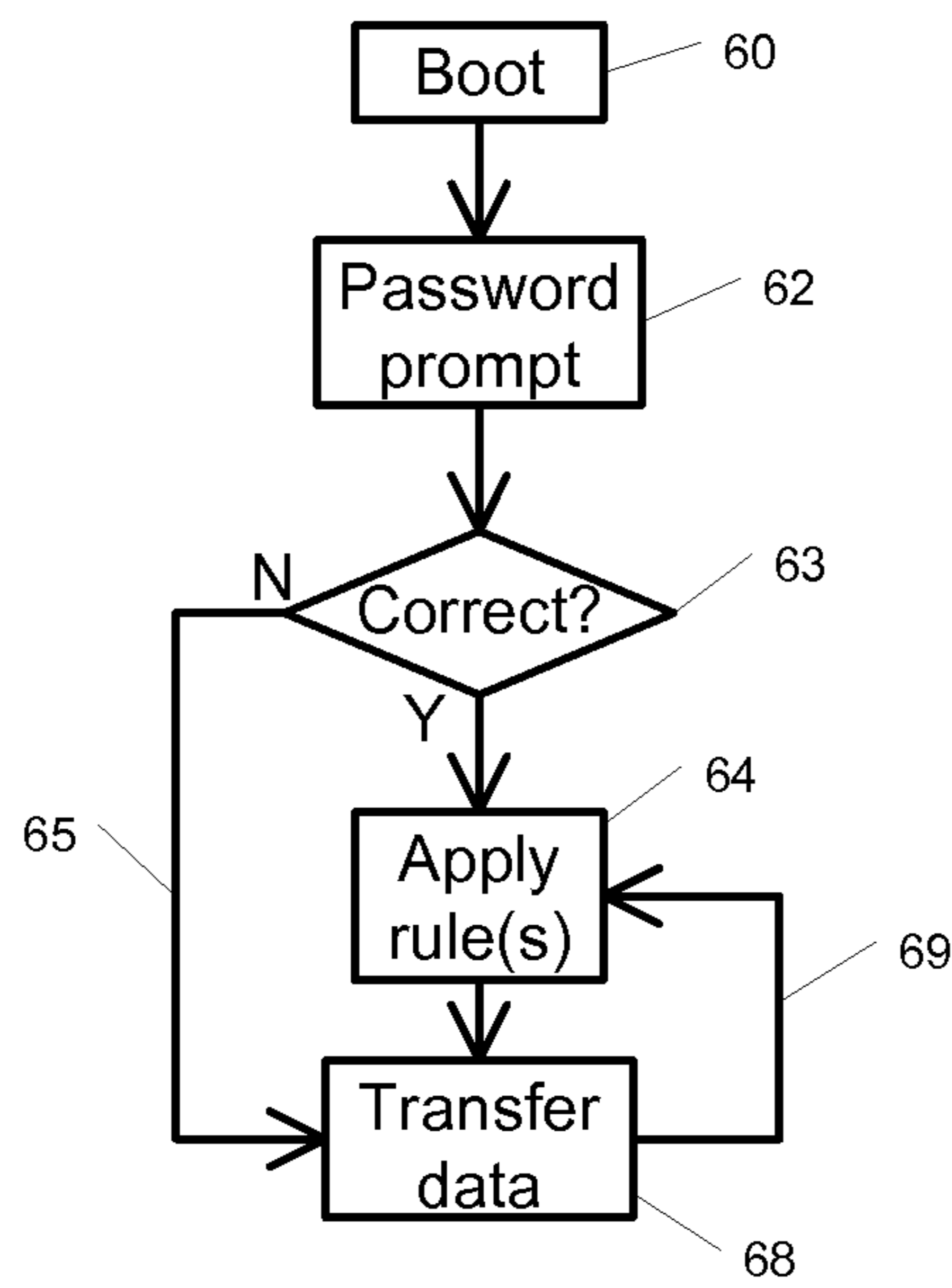


Fig. 4

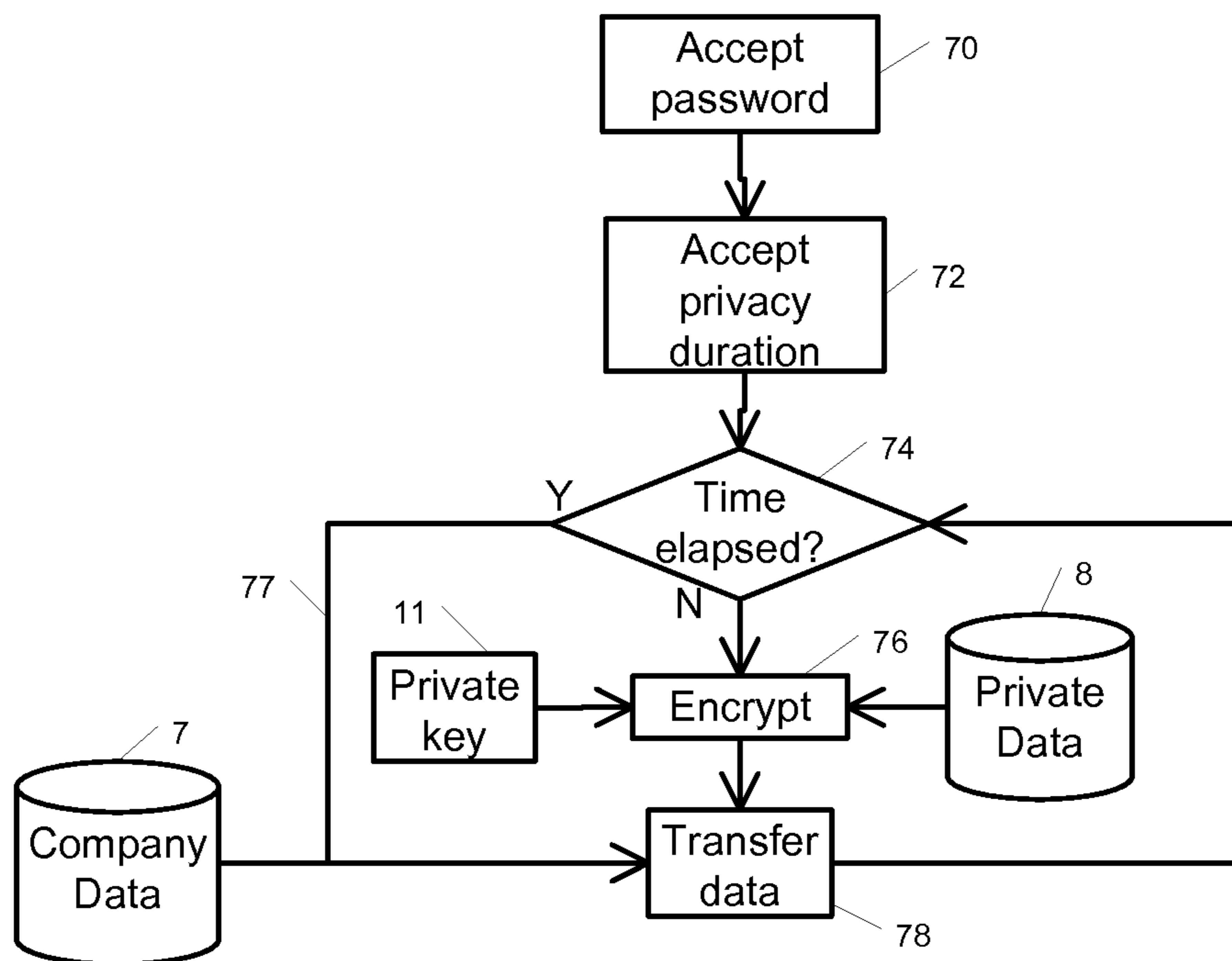


Fig. 5

PRIVACY MANAGEMENT FOR TRACKED DEVICES

CROSS-REFERENCE TO RELATED APPLICATION

This application claims the benefit of U.S. Provisional Patent Application No. 61/082,130 filed Jul. 18, 2008, priority from the filing date of which is claimed under 35 U.S.C. §119, and which is hereby fully incorporated by reference.

BACKGROUND

The present disclosure relates to the protection of user privacy while allowing electronic devices to be tracked.

Laptops, and increasingly other electronic devices such as cell phones, PDAs, smart phones (e.g. BlackBerry™, iPhone™), memory sticks, personal media devices (e.g. iPod™), gaming devices and personal computers, are being remotely tracked so that they can be recovered in the event of theft. Such tracking may be effected by sending location information to a remote storage site or an email server.

Proprietary information is routinely stored on electronic devices such as personal computers, laptop computers and personal digital assistants, and the need to protect such proprietary or sensitive data, and to recover such devices if they are lost or stolen, is self-evident. However, the privacy of the users of such devices needs to be taken into consideration when providing protection of such devices and/or data.

SUMMARY

This summary is not an extensive overview intended to delineate the scope of the subject matter that is described and claimed herein. The summary presents aspects of the subject matter in a simplified form to provide a basic understanding thereof, as a prelude to the detailed description that is presented below.

In many cases, an employer will want to track all the laptops (or other electronic devices) that are issued to its employees. For privacy reasons, some employees may object to the laptop being tracked 24/7, as one's personal location and compilations of historical personal locations are considered private data. This is especially the case if an employer has given permission for an employee to use the laptop for personal use outside of working hours. The concern exists whether the employer does the monitoring, or whether an unrelated third party such as a security company does the monitoring.

The subject matter described herein provides a system and method for the conditional encryption of data transferred from a device that is being tracked to a computer at a remote location. Data transfer may be for tracking, for monitoring purposes, data backup or for recovery in the case of loss or theft.

There are several aspects to the encryption in one embodiment. In order to prevent unauthorized access, private data is encrypted before it is transferred to the remote location, and cannot be decrypted without a private key. Whether or not data is encrypted before transmitting to the remote location may depend on whether it is private or business data, the determination of which can be made dependent upon certain conditions. The conditions may be temporal, such that for data created during certain hours of the day (such as working hours), the data is considered to be business related and is not encrypted before transfer, or it is pre-encrypted and decryptable at the remote site using a business related decryption key.

For data created at other times, such as outside working hours, the data may be considered private and encrypted before transfer. In a preferred embodiment, private data is decryptable only with consent of the user of the device, using a private decryption key.

The data that is transferred is typically location or location-related information, such as IP addresses, GPS coordinates, Wi-Fi signal strengths, cell tower signal strengths, times at these locations, time spent at these locations, and identification indicia for the device, but may also include websites visited, key strokes, email messages, software versions, software run, device specifications, mouse movements and files or details of files created, deleted, copied, transferred, opened, clicked, selected and/or amended. However, as will be readily understood by those of skill in the art, the disclosed subject matter can equally be employed to protect other private data created using a shared business and private use device, either together with location or location-related information, or alone. Other private data that can be protected includes, for example, usage data, websites visited, video and audio files played, downloads, keystrokes, screenshots, emails, files and any other private data.

DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the nature and advantages of the disclosed subject matter, as well as the preferred mode of use thereof, reference should be made to the following detailed description, read in conjunction with the accompanying drawings. In the drawings, like reference numerals designate like or similar steps or parts.

FIG. 1 is a schematic functional block diagram of a system and method for the conditional encryption of data in accordance with an embodiment of the disclosed subject matter, as incorporated in a laptop computer.

FIG. 2 is a functional flow diagram schematically representing the post-theft flow process of a system and method for the conditional encryption of data in accordance with embodiments of the disclosed subject matter.

FIG. 3 is a functional flow diagram schematically representing the encryption process of a system and method for the conditional encryption of data in accordance with embodiments of the disclosed subject matter.

FIG. 4 is a functional flow diagram schematically representing the encryption process of a system and method for the conditional encryption of data in accordance with alternate embodiments of the disclosed subject matter.

FIG. 5 is a functional flow diagram schematically representing the encryption process of a system and method for the conditional encryption of data in accordance with further alternate embodiments of the disclosed subject matter.

DETAILED DESCRIPTION OF SPECIFIC EMBODIMENTS

A. Terminology

Agent—as used herein, is a software, hardware or firmware agent that is ideally persistent and stealthy, and that resides in a computer or other electronic device. The agent preferably provides servicing functions which require communication with a remote server. The agent is tamper resistant and may be enabled for supporting and/or providing various services such as data delete, firewall protection, data encryption, location tracking, message notification, and software deployment and updates. An illustrative embodiment of an agent is found in the commercially available product Computrace Agent™.

The technology underlying the Computrace Agent™ has been disclosed and patented in the U.S. and other countries, which patents have been commonly assigned to Absolute Software Corporation. See, for example, U.S. Pat. Nos. 5,715,174; 5,764,892; 5,802,280; 6,244,758; 6,269,392; 6,300,863; and 6,507,914 and related foreign patents. Details of the persistent function of an agent are disclosed in U.S. Patent Application Publication Nos. US2005/0216757 and US2006/0272020. The technical disclosures of these documents are fully incorporated by reference as if fully set forth herein. It is feasible to use an equivalent agent to the Computrace Agent™, or less preferably an alternative agent with less functionality. For the purposes of the present disclosure, the minimal functional attribute of the agent is to facilitate communications between the electronic device and a monitoring center. Communications may be initiated by the agent, by the monitoring center or by both.

Host—This is the electronic device to be protected, that is typically intended for shared business and private use. Examples of a host include a laptop, a netbook, or a smart phone. The agent resides in the host.

Monitoring Center—This is a guardian server or other computer or server that the agent communicates with or sends a message to. It may be an email server or it may be a distribution of servers or other computers. For example, provided an internet connection is available to the host, an agent may call the monitoring center at some selected suitable interval to report the location of the host, download software upgrades if there are any and repair any security modules that are or should be installed on the host. In the embodiments disclosed herein, the agent would upload to remote storage located in the monitoring center location information and/or any other data desired to be transferred. Communication to the monitoring center may take place, for example, via a wired or wireless telephone network, WIFI, WIMAX, cable or satellite.

Encryption—It is generally assumed that any data that is transferred between remote devices, such as between a host and a monitoring center, is encrypted during transmission. However, in this document, unless the context requires otherwise, the term encryption generally refers to a conditional level of encryption, which may be private encryption or business encryption, rather than to the encryption typically employed during transmission. Furthermore, the term encryption applies predominantly herein to private data (including private location information and/or any other private data desired to be transferred) that is transferred and remains encrypted and unable to be decrypted at a remote storage center unless a private decryption key is provided. The term encryption also refers to the user of a host device, who is the owner of private data, being able to control whether his private data is encrypted when it is transferred or copied to a remote storage facility. Private data can also be referred to as personal data. Business data can also be referred to as corporate data, company data or non-personal data.

The detailed descriptions within are presented largely in terms of methods or processes, symbolic representations of operations, functionalities and features of the invention. These method descriptions and representations are the means used by those skilled in the art to most effectively convey the substance of their work to others skilled in the art. A software implemented method or process is here, and generally, conceived to be a self-consistent sequence of steps leading to a desired result. These steps involve physical manipulations of physical quantities. Often, but not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and other-

wise manipulated. It will be further appreciated that the line between hardware, software and firmware is not always sharp, it being understood by those skilled in the art that software implemented processes may be embodied in hardware, firmware, or software, in the form of coded instructions such as in microcode and/or in stored programming instructions. In general, unless otherwise indicated, singular elements may be in the plural and vice versa with no loss of generality. The use of the masculine can refer to masculine, feminine or both.

B. Exemplary Embodiment

A block diagram of a preferred embodiment is shown in FIG. 1. A host electronic device 1 such as a laptop comprises an agent 2 which can communicate regularly, aperiodically, randomly, semi-randomly and/or according to triggers, with remote storage 12 at a monitoring center 3 via the internet 4, via some other telecommunications network, or via a combination of these. SMS messaging can be used for all or some of the communications, for example.

The agent 2 is operably connected to an encryption engine 5 comprising computer readable instructions in the memory 6, which encrypts the company data 7 and/or private data 8 to be transferred, according to encryption rules 9, also stored in memory 6. One or more encryption keys, for example company key 10 and private key 11, may be stored in the memory 6 of the electronic device 1. The memory 6 may be divided into parts and/or different types of memory, such as, for example, to facilitate the separate storage of company data 7 and private data 8 in distinct data stores. In a typical application, a user of device 1 may create a private directory or folder in memory 6 into which any data that is identified as private data 8 may be segregated from company data 7.

Host device 1 also comprises a location device 15, such as a GPS or A-GPS receiver device, or some other device performing location determination. The location device 15 may be contained in the memory 6 of the electronic device 1, or it may be a component or module separate from the memory 6 as shown in FIG. 1. There may be one, two or more location devices 15, each operating on a different principle or one acting as a backup for another. The electronic device 1 generally contains a processor 16 for processing instructions contained in the memory 6 and reading/writing data to and from it via a bus 18, and an interface 19 to the internet 4 or other communication network. It should be appreciated that a device 1 that connects to the internet 4 may in some cases be considered part of the internet 4.

The agent 2 sends data 7, 8, which may include location information, to a monitoring center 3 and/or remote storage device(s) 12 regularly, aperiodically, randomly, semi-randomly and/or according to triggers. This transmission of data between agent 2 and monitoring center 3 may occur transparently to the user. Before sending, private location data (i.e. location data logged or collected outside working hours) in private data store 8 may be encrypted and company location data in company data store 7 may be left unencrypted. Location data in data stores 7, 8 may be present only transiently in the electronic device 1.

At the monitoring center 3, the two types of data 7a, 8a may be stored together, or may be stored in separate databases after being sorted by a sorter module 25. For example, the company data 7 that is not encrypted can be marked as such in device 1, or can be identified as such at the monitoring center 3, and then stored in data store 7a. Private data 8 that is encrypted before sending can be marked as such in device 1, or can be identified as such at the monitoring center 3, and

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then stored in a data store **8a**. The remote storage **12** may be at the premises of a company or business that owns the electronic device **1**, or at the premises of a third party security company, or it may be in another computer or server, or distributed in multiple computers or servers. If the company data **7a** that is stored is not encrypted (apart from temporarily during transmission), the company will have access to it, but will not be able to decipher private data **8a** without being provided access to private decryption key **11a**. It is possible that the encryption engine **5** encrypts both company data **7** and private data **8** before it is sent by the agent **2** to the remote storage **12**, in which case an administrator at the company will need a company decryption key **10a** to convert the data **7a** to a meaningful (unencrypted) format. In either case, the private data **8** which is transferred or copied is encrypted using a private encryption key **11** or password that is known only to the user of the electronic device **1**. The company does not have access to the private encryption key **11** and cannot interpret the data **8a** that is private and stored at the monitoring center **3**.

The monitoring center **3** may be a server which contains an interface **23** to the network **4**, a bus **14** via which components internal to the server communicate and a processor **13** for processing computer readable instructions in remote storage **12**. Examples of instructions may be those used to sort incoming data in the sorter module **25**, a program allowing for input of decryption keys, a program for allowing access to data, etc. Also in remote storage **12**, the encrypted private data **8a** may be stored, as can be the company data **7a**, which may or may not be encrypted. Links **20**, **21** between the electronic device **1**, the network **4** and the monitoring center **3** may be wired, wireless or cable.

If a user wants to access his private data **8a**—for example after the theft of the electronic device **1**, he can access the remote storage **12** using a terminal **30** via the internet **4**. The data can be downloaded to terminal **30** and the user's private decryption key **11a** can be used to decrypt the data **8a**. A first password may be used for retrieving the private data **8a** and a second password or decryption key **11a** may be used for decrypting the private data **8a**. Alternately, the decryption key **11a** may be provided to the monitoring center **3** in order to decrypt the private data **8a**.

In the case of theft or loss of the electronic device **1**, FIG. **2** shows the process a user typically goes through. The theft **40** is reported **42** to the police and to the company that owns the electronic device **1**, and the user provides **44** the user's decryption key **11a** to the company. This may be via another computer **30** connected to the internet **4**, or it may be given directly to a company administrator. This decryption key/password **11a** will allow some or all of the private location information in data store **8a** to be decrypted **46** by the company and/or security company, so that it can be provided to law enforcement authorities who then attempt to recover **48** the electronic device **1**. The business, company and/or security company administering the monitoring of the electronic device **1** has access to company location data **7a** (using a company decryption key **10a** if the company data **7a** has also been encrypted) and can make this information available to law enforcement. This means that the user potentially sacrifices location privacy only in the case of a theft, but not on a day to day basis or in the absence of a theft. In some embodiments, access to private location data **8a** may be provided only as far back as the date and time of the theft, or as close to this as can be determined, or to the date and time the theft was reported, so that all or the majority of user location privacy is not compromised.

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In embodiments where the provision of a private key would reveal historical location data, or other private information, the use of a third party security company may be preferable for employees who never want any of their private information to become available to their employer.

There may be a set of rules by which the private data **8** is encrypted. FIG. **3** shows that after the agent loads **49** it ensures the availability of the encryption engine **50**. The encryption engine **5** then checks **51** the time of day and retrieves **52** an encryption rule **9** in order to determine **53** whether to encrypt the private data **8** or not. As an example only, a simple rule could be that data **7**, **8** is not encrypted between the times of 9 am-5 pm, Mondays to Fridays. In this example, it is assumed that, whether the data is in fact private or business-related in nature, it will all be treated as company data **7** during working hours. During working hours, there is no encryption **55** and company data **7** (comprising all data **7,8**) is transferred **56** to remote storage **12**. The remote storage **12** may be located in a monitoring center **3** at the premises the user works at, or it may be at another site. After data has been transferred **56**, the process loops back to the check time step **51** so that further data can be transferred from time to time, after a set delay, or after more data is created. Outside of these times, i.e. outside of the normal working hours, all data is assumed to be private data **8** and is encrypted with a private key **11** and/or password known only to the user of the electronic device **1**. The private data **8** is encrypted **54** and transferred **56** to the remote storage facility **3**. After data has been transferred **56**, the process loops back to the check time step **51** so that further data can be transferred after a delay.

Other time periods may be set as exceptions to a schedule such as described above, and allowances may be made for vacation time, for example. Rules, including rules relating to the time periods, may be amended or updated via the agent **2** during a communication with the monitoring center. For example, in the case of a theft, an amended rule to cease all private encryption may be communicated via the agent **2** to the encryption rules module **9**. This embodiment may obviate the need for a user to supply a private decryption key **11a** to recovery personnel.

Business or company data **7** may be encrypted with a key **10** known only to the business, company, owner or administrator of the electronic device **1**. Alternately, there may be a separate encryption process for storage of company data that occurs at the remote monitoring site **3**. This way, a user will not have access to a company encryption key.

The application of the rules **9** may in some embodiments be dependent upon the user entering a password. As shown in FIG. **4**, after the electronic device boots **60**, it prompts **62** the user to enter a password. If **63** the password is correctly entered, the rules **9** are applied **64** and private data **8** is encrypted according to the private encryption key **11**. If **63** the password is incorrectly entered **65**, or not entered, the data **8** is not encrypted according to the private key **11**, because in this case, either the device **1** has been stolen, or the user wishes only to use the device for work-related tasks. Whether the data is encrypted or not, it is transferred **68** to the remote storage **3**. After the transfer **68**, the system loops back **69** in the process so that from time to time, regularly, or as and when needed, more data can be transmitted.

In an alternate embodiment, the company data **7** and the private data **8** is by default not encrypted. The user has the option, when desiring to use the device **1** for private matters, of entering a password which will cause the data that is transferred to the remote storage **12** to be encrypted beforehand, but only for a set period of time. Referring to FIG. **5**, the device **1** is configured to accept **70** entry of a password. Upon

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entry of a correct password, the device **1** prompts the user to choose a privacy duration, which may be a selection for a set of standard periods such as 30 minutes, 6 hours and 1 week, for example. Other times are possible, and the user may have the option of entering any time up to a predetermined maximum. The device **1** accepts **72** the input of the desired privacy duration from the user and then monitors **74** whether the duration has elapsed or not. During the period selected, all data **8** is encrypted **76** using the private key **11**, as it will be assumed that all use of the electronic device during this period is for private data **8**. The encrypted data is then transmitted **78** to the remote storage **12**. If **74** the privacy duration selected has elapsed **77**, data is not encrypted using the private key, as it is assumed that data created after this duration is company data **7**, which is transmitted **78** to the remote storage **12** without being encrypted (or is encrypted using company key **10**). After transfer **78** of data, whether encrypted or not, the process reverts to step **74**, so that from time to time a check can be made on whether the privacy duration has elapsed and more data can be transferred if necessary.

Example Rules

The following are examples of rules that can be used for the encryption using the user's private key:

1. Always encrypted. After theft, the user provides the key. This case would be suitable where location data is being recorded.
2. Always encrypted. Decryption of data is possible after both the user and the owner provide their respective parts of a joint key.
3. Encryption occurs according to a private key for time periods outside a working day.
4. As example rule (3), but this rule can be modified to allow for vacations and variable working times.
5. As example rule (3), but can only be activated if the user inputs a password at boot or unlock.
6. Encryption occurs according to a private key temporarily upon the request of a user, as in the embodiment of FIG. **5**. The desired duration of privacy may be entered by the user, or it may be fixed. It may be a different period depending on the time of day. For example, around lunchtime it could be 20 minutes. In the evening, it could be 5 hours. At the weekend it may be a day.

Alternatives and Variations

Steps in the figures may be performed in a different order to that illustrated, or they may be combined where shown separately.

A signal (such as an audible signal or a visual pop-up message generated on the device) may be generated by the agent and given to the user that the period of private encryption is over, or is about to end. It may be a disguised signal that gives no clue to a thief that there is a form or tracking protection installed in the device.

A user password for encryption may be deleted by the agent from the device at the end of every encryption period. This would prevent a thief attempting to use it to encrypt location data in order to hide his whereabouts.

On provision of the user's private key to the security company, the system may be configured to only decrypt data going back for a certain period of time, such as two weeks. This could be arranged by regularly deleting old data from the remote storage device. Alternately, the private encryption key may evolve as a function of time, such that a given decryption key can only unlock current and future data but not historical data.

It is not necessary for the private and company data to be transferred as it is being created. It may be stored locally in the electronic device **1** in its respective data store **7**, **8** until a

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connection between the device **1** and the monitoring center **3** is available, or until it is time for the agent to initiate communication to or respond to the monitoring center **3**.

While an embodiment has been described in relation to protecting private location data, the disclosed subject matter can equally be employed to protect other private data created using a shared business and private use device. Other private data that can be protected includes usage data, websites visited, video and audio files played, downloads, keystrokes, screenshots, emails, files and any other private data.

The present description is of the best presently contemplated mode of carrying out the subject matter disclosed and claimed herein. The description is made for the purpose of illustrating the general principles of the subject matter and not be taken in a limiting sense. The subject matter can find utility in a variety of implementations without departing from the scope of the disclosure made, as will be apparent to those of skill in the art from an understanding of the principles that underlie the subject matter.

We claim:

1. A method performed by a user computing device to enable a location of the user computing device to be monitored from a remote location, the method comprising:
 - receiving over a network, from a monitoring system, a conditional data encryption rule that specifies criteria for the user computing device to determine whether to encrypt at least device location data with a private key of a user of the device before transmitting the device location data to the monitoring system, said device location data representing a location of the user computing device, said criteria including time-based criteria corresponding to an employment work schedule of the user;
 - storing the conditional data encryption rule in a memory of the user computing device;
 - repeatedly reporting a location of the user computing device to the monitoring system according to the conditional data encryption rule such that said location is reported during both employment work hours and non-work hours of the user, wherein repeatedly reporting the location comprises:
 - obtaining location data reflective of a location of the user computing device;
 - determining, based at least partly on whether the location data was obtained during employment work hours associated with the user, as determined using the conditional data encryption rule, whether to encrypt the location data with the private key;
 - when a determination is made to encrypt the location data with the private key, encrypting the location data with the private key to generate encrypted location data, and transmitting the encrypted location data on a network to the monitoring system; and
 - when a determination is made not to encrypt the location data with the private key, transmitting the location data on the network to the monitoring system without first encrypting the location data with the private key;
 - wherein the method is performed under the control of program code executed by the user computing device.
2. The method of claim **1**, wherein the determination is based on a comparison of a date and time associated with the location data with a schedule of work hours.
3. The method of claim **1**, wherein the method is performed as a background task substantially invisibly to the user.
4. The method of claim **1**, wherein the method further comprises transmitting application data to said monitoring

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system to enable said application data to be remotely backed up, said application data being distinct from said location data.

5 5. The method of claim 4, further comprising determining, based at least partly on whether the application data was generated during the employment work hours, whether to encrypt the application data with the private key prior to transmission to the monitoring system.

10 6. The method of claim 1, wherein the conditional data encryption rule is based in part on a vacation schedule of the user.

15 7. The method of claim 1, wherein the user computing device is owned by an employer of the user, and the conditional data encryption rule reflects the employment work schedule of the user with said employer.

20 8. The method of claim 1, further comprising using the transmitted location data, including the encrypted location data, to attempt to recover the user computing device following a theft.

25 9. The method of claim 1, wherein the location data comprises Global Positioning System (GPS) data generated by a GPS receiver of the user computing device.

30 10. A non-transitory computer readable medium which stores program code that instructs a user computing device to perform a method that comprises:

receiving over a network, from a monitoring system, a conditional data encryption rule that specifies criteria for the user computing device to determine whether to encrypt at least device location data with a private key of a user of the device before transmitting the device location data to the monitoring system, said device location data representing a location of the user computing device, said criteria including time-based criteria corresponding to an employment work schedule of the user with an employer;

storing the conditional data encryption rule in a memory of the user computing device;

repeatedly reporting a location of the user computing device to the monitoring system according to the conditional data encryption rule such that said location is reported during both employment work hours and non-work hours of the user, wherein repeatedly reporting the location comprises:

obtaining location data reflective of a location of the user computing device;

determining, based at least partly on a schedule of work hours associated with the employer, as determined using the conditional data encryption rule, whether the location data is associated with an employment use of the user computing device;

when a determination is made that the location data is not associated with an employment use of the device, encrypting the location data with the private key of the user to generate encrypted location data, and transmitting the encrypted location data on a network to the monitoring system; and

when a determination is made that the location data is associated with an employment use of the device, transmitting the location data on the network to the

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monitoring system without first encrypting the location data with the private key.

11. A method of monitoring a location of a user computing device such that user privacy is preserved, the method comprising:

5 transmitting over a network, from a monitoring system to the user computing device, a conditional data encryption rule that specifies criteria for the user computing device to determine whether to encrypt at least device location data with a private key of a user of the device before transmitting the device location data to the monitoring system, said device location data representing a location of the user computing device, said criteria including time-based criteria corresponding to an employment work schedule of the user with an employer;

15 receiving from the user computing device, over a network, and storing in computer storage of the monitoring system, a first set of location data that is encrypted with the private key of the user, said first set of location data representing a monitored location of the user computing device during non-work hours of the user, said first set of location data encrypted with the private key by the user computing device based on the conditional data encryption rule;

25 receiving from the user computing device, over a network, and storing in computer storage of the monitoring system, a second set of location data that is not encrypted with the private key of the user, said second set of location data representing a monitored location of the user computing device during work hours of the user;

30 receiving the private key of the user in connection with a reported theft of the user computing device, and using the private key to decrypt the first set of location data; and

35 using the decrypted first set of location data and the second set of location data to attempt recovery of the user computing device following the reported theft.

40 12. The method of claim 11, wherein the user computing device is owned by the employer.

13. The method of claim 11, wherein the conditional data encryption rule reflects a vacation schedule of the user.

45 14. The method of claim 1, further comprising, at least when a determination is made not to encrypt the location data with the private key of the user, encrypting the location data with an employer key.

50 15. The method of claim 1, wherein the encryption of the location data with the private key is conditional upon user entry of a correct password.

16. The method of claim 8, further comprising decrypting the encrypted location data only back to an approximate time of the theft.

55 17. The method of claim 8, further comprising decrypting the encrypted location data only back to a time of a report of the theft.

18. The method of claim 8, further comprising receiving an amended data encryption rule following the theft.

19. The method of claim 18, wherein the amended data encryption rule causes the computing device to cease all encryption with the private key.

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