

Description

Title of Invention: INFORMATION PROCESSING SYSTEM, INFORMATION PROCESSING APPARATUS, INFORMATION PROCESSING METHOD, AND PROGRAM

Technical Field

[0001] The present disclosure relates to an information processing system, an information processing apparatus, an information processing method, and a program.

Background Art

[0002] With wide spreading of a network such as the Internet and a wireless communication network, more and more, an image forming apparatus is used by a user in a state where the image forming apparatus is connected to the network. When an image forming apparatus is connected to a network, it is possible for a server communicating with the image forming apparatus to provide various services to a user.

[0003] For example, a service is known in which the server provides a maintenance service to an image forming apparatus connected to the server via a network. The image forming apparatus transmits information useful for maintenance, such as a daily use amount, to the server. The server detects a symptom of an error by comparing the information with error information of various models obtained in the past, and determines necessary maintenance. As a result, if necessary, a customer engineer is dispatched to perform appropriate maintenance or conduct an inspection in order to prevent an error.

[0004] As an example of the use amount, there is a case where a number of print pages is obtained by a server from an image forming apparatus (e.g., refer to PTL 1). PTL 1 describes a system in which, in order to provide flexible maintenance according to a model of the image forming apparatus by obtaining a use state of the image forming apparatus, a number of print pages, etc., are obtained from the image forming apparatus through a network. For example, the server can determine a state of use by aggregating numbers of print pages during a certain period, and thus, it is possible to provide appropriate maintenance.

Summary of Invention

Technical Problem

[0005] It should be noted that, when a customer introduces an image forming apparatus, there are mainly a case where the customer purchases the image forming apparatus and a case where the customer rent the image forming apparatus. For example, a customer can choose to purchase the image forming apparatus when the customer expects to use

the image forming apparatus for a long period of time, and a customer can choose to rent the image forming apparatus when the customer intends to save initial investment cost or expects to use the image forming apparatus for a short period of time.

[0006] In the case where a customer rents an image forming apparatus and receives the service described above, the image forming apparatus transmits a number of print pages, etc., to the server during a rental period. However, in the case where the rented image forming apparatus is returned to a manufacturer or a dealer of the image forming apparatus, and rented to another customer, there is a problem that it is unclear which customer the number of print pages transmitted to the server belongs to. A specific example will be described.

[0007] For example, it is assumed that the server aggregates the number of print pages of the image forming apparatus for each month (from the start of the month to the end of the month). A customer A returns a rented image forming apparatus X in the middle of a month, and a customer B start renting the image forming apparatus X in the same month. Numbers of print pages of the image forming apparatus X are transmitted to the server from the customer A and the customer B, respectively. In this case, it can be understood by the server that the numbers of print pages are transmitted from the image forming apparatus, and it cannot be determined which number of print pages is transmitted from which of the customers A and B.

[0008] It is preferable for the server to obtain statistics of a use amount per month for each customer because it is known that each customer has a different number of print pages according to the business scale or style of the customer. However, as described above, in the case where an image forming apparatus is rented, it has been often the case that the use amount of each customer cannot be accurately aggregated.

[0009] In view of the above, an object of the present disclosure is to provide an information processing system that is capable of aggregating the use amount of the image forming apparatus for each customer.

Solution to Problem

[0010] An information processing system capable of aggregating the use amount of an image forming apparatus for each customer is provided. A second information processing apparatus includes a transmission unit configured to transmit use amount information of the second information processing apparatus and first identification information of the second information processing apparatus. A first information processing apparatus includes a reception unit configured to receive the use amount information and the first identification from the second information processing apparatus, an obtaining unit configured to obtain second identification information of the second information processing apparatus from the second information processing

apparatus, or obtain the second identification information based on the first identification information received by the reception unit, a use amount information recording unit configured to associate the use amount information with the first identification information and the second identification information and store the use amount information with the first identification information and the second identification information in a first storage unit, and an aggregation unit configured to aggregate the use amount information for each set of the first identification information and the second identification information.

Advantageous Effects of Invention

[0011] The present disclosure provides an information processing system that is capable of aggregating the use amount of the image forming apparatus for each customer.

Brief Description of Drawings

[0012] [fig.1A]Fig. 1A is an example of a drawing illustrating an outline of an equipment system.

[fig.1B]Fig. 1B is an example of a drawing illustrating an outline of an equipment system.

[fig.1C]Fig. 1C is an example of a drawing illustrating an outline of an equipment system.

[fig.2]Fig. 2 is an example of a configuration diagram of the equipment system.

[fig.3]Fig. 3 is an example of a hardware configuration diagram of a management apparatus.

[fig.4]Fig. 4 is an example of a hardware configuration diagram of an image forming apparatus.

[fig.5]Fig. 5 is an example of a functional block diagram of the management apparatus, a sales server, and the image forming apparatus included in the equipment system.

[fig.6]Fig. 6 is an example of a sequence diagram illustrating a procedure of the image forming apparatus of transmitting an initial notification and a regular notification to the management apparatus.

[fig.7]Fig. 7 is an example of a flowchart illustrating a process of transmitting a registration state confirmation response.

[fig.8]Fig. 8 is an example of a flowchart illustrating a procedure of calculating counter information.

[fig.9]Fig. 9 is a flowchart illustrating a modified example of a procedure of calculating counter information.

[fig.10A]Fig. 10A is an example of a sequence diagram illustrating a process of stopping the use of an image forming apparatus.

[fig.10B]Fig. 10B is an example of a sequence diagram illustrating a process of

stopping the use of an image forming apparatus.

[fig.11]Fig. 11 is an example of a sequence diagram illustrating a procedure of the image forming apparatus of transmitting an initial notification and a regular notification to the management apparatus (embodiment 2).

[fig.12]Fig. 12 is an example of a flowchart illustrating a procedure of a use count management unit of registering a record in a use count information table based on a regular notification.

[fig.13]Fig. 13 is an example of a sequence diagram illustrating a procedure of the image forming apparatus of transmitting an initial notification and a regular notification to the management apparatus (embodiment 3).

[fig.14]Fig. 14 is an example of a flowchart illustrating a process of updating an equipment management table in response to an initial notification.

Description of Embodiments

[0013] In the following, embodiments of the present disclosure will be described referring to accompanying drawings.

[0014] (Embodiment 1)

[0015] Figs. 1A-1C are examples of a drawing illustrating an outline of an equipment system 100 of an embodiment 1. As illustrated in Fig. 1A, an image forming apparatus 20 and a management apparatus 40 are connected to each other and capable of communicating with each other via a network N. A customer A rents and uses the image forming apparatus 20. As a result, for example, the image forming apparatus 20 regularly transmits to a management apparatus 40 a model number X, a registration number 01, and counter information A. One of the features of the embodiment 1 is to transmit the registration number 01 to the image forming apparatus 20.

[0016] It is assumed that the customer A returns the image forming apparatus 20 to its manufacturer or dealer (the rental period has expired), and a customer B rents and starts using the image forming apparatus 20. As illustrated in Fig. 1B, the management apparatus 40 provides a new registration number 02 for a contract in which the customer B rents the image forming apparatus 20. The registration number is provided for the rental contract, and thus, a different registration number is provided for the same image forming apparatus 20.

[0017] After the customer B starts renting the image forming apparatus 20, for example, the image forming apparatus 20 regularly transmits to the management apparatus 40 the model number X, the registration number 02, and the counter information B. The management apparatus 40 associates the registration number with the model number as a set, and aggregates counter information for each set. Therefore, the counter information A transmitted by the customer A and the counter information B transmitted

by the counter information B are aggregated separately.

- [0018] As described above, in the equipment system 100 according to an embodiment, even if the same image forming apparatus 20 is rented to different customers within the same calculation period (an example of an aggregation period) of use fee, the counter information can be aggregated for each customer because the registration number as identification information is provided for the rental contract.
- [0019] <Terminology>
- [0020] A first information processing apparatus is an information processing apparatus for providing various services to equipment. In an embodiment of the present disclosure, the management apparatus 40 is described as an example of the first information processing apparatus. A second information processing apparatus is an information processing apparatus for receiving the various services from the first information processing apparatus. In an embodiment of the present disclosure, the image forming apparatus 20 is described as an example of the second information processing apparatus.
- [0021] First identification information is information used for identifying the second information processing apparatus (image forming apparatus 20). In an embodiment of the present disclosure, a model number is described as an example of the first identification information.
- [0022] Second identification information is information used for identifying a user of the first information processing apparatus 40. It should be noted that if a user of the first information processing apparatus 40 is changed from a user A to a user B, and changed again to the user A, then the identification information for the first use of the user A is different from the identification information for the second use of the user A. In an embodiment of the present disclosure, a registration number is described as an example of the second identification information.
- [0023] A user is a person (or a corporation) who is permitted to use the image forming apparatus 20. The user may not need to actually use the image forming apparatus 20. In an embodiment of the present disclosure, a customer is described as an example of the user. It should be noted that the user is permitted to use the image forming apparatus 20 according to a contract. Therefore, the user may be referred to as a contract party. In this case, the second identification is information used for identifying the contract party.
- [0024] Use amount information is information used as an index of the use of the image forming apparatus 20. Specifically, the use amount information is information transmitted in a regular notification.
- [0025] An operational user is a person who operates the image forming apparatus 20 or an information terminal (which will be described later). An operator is a person who

operates the management apparatus 40. A sales manager is a person who manages selling and renting of the image forming apparatus 20, and a sales server 60 may be included.

[0026] The information used as an index of the use of the image forming apparatus 20 is transmitted by the regular notification. For example, the information includes an accumulated number of pages printed in the past (hereinafter, referred to as counter information), a coverage (accumulated amount of an area ratio [%] occupied by the toner per A4-size sheet), a remaining toner amount, a number of ejected pages, accumulated number of rotations of a photoconductor drum, energized time, etc., which are useful for the management apparatus 40 to determine the use amount of the image forming apparatus 20. In the following, it is assumed that mainly the counter information is transmitted in the regular notification.

[0027] In an initial notification, a personal identification number (PIN) is transmitted in addition to the contents of the regular notification. The PIN is a number used for authentication of a customer (e.g., one-time password) (an example of third identification information). It should be noted that the initial notification may be referred to as a registration state confirmation request. When the image forming apparatus 20 successfully transmits the initial notification to the management apparatus 40, the use of the image forming apparatus 20 is permitted.

[0028] Error information including paper jamming, etc., is transmitted by an error notification. A return notification is transmitted when a process of returning the image forming apparatus 20 (rental termination) is performed. When the image forming apparatus 20 transmits the return notification to the management apparatus 40, the use of the image forming apparatus 20 is not permitted.

[0029] <Configuration example>

[0030] Fig. 2 is an example of a configuration diagram of the equipment system 100. The equipment system 100 includes the management apparatus 40, the sales server 60, the image forming apparatus 20, an information terminal 10, and a settlement institution 80, which are connected to each other via the network N. The equipment system 100 is an example of an information processing system, and a process performed by the equipment system 100 is an example of an information processing method.

[0031] The network N includes a LAN installed in an office in which the image forming apparatus 20 is included, a provider's network that connects the LAN to the Internet, lines provided by a telecommunications carrier, etc. Further, the network N may include the Internet. The network N may include a wired network, a wireless network, or a combination thereof. In the case where the image forming apparatus 20 is directly connected to a telecommunications network or a mobile telephone network, the image forming apparatus 20 can be connected to the provider's network without going

through the LAN. Communications based on wireless communication standards such as Bluetooth (registered trademark), ZigBee (registered trademark), etc., may be included in the network N, for example, in a route for connecting to the LAN, etc.

[0032] The management apparatus 40 manages the image forming apparatus 20. The term "management" refers to determining the image forming apparatus 20 used by each of the customers, maintaining the image forming apparatus 20, performing a billing process based on counter information, etc., included in the regular notification. For example, the management apparatus 40 obtains the regular notification of the image forming apparatus 20, makes a diagnosis, and detects an error or a symptom of an error of the image forming apparatus 20. According to a result of the detection, a further diagnosis is made from a remote site, or, a customer engineer is dispatched if necessary. Further, in the case where an error notification is received from the image forming apparatus 20, a customer engineer is dispatched. Further, the management apparatus 40 obtains the remaining toner amount from the image forming apparatus 20, arranges shipping of toner if necessary, obtains the number of ejected pages, arranges shipping of print paper if necessary, etc. Regarding the billing process, every month, a fee is calculated and billed by multiplying an increased amount of the counter information by a unit price amount.

[0033] It should be noted that it is not necessary for the management apparatus 40 to include all of the functions described above as long as the management apparatus 40 receives the initial notification and the regular notification, and maintains the use amount of the image forming apparatus 20.

[0034] Operations of the management apparatus 40 are performed by a sales company (dealer) that provides the image forming apparatus 20 to the customer, a manufacturing company (manufacturer) of the image forming apparatus 20, an associated company of the sales company or the manufacturing company, or the like. The operations of the management apparatus 40 may be performed by the same operator as that of the sales server 60 which will be described below.

[0035] The sales server 60 is used for selling various products and services. The sales server 60 provides a Web page in which various products and services can be displayed and selected. The sales server 60 transmits to the settlement institution 80 a request for settlement of the products and services selected by the customer. Further, when the settlement is complete, the sales server 60 arranges shipping of the products and services for the customer. In other words, the sales server 60 provides a Web site capable of performing e-commerce. It should be noted that the sales server 60 transmits to the management apparatus 40 information of a contract signed by the customer regarding the sales of the image forming apparatus 20 (which will be described later). The management apparatus 40 and an operator thereof can obtain the

contract information when the contract is signed.

[0036] The settlement institution is, for example, a financial institution or a credit card company and performs settlement for various products and services purchased by the customer. For example, in the case of settlement by a credit card, the settlement institution 80 pays the price amount of the products or services to the sales company and charges a fee to the customer. Further, in the case of the financial institution, the price amount of the products or services is withdrawn from an account of the customer and paid to the sales company. Further, in the case of settlement by a transfer form, the transfer form for payment of the price amount is mailed to the customer, the customer pays the price amount at a convenience store etc., and the price amount is paid to the sales company.

[0037] The image forming apparatus 20 performs printing documents input as electronic data, copying documents, scanning (reading) documents, fax transmission of documents, reception of faxed documents, etc. It should be noted that the image forming apparatus 20 has at least a printing function. Further, an image forming apparatus 20 that has two or more functions of printing documents, copying documents, scanning documents, fax transmission and fax reception, may be referred to as a multi-function peripheral/printer/product (MFP).

[0038] The information terminal 10 is an apparatus referred to as a general-purpose information processing apparatus or a terminal. The customer applies for a purchase of various products or a rental of various services ("rental" and "lease" are not distinguished in an embodiment of the present disclosure, and referred to as "rental") by operating the information terminal 10. Browser software for accessing the e-commerce Web site provided by the sales server 60 or equivalent application software with the similar functionality runs on the information terminal 10.

[0039] The information terminal 10 is specifically, for example, a personal computer (PC), a smartphone, a tablet terminal, a mobile telephone, a personal digital assistant (PDA), a wearable computer (watch, sun glasses, head-mounted display, etc.), an electronic white board, a video conference terminal, a projector, etc. Further, the image forming apparatus 20 may be used as the information terminal 10.

[0040] It should be noted that it is assumed that the image forming apparatus 20 and the information terminal 10 are installed in an environment 9 of the customer who has purchased or rented the image forming apparatus 20, and are operated by the customer. It should be noted that the information terminal 10 may be portable.

[0041] <<Hardware configuration>>

[0042] Next, referring to Figs. 3 and 4, a hardware configuration of the management apparatus 40, the sales server 60, the image forming apparatus 20, etc., will be described. Fig. 3 is an example of a hardware configuration diagram of the

management apparatus 40. The management apparatus 40 includes a central processing unit (CPU) 201, a read only memory (ROM) 202, a random access memory (RAM) 203 and an auxiliary storage device 204. Further, the management apparatus 40 includes an input unit 205, a display unit 206, and a communication unit 207. It should be noted that the units of the management apparatus 40 are connected to each other via a bus 208. As described above, the management apparatus 40 has functions of the information processing apparatus.

- [0043] The CPU 201 executes various programs and an operating system (OS) stored in the auxiliary storage device 204. The ROM 202 is a non-volatile memory. The ROM 202 stores programs, data, etc., which are needed for the CPU 201 to execute the programs stored in the auxiliary storage device 204.
- [0044] The RAM 203 is a main memory device including a dynamic random access memory (DRAM), a static random access memory (SRAM), or the like. The programs stored in the auxiliary storage device 204 are read into the RAM 203 and executed by the CPU 201. The RAM 203 is used as a work area of the CPU 201.
- [0045] The auxiliary storage device 204 stores various kinds of programs to be executed by the CPU 201, and various kinds of databases used when the CPU 201 executes the programs. The auxiliary storage device 204 is a non-volatile memory including a hard disk drive (HDD), a solid state drive (SSD), etc. It should be noted that the databases will be described later.
- [0046] The input unit 205 is an interface for an operator to input various kinds of instructions to the management apparatus 40. For example, the input unit 205 is a keyboard, a mouse, a touch panel, a voice-input device, etc. Further, an installation unit for a recording medium such as a USB interface (I/F) may be included.
- [0047] The display unit 206 displays information in the management apparatus 40 on a display part 210 in various forms such as a cursor, a menu, a window, a character, or an image, according to a request from the CPU 201. The display unit 206 is, for example, a graphic chip or a display interface (I/F).
- [0048] The communication unit 207 is a network interface (I/F) for communicating with the sales server 60 and the image forming apparatus 20 via the network N.
- [0049] It should be noted that it is assumed that the sales server 60 and the information terminal 10 each have similar hardware configurations to those of the management apparatus 40. It is not necessary for the sales server 60 and the information terminal 10 to have exactly the same hardware configuration as the management apparatus 40. There will be no problem in describing an embodiment of the present disclosure even if there are some differences.
- [0050] The hardware configuration of the management apparatus 40, etc., illustrated in the figure indicates hardware elements the management apparatus 40, etc., preferably

have. However, it is not necessary for the hardware elements to be contained in a single housing as an apparatus. Further, in order to cooperate with cloud computing, the physical configuration of the management apparatus 40, etc., may not be fixed. The hardware resources of the management apparatus 40, etc., may be dynamically connected or disconnected according to load of the management apparatus 40, etc.

- [0051] Fig. 4 is an example of a hardware configuration diagram of the image forming apparatus 20. The image forming apparatus 20 includes a controller 320. The controller 320 includes a CPU 301, an application specific integrated circuit (ASIC) 305, a SDRAM 302, a flash memory 303, a HDD 304, and a network interface card (NIC) 306.
- [0052] The ASIC 305 is a multi-function device board including a CPU interface, a SDRAM interface, a local bus interface, a PCI bus interface, a media access controller (MAC), a HDD interface, etc.
- [0053] The CPU 301 reads various programs (e.g., use management program) from the HDD 304 via the ASIC 305 and executes the programs.
- [0054] The SDRAM 302 functions as a program memory for storing the programs, or a work memory used by the CPU 301 executing the programs. It should be noted that the SDRAM 302 may be replaced by a DRAM or a SRAM.
- [0055] The flash memory 303 is a non-volatile memory, and stores a boot loader (boot program) for starting the image forming apparatus 20, or an operating system (OS). Further, the flash memory 303 functions as an application memory for storing application software (e.g., including the use management program). Further, the flash memory 303 functions as a service memory for storing software of various services (copy service, print service, facsimile service). Further, the flash memory 303 functions as a firmware memory for storing firmware, or a data memory for storing a network address, a model number, and point setting information in which the number of points is set.
- [0056] It should be noted that the flash memory 303 may be replaced by a non-volatile RAM in which a RAM and a backup circuit with battery are integrated, or other non-volatile memories including an electrically erasable programmable read-only memory (EEPROM), etc.
- [0057] The HDD 304 is a non-volatile recording medium in which data is retained regardless of ON/OFF of the power supply of the image forming apparatus 20. The HDD 304 stores programs and data other than the programs and data stored in the flash memory 303. It should be noted that the HDD 304 may be used as a firmware memory.
- [0058] The NIC 306 is an interface for communicating with the management apparatus 40 via the network N (e.g., Ethernet (registered trademark) card). Communications with the management apparatus 40 are performed via the NIC 306.

- [0059] An operation unit 307 is connected to the controller 320. The operation unit 307 includes various operation keys, a character display device of a liquid crystal display (LCD) or a CRT as a display device, and a touch panel, and is used by a user when inputting various instructions to the image forming apparatus 20.
- [0060] Further, a fax control unit 308, a USB 309, a IEEE 1394 310, a plotter engine 311, and a scanner engine 312 are connected to the controller 320 via a PCI bus 330. With the above arrangement, the image forming apparatus 20 can provide various services such as a copy service, a print service, a facsimile service, etc. The plotter engine 311 may employ an electrophotography method or an inkjet method.
- [0061] It should be noted that the configuration illustrated in the figures is just an example. The hardware configuration of the image forming apparatus 20 is not limited to the one illustrated in Fig. 4. For example, the NIC 306 may be connected to the PCI bus 330. Further, the NIC 306 may be connected to the network N via a wire, or may be wirelessly connected to the network N, for example, by using Wi-Fi (registered trademark).
- [0062] Further, the NIC 306 may be replaced by, or may be used with, a digital service unit (DSU) or a modem for connecting to a telephone network. A communication device for connecting to a mobile telephone network may be included. Further, for example, the image forming apparatus 20 may include a device used for communications using Bluetooth (registered trademark) communication standard, and connect to the network N via the device.
- [0063] <Functions of equipment system>
- [0064] Next, referring to Fig. 5, a functional configuration of the management apparatus 40, the sales server 60, and the image forming apparatus 20 will be described. Fig. 5 is an example of a functional block diagram of the management apparatus 40, the sales server 60, and the image forming apparatus 20 included in the equipment system 100. It should be noted that it is assumed that a known institution is used for the settlement institution 80.
- [0065] In the following, terms "database (DB)" and "table" are used for the sake of description convenience. It is not necessary for information in storage units 1000, 2000, 4000, and 6000 to be stored in the form of a database or a table.
- [0066] <<Sales server 60>>
- [0067] The sales server 60 includes a transmission and reception unit 61, an application accepting unit 62, a settlement request unit 63, a customer information transmission unit 64, and a storing and reading unit 69. The above units of the sales server 60 are functions or units which are realized or provided by any one of elements illustrated in Fig. 3 which is controlled by the CPU 201 which executes a sales program 6100 read from the auxiliary storage device 204 and written to the RAM 203.

- [0068] Further, the sales server 60 has a storage unit 6000 including the auxiliary storage device 204 and the RAM 203 illustrated in Fig. 3. A sales program 6100 and a customer management DB 6001 are stored in the storage unit 6000. The sales program 6100 is delivered from a dedicated program-delivery server, or written to a computer readable recording medium, which medium is delivered.
- [0069] Databases of the sales server 60 will be described.

[Table 1]

CUSTOMER ID	CUSTOMER NAME	ADDRESS	CONTACT	REPRESENTATIVE	PAYMENT HISTORY OF LAST MONTH
CS500-0001	ABC Co.	TOKYO...	0312345678 ABC@co.jp	SATOH	YES
CS500-1530	DEF Co.	SAITAMA...	0312345679 DEF@co.jp	SUZUKI	YES
CS500-7680	GHI Co.	CHIBA...	0312345680 GHI@co.jp	SAITOH	NO
⋮ ⋮	⋮ ⋮	⋮ ⋮	⋮ ⋮	⋮ ⋮	⋮ ⋮

- [0070] The storage unit 6000 includes the customer management DB 6001 which stores a customer management table of Table 1. In the customer management table, a customer ID associated with a customer name, an address, contact information (telephone number, email address), a representative, and a payment history of last month are registered. The customer ID is identification information of the customer uniquely provided by, for example, the sales server 60. The customer ID may be provided by the sales manager. Further, the payment history of last month has a record whether the last month payment has been performed. Remaining information including the customer name, the address, the contact and the representative is customer information input by, for example, an operational user via the information terminal 10 when the customer applies for a purchase of various products or a rental of various services or performs user registration.
- [0071] (Functions of sales server 60)
- [0072] Next, functions of the sales server 60 will be described. The transmission and reception unit 61 is realized by instructions from the CPU 201 illustrated in Fig. 3 and the communication unit 207 illustrated in Fig. 3, and performs data transmission and reception with the management apparatus 40, the image forming apparatus 20, and the information terminal 10 via the network N.
- [0073] The application accepting unit 62 is realized by instructions from the CPU 201 illustrated in Fig. 3, etc., transmits to the information terminal 10 a Web page for accepting an order of products and services, and accepts purchase applications or rental applications of products from the information terminal 10. Further, the application accepting unit 62 obtains settlement information (a credit card number and a name in the case of credit card settlement, account information, an address, and a name in the case of withdrawal from a bank account, and an address and a name in the case of transfer paper) and customer information necessary for settlement. As described above, the customer information includes a customer name, an address, a contact, a representative, etc. In the case where the sale is the second time or after, the customer information may be identified by the login of the operational user. The settlement request unit 63 realized by instructions from the CPU 201 illustrated in Fig. 3, etc., transmits a settlement request to the settlement institution 80. Further, the settlement request unit 63 receives from the settlement institution 80 information indicating settlement completion.
- [0074] The customer information transmission unit 64 is realized by instructions from the CPU 201 illustrated in Fig. 3, etc., and transmits customer information, etc., to the management apparatus 40. For example, in response to receiving a payment history of the last month payment, the management apparatus 40 may cause the image forming apparatus 20 to be use not-permitted.

- [0075] The storing and reading unit 69 is realized by instructions from the CPU 201 illustrated in Fig. 3 and the auxiliary storage device 204 illustrated in Fig. 3, and performs a process of storing data in the storage unit 6000 and reading the data stored in the storage unit 6000.
- [0076] <<Information terminal 10>>
- [0077] Next, the information terminal 10 will be described. The terminal 10 includes a transmission and reception unit 11, an operation accepting unit 12, and a storing and reading unit 19. The above units of the information terminal 10 are functions or units which are realized or provided by any one of elements illustrated in Fig. 3 which operates according to instructions from the CPU 201 which executes browser software 1100 read from the auxiliary storage device 204 and written to the RAM 103.
- [0078] Further, the information terminal 10 has a storage unit 1000 including an auxiliary storage device 204 and the RAM 203 illustrated in Fig. 3. The storage unit 1000 stores the browser software 1100. The browser software 1100 is delivered from the dedicated program-delivery server, or written to a computer readable recording medium, which medium is delivered.
- [0079] Functions of the information terminal 10 will be described. The transmission and reception unit 11 is realized by instructions from the CPU 201 illustrated in Fig. 3 and the communication unit 207 illustrated in Fig. 3, and performs data transmission and reception with the sales server 60, the management apparatus 40, and the image forming apparatus 20 via the network N.
- [0080] The operation accepting unit 12 is realized by instructions from the CPU 201 illustrated in Fig. 3 and the input unit 205 illustrated in Fig. 3, and accepts various operations input to the information terminal 10 by the operational user of the information terminal 10.
- [0081] The storing and reading unit 19 is realized by instructions from the CPU 201 illustrated in Fig. 3 and the auxiliary storage device 204, etc., illustrated in Fig. 3, and performs a process of storing data in the storage unit 1000 and reading the data stored in the storage unit 1000.
- [0082] <<Management apparatus 40>>
- [0083] Next, the management apparatus 40 will be described. The management apparatus 40 includes a transmission and reception unit 41, a use count management unit 42, an equipment management unit 43, an operation accepting unit 44, a fee calculation unit 45, and a storing and reading unit 49. The above units of the management apparatus 40 are functions or units which are realized or provided by any one of elements illustrated in Fig. 3 which operates according to instructions from the CPU 201 which executes a management program 4100 read from the auxiliary storage device 204 and written to the RAM 203.

[0084] Further, the management apparatus 40 has a storage unit 4000 including an auxiliary storage device 204 and the RAM 203 illustrated in Fig. 3. In the storage unit 4000, a PIN table 4001, a use count management DB 4002, an equipment registration information DB 4003, and the management program 4100 are included. The management program 4100 is delivered from the dedicated program-delivery server, or written to a computer readable recording medium, which medium is delivered.

[0085] First, databases of the management apparatus 40 will be described.

[Table 2]

	REGISTRATION NUMBER	INSTALLATION STATE OF IMAGE FORMING APPARATUS	MODEL NUMBER	CUSTOMER ID
1	T2222001	SETTING DONE	K1234-0000	CS500-0001
2	T2222002	SETTING DONE	K1234-0122	CS500-1530
3	T2222003	EQUIPMENT BEING SET	—	CS500-7680
4	T2222004	SETTING NOT DONE	—	CS550-9999
5	T2222002	SETTING NOT DONE	—	CS500-1530
⋮	⋮	⋮	⋮	⋮

[0086] The storage unit 4000 has the equipment registration information DB 4003 including an equipment management table illustrated in Table 2 (the equipment registration information DB 4003 is an example of a second storage unit). In the equipment management table, a registration number associated with an installation state of the image forming apparatus 20, a model number, and a customer ID, is registered. Therefore, the registration number is associated with the model number and the customer ID in the equipment management table. It should be noted that the model number is identification information specific to the image forming apparatus 20. The model number may be changeable, but uniqueness of the model number is guaranteed. The installation state of the image forming apparatus 20 is registered based on whether an initial notification has been transmitted to the management apparatus 40 from the image forming apparatus 20 installed in the customer environment 9. "Setting done" indicates that the initial notification has been transmitted and the image forming

apparatus 20 is permitted to be used, and "setting not done" indicates that the image forming apparatus 20 is not permitted to be used. The "setting done" indicates that the image forming apparatus 20 is in a use permitted state.

- [0087] In the following, an update of the equipment management table will be described. When a customer rents an image forming apparatus 20, an operator of the management apparatus 40 issues (performs numbering of) a registration number, a customer ID is associated with the registration number, and the customer ID with the registration number is registered. At this time, the setting state of the image forming apparatus 20 in the equipment management table is "setting not done" (refer to the fourth and fifth records in Table 2).
- [0088] When the image forming apparatus 20 transmits a PIN, a registration number, and a model number to the management apparatus 40 in the initial notification, the management apparatus 40 searches the equipment management table for the registration number, and stores the model number associated with the registration number. With the above operation, the installation state of the image forming apparatus 20 in the equipment management table becomes "setting done".
- [0089] It should be noted that it is for the sake of illustration that the installation state is "equipment being set" in the third record in Table 2, which indicates a transitional state before the equipment management table is updated after the initial notification is received by the management apparatus 40. Actually, "setting not done" may directly transition to "setting done" without going through "equipment being set".
- [0090] The registration number and the customer ID are the same in the second record and the fifth record in Table 2, which indicates that, when a customer (customer ID = CS500-1530) has rented two image forming apparatuses 20, an operator of the management apparatus 40 handled the two image forming apparatuses 20 in the same contract.
- [0091] Further, in the case where equipment is exchanged due to an error of the equipment, the same registration number may be set for a different model number. In this case, when a use amount is calculated for a set of a registration number and a model number, the customer ID is the same, and thus, the use amount can be calculated for the same customer.
- [0092] Further, in the case where an image forming apparatus 20 is used for a rental, when the customer renting the image forming apparatus 20 changes, there is a case where the same model number is set for different customer IDs (and the registration number changes). In this case, the use amount can be calculated for each customer because the use amount is calculated for a set of the registration number and the model number.

[Table 3]

REGISTRATION NUMBER	PIN
T2222004	123456789
T2222002	987654321

[0093] The storage unit 4000 stores a PIN table 4001 illustrated in Table 3. The PIN table 4001 is an example of a third storage unit. In the PIN table 4001, the registration number associated with the PIN is registered. The registration number may have low secrecy while the PIN is used only once and handled with higher secrecy. When a user, who rents the image forming apparatus 20, performs a predetermined procedure (e.g., performs a user registration procedure for registering information illustrated in Table 1), the management apparatus 40 creates and registers a PIN associated with the registration number. The PIN is transmitted to the user in an encrypted state or by registered mail, and thus, the PIN can be known only by the user. As a result, in the initial notification, the management apparatus 40 can authenticate the user by using a set of the PIN and the registration number.

[Table 4]

REGISTRATION NUMBER	MODEL NUMBER	RECEPTION TIME	NOTIFICATION TYPE	COUNTER INFORMATION
T2222001	K1234-0000	01/01/2015 12: 00	INITIAL NOTIFICATION	COLOR TOTAL: 0000150 MONO. TOTAL: 0000368
T2222001	K1234-0000	01/01/2015 17: 00	REGULAR NOTIFICATION	COLOR TOTAL: 0000155 MONO. TOTAL: 0000368
T2222001	K1234-0000	01/02/2015 17: 00	REGULAR NOTIFICATION	COLOR TOTAL: 0000160 MONO. TOTAL: 0000368
T2222001	K1234-0000	01/03/2015 17: 00	REGULAR NOTIFICATION	COLOR TOTAL: 0000200 MONO. TOTAL: 0000368
T2222002	K1234-0000	01/15/2015 15: 00	INITIAL NOTIFICATION	COLOR TOTAL: 0000200 MONO. TOTAL: 0000368
T2222002	K1234-0000	01/16/2015 11: 00	REGULAR NOTIFICATION	COLOR TOTAL: 0000200 MONO. TOTAL: 0000378
T2222002	K1234-0000	01/17/2015 11: 00	REGULAR NOTIFICATION	COLOR TOTAL: 0000200 MONO. TOTAL: 0000391
T2222002	K1234-0000	01/18/2015 11: 00	REGULAR NOTIFICATION	COLOR TOTAL: 0000200 MONO. TOTAL: 0000402
⋮	⋮	⋮	⋮	⋮
T2222002	K1234-0000	01/31/2015 11: 00	REGULAR NOTIFICATION	COLOR TOTAL: 0000200 MONO. TOTAL: 0000468
⋮	⋮	⋮	⋮	⋮
T2222003	K1234-0122	02/10/2015 12: 00	INITIAL NOTIFICATION	COLOR TOTAL: 0000000 MONO. TOTAL: 0000000
T2222003	K1234-0122	02/10/2015 17: 00	REGULAR NOTIFICATION	COLOR TOTAL: 0000005 MONO. TOTAL: 0000010
T2222003	K1234-0122	02/11/2015 17: 00	REGULAR NOTIFICATION	COLOR TOTAL: 0000010 MONO. TOTAL: 0000015
T2222003	K1234-0122	02/12/2015 17: 00	ERROR NOTIFICATION	COLOR TOTAL: 0000011 MONO. TOTAL: 0000016
T2222003	K1234-0144	02/14/2015 15: 00	INITIAL NOTIFICATION	COLOR TOTAL: 0000000 MONO. TOTAL: 0000000
T2222003	K1234-0144	02/15/2015 11: 00	REGULAR NOTIFICATION	COLOR TOTAL: 0000000 MONO. TOTAL: 0000000
T2222003	K1234-0144	02/16/2015 11: 00	REGULAR NOTIFICATION	COLOR TOTAL: 0000010 MONO. TOTAL: 0000010
T2222003	K1234-0144	02/17/2015 11: 00	REGULAR NOTIFICATION	COLOR TOTAL: 0000020 MONO. TOTAL: 0000020

[0094] The memory unit 4000 has a use count management DB 4002 including a use count

information table illustrated in Table 4. The use count management DB 4002 is an example of a first storage unit. In the use count information table, the registration number associated with the model number, reception time, a notification type (initial notification, regular notification, etc.), and the counter information is registered. The registration number, the model number, and the notification type have been described so far. The reception time is date and time information when an initial notification, a regular notification, an error notification, or a return notification is received from the image forming apparatus 20. The counter information is an accumulated number of print pages (number of pages) received from the image forming apparatus 20.

[0095] It should be noted that the "regular" notification may not be necessarily transmitted at a constant period, and may be transmitted at an irregular period. For example, in order to calculate a monthly use amount, one or more numbers of reception may be sufficient.

[0096] (Functions of management apparatus)

[0097] Next, functions of the management apparatus 40 will be described. The transmission and reception unit 41 is realized by instructions from the CPU 201 illustrated in Fig. 3 and the communication unit 207 illustrated in Fig. 3, and performs data transmission and reception with the sales server 60, the image forming apparatus 20, and the information terminal 10 via the network N.

[0098] The use count management unit 42 is realized by instructions from the CPU 201 illustrated in Fig. 3, and registers a record in the use count information table in the case where the initial notification, the regular notification, the error notification, the return notification, etc., are received from the image forming apparatus 20.

[0099] The equipment management unit 43 is realized by instructions from the CPU 201 illustrated in Fig. 3, and performs registration and updating of a record in the equipment management table. Specifically, the equipment management unit 43 registers a record in the equipment management table according to an operation of an operator of the management apparatus 40. It is assumed that the operator provides the registration number for the sake of description convenience, but the equipment management unit 43 may automatically provide the registration number. Further, when the initial notification is received from the image forming apparatus 20, the equipment management unit 43 registers the model number, and sets the "setting done" in the "installation state of the image forming apparatus". When the return notification is received, the equipment management unit 43 sets the "setting not done" in the "installation state of the image forming apparatus".

[0100] The operation accepting unit 44 is realized by instructions from the CPU 201 and the input unit 205, etc., illustrated in Fig. 3, and accepts various operations input by the operator who operates the management apparatus 40.

- [0101] The fee calculation unit 45 is realized by instructions from the CPU 201 illustrated in Fig. 3, and calculates a use amount and a fee of the equipment by referring to the use count information table stored in the use count management DB 4002.
- [0102] The storing and reading unit 49 is realized by instructions from the CPU 201 illustrated in Fig. 3 and the auxiliary storage device 204, etc., illustrated in Fig. 3, and performs a process of storing data in the storage unit 4000 and reading the data stored in the storage unit 4000.
- [0103] <<Image forming apparatus>>
- [0104] Next, the image forming apparatus 20 will be described. The image forming apparatus 20 includes a transmission and reception unit 21, a registration state confirmation unit 22, a use count recording unit 23, a use amount notification unit 24, a use restriction unit 25, an equipment error management unit 26, and a storing and reading unit 29. The above units of the image forming apparatus 20 are functions or units which are realized or provided by any one of elements illustrated in Fig. 4 which operates according to instructions from the CPU 301 which executes a use management program 2100 read from a flash memory 303 and written to a SDRAM 302.
- [0105] Further, the image forming apparatus 20 has a storage unit 2000 including the flash memory 303 and the HDD 304 illustrated in Fig. 4. The storage unit 2000 stores a registration number 2001, a registration state confirmation done 2002, a use permission 2003, a model number 2004, a use count information DB 2005, and a use management program 2100. The use management program 2100 is delivered from the dedicated program-delivery server, or written to a computer readable recording medium, which medium is delivered.
- [0106] Further, the registration number 2001 is stored when, for example, it is input by a user. The registration state confirmation done 2002 is stored when the image forming apparatus 20 receives a registration state confirmation response (response to the initial notification) from the management apparatus 40. The use permission 2003 is stored when the image forming apparatus 20 receives the registration state confirmation response or a use state response from the management apparatus 40.

[Table 5]

TRANSMISSION DATE AND TIME	A4 COLOR	A4 MONO.	A3 COLOR	A3 MONO.
03/17/2015 12:00	00001500	00000368	00000250	00000800
03/18/2015 12:00	00001600	00000380	00000251	00000800
03/19/2015 12:00	00001700	00000390	00000252	00000802
03/20/2015 12:00	00001750	00000395	00000253	00000803

- [0107] The storage unit 2000 has the use count information DB 2005 including a use count information table illustrated in Table 5. In the use count information table, accumulated numbers of print pages (counter information) for several sets of paper size and print color, associated with transmission date and time are stored. The transmission date and time is date and time when the counter information is transmitted by the image forming apparatus 40 to the management apparatus 40 (actually transmitted to the management apparatus 40).
- [0108] (Functions of image forming apparatus)
- [0109] Next, functions of the image forming apparatus 20 will be described. The transmission and reception unit 21 is realized by instructions from the CPU 301 illustrated in Fig. 4 and a NIC 306 illustrated in Fig. 4, and performs data transmission and reception with the management apparatus 40, the sales server 60, and the information terminal 10 via the network N.
- [0110] The registration state confirmation unit 22 is realized by instructions from the CPU 301, an operation unit 307, etc., illustrated in Fig. 4, and transmits the initial notification (registration state confirmation request) to the management apparatus 40. The registration state confirmation request corresponds to the initial notification. In the case where a registration state confirmation response, indicating that the image forming apparatus 20 has been registered by the management apparatus 40, is received in response to the transmission of the registration state confirmation request, the registration state confirmation unit 22 displays the confirmation result on the operation unit 307. Further, the registration state confirmation unit 22 stores the registration state confirmation done 2002 in the storage unit 2000.

- [0111] The use count recording unit 23 is realized by instructions from the CPU 301, a plotter engine 311, etc., illustrated in Fig. 4, calculates and records the number of print pages for each set of the paper size and the print color as counter information accumulated up to now in the use count information table.
- [0112] The use amount notification unit 24 realized by instructions from the CPU 301 illustrated in Fig. 4, etc., and transmits a regular notification regularly or at a predetermined timing to the management apparatus 40 via the transmission and reception unit 21. It should be noted that the transmission of the regular notification is performed in the case where the registration state confirmation done 2002 is stored in the storage unit 2000.
- [0113] The use restriction unit 25 is realized by instructions from the CPU 301, the operation unit 307, the NIC 306, etc., illustrated in Fig. 4, locks at least a part of the functions of the image forming apparatus 20 in the case where the use permission 2003 is not stored in the storage unit 2000, and causes the user to be unable to use the image forming apparatus 20. It should be noted that the use restriction unit 25 locks at least a part of the functions of the image forming apparatus 20 also in the case where a response indicating use unavailability is received from the management apparatus 40 (e.g., because of an insufficient balance). Accepting no operation by the operation unit 307, for example, can be listed as a method for the use restriction. Further, as a method for the use restriction, there is a method in which the image forming apparatus 20 does not print the print data normally created by a PC, etc., by using a printer driver and transmitted to the image forming apparatus 20 via the network N.
- [0114] The equipment error management unit 26 is realized by instructions from the CPU 301 illustrated in Fig. 4, etc., and transmits an error notification to the management apparatus 40 when an error of the image forming apparatus 20 is detected. The error notification may include the registration number, the model number, and the counter information in addition to the error contents.
- [0115] The storing and reading unit 29 is realized by instructions from the CPU 301 illustrated in Fig. 4 and the HDD 304, the SDRAM 302, etc., illustrated in Fig. 4, and performs a process of storing data in the storage unit 2000 and reading the data stored in the storage unit 2000.
- [0116] <Operational procedure>
- [0117] Next, an operational procedure of the equipment system 100 will be described. It should be noted that it is assumed that an initial settlement for renting the image forming apparatus 20 has been completed.
- [0118] <<Transmission procedure of initial notification and regular notification>>
- [0119] Fig. 6 is an example of a sequence diagram illustrating a procedure of the image forming apparatus 20 of transmitting an initial notification and a regular notification to

the management apparatus 40.

[0120] S1: First, an operator inputs (performs numbering of) a registration number for a customer ID of a customer with whom a contract is established.

[0121] S2: In response to the input by the operator, the equipment management unit 43 of the management apparatus 40 associates the registration number with the customer ID, and registers the registration number with the customer ID in the equipment management table. At this time, the "installation state of the image forming apparatus" in the equipment management table is "setting not done".

[0122] It should be noted that the registration number is transmitted to the image forming apparatus 20 or the user. Specifically, the registration number may be transmitted in any manner. For example, the operator of the management apparatus 40 transmits the registration number to the user via email, telephone, or FAX. A person in charge of the shipping source may set the registration number in the image forming apparatus 20 before the person in charge arranges shipping of the image forming apparatus 20. A delivery person may keep the registration number provided by the management apparatus 40, and set the registration number in the image forming apparatus 20 when the delivery person installs the image forming apparatus 20 at the customer's site.

[0123] S3: Further, an operational user operates an information terminal 10 and performs a predetermined procedure (e.g., user registration). With the above operation, a customer ID of the operational user is specified. Further, the operational user may input the registration number registered in step S2, and the customer ID and the registration number may be identified.

[0124] S4: the equipment management unit 43 of the management apparatus 40 searches the equipment management table for the identified customer ID of the operational user, and extracts the registration number that is associated with the customer ID in step S2. Further, the equipment management unit 43 creates a PIN, associates the PIN with the extracted registration number, and registers in the PIN table 4001. It should be noted that, in the case where multiple registration numbers are associated with the customer ID, the PIN is created and registered for each registration number.

[0125] S5: The transmission and reception unit 41 of the management apparatus 40 transmits a set of the registration number and the PIN to the information terminal 10.

[0126] Next, when the settlement is completed (or, before the settlement is completed), the image forming apparatus 20 is delivered to the customer and installed at the customer's site. Alternatively, the image forming apparatus 20 may be replaced due to an error, and a new image forming apparatus 20 may be installed.

[0127] S6: The operational user cannot use the image forming apparatus 20 until an initial notification is completed. Therefore, when the operational user uses the image forming apparatus 20 for the first time, the operational user performs an operation of the initial

notification. Therefore, the operational user inputs the PIN and the registration number. The registration state confirmation unit 22 transmits the PIN, the registration number, the model number, and the counter information as a registration state confirmation request to the management apparatus 40, which is an initial notification. It should be noted that the registration state confirmation request may be transmitted when triggered by the operation of the operational user, or may be transmitted when it is detected that the registration state confirmation done 2002 is not stored in the storage unit 2000.

- [0128] S7: When the transmission and reception unit 41 of the management apparatus 40 receives the registration state confirmation request, the equipment management unit 43 performs a process for transmitting a registration state confirmation response. The process will be described later by referring to Fig. 7. In an embodiment, it is assumed that the registration state confirmation response can be transmitted. With the above operation, the "installation state of the image forming apparatus" in the equipment management table is updated from "setting not done" to "setting done".
- [0129] S8: The transmission and reception 41 of the management apparatus 40 transmits the registration state confirmation response (an example of use permitted information) to the image forming apparatus 20.
- [0130] S9: The storing and reading unit 29 of the image forming apparatus 20 records the registration state confirmation done 2002 and the use permission 2003 in the storage unit 2000. With the above operation, the operational user is permitted to use the image forming apparatus 20
- [0131] S10: When the image forming apparatus 20 registers itself in the management apparatus 40 (when the registration state confirmation response is received), the use amount notification unit 24 of the image forming apparatus 20 performs a regular notification. The regular notification includes the registration number, the model number, and the counter information. A use amount for each customer can be calculated because the registration number and the model number are transmitted. It should be noted that the regular transmission is performed at predetermined time of the day (in the case where the power supply of the image forming apparatus 20 is not ON at the predetermined time, after the power supply has been ON), or periodically at a certain transmission period. The transmission period may be once in two days, once a week, once a month, etc. Further, the transmission may be performed twice or more a day. The transmission is not limited to periodic transmission. The transmission may be performed when load of the image forming apparatus 20 is decreased.
- [0132] S11: When the transmission and reception unit 41 of the management apparatus 40 receives the regular notification, the use count management unit 42 registers a record in the use count information table of the user count management DB 4002. The use

count management unit 42 mainly creates reception time.

[0133] S12: The transmission and reception 41 of the management apparatus 40 transmits a use state response to the image forming apparatus 20. The use state response is a response for transmitting a use permission or a use no-permission. For example, there is a case where the use no-permission is transmitted when the customer does not pay the fee. In an embodiment, it is assumed that the use permission is transmitted.

[0134] S13: The transmission and reception 21 of the management apparatus 20 receives the use state response. With the above operation, the storing and reading unit 29 of the image forming apparatus 20 stores the use permission 2003 in the storage unit 2000. In the case where the use no-permission is received, the storing and reading unit 29 deletes the user permission 2003 in the storage unit 2000.

[0135] <<Update of equipment management table in response to initial notification>>

[0136] Fig. 7 is an example of a flowchart illustrating a process of transmitting a registration state confirmation response. The process of Fig. 7 corresponds to the process of step S7 in Fig. 6. Therefore, a set of the registration number and the customer ID is registered in the equipment management table, and the installation state is "setting not done".

[0137] S7-1: The equipment management unit 43 of the management apparatus 40 determines whether the initial notification (the PIN, the registration number, the model number, the counter information) is received.

[0138] S7-2: When the initial notification is received (YES in S7-1), the equipment management unit 43 determines whether the set of the PIN and the registration number is registered in the PIN table 4001. In the case where the set of the PIN and the registration number is registered (YES in S7-2), it can be determined that the procedure for the operational user to use the image forming apparatus 20 is completed, and that the operational user is a proper user based on the PIN. With respect to determining whether the operational user is a right user, the registration number alone may not be sufficient because it is possible for the operational user to input the right registration number analogized from the registration number of another image forming apparatus 20, or to find the right registration number by inputting all possible numbers. On the other hand, the PIN is created and concealed every time when an initial notification is received. Therefore, the PIN can be used for authentication of a person who has purchased (or rented) the image forming apparatus 20. In the case where the same set of the PIN and the registration number does not exist in the PIN table 4001 as a result of a predetermined number of determinations in step S7-2, the equipment management unit 43 discards the PIN in the PIN table 4001, and issues another PIN.

[0139] It should be noted that the operational user may be authenticated by determining whether the PIN alone is registered in the PIN table 4001 because the PIN has high

secrecy. In this case, it is not necessary for the registration number to be associated with the PIN in the PIN table 4001.

- [0140] S7-3: In the case where the set of the PIN and the registration number is registered in the PIN table 4001, the equipment management unit 43 registers the model number in the equipment table by associating the model number with the registration number transmitted with the PIN. With the above operation, the registration number can be tied with the model number. There is a case where it is difficult to control which model number is shipped to which customer at the time of shipping depending on a distribution situation. Further, even if it is possible to control which model number is shipped to which customer, there is a possibility of increased cost. In an embodiment, the registration number is tied with the model number after the installation at the customer's site. As a result, work load of shipping can be decreased.
- [0141] S7-4: the equipment management unit 43 updates the installation state of the equipment management table to "setting done". As described above, the equipment management table can be updated.
- [0142] <<Calculation of use amount>>
- [0143] The fee calculation unit 45 of the management apparatus 40 calculates a monthly use amount for each customer. In an embodiment, the use amount is calculated by using the above-described set of the registration number and the model number. It should be noted that an example of aggregating monthly counter information will be described in the following.
- [0144] Fig. 8 is an example of a flowchart illustrating a procedure of calculating counter information. The procedure of Fig. 8 is repeatedly performed at a preset calculation period. The calculation period is a period for which usage fee is calculated, and which may be set for each customer. The calculation period may not be fixed. The operator of the management apparatus 40 sets the calculation period beforehand according to the customer's request or the circumstances of the management apparatus 40. For example, the calculation period may be set as a monthly period, or set with respect to a cutoff date (20th day, 25th day, etc., of the month). If it is a monthly period, then the process of Fig. 8 is started at or after 12 PM of the last day of the month. It should be noted that the calculation period may be automatically set by the management apparatus 40 (e.g., every month, from the first day to the last day).
- [0145] The fee calculation unit 45 take out a customer ID of the use amount calculation target (S10). A list of the customer IDs of the use amount calculation target is created beforehand. The fee calculation unit 45 may take out customer IDs from the list in order.
- [0146] Next, the fee calculation unit 45 extracts a set of the registration number and the model number, tied with the customer ID taken out in step S10 (S20). There may be a

case where a single set is extracted, or a case where several sets are extracted.

[0147] Next, the fee calculation unit 45 selects a set of the registration number and the model number from all the sets extracted in step S20 (S30).

[0148] Next, the fee calculation unit 45 extracts the counter information, whose reception time is the earliest in the predetermined calculation period, from the use count information table corresponding to the set of the registration number and the model number selected in step S30 (S40). For example, if the calculation period is from July 1 to July 31, then the counter information, whose reception time is the earliest after July 1, is extracted.

[0149] Next, the fee calculation unit 45 extracts the counter information, the reception time of which is the latest in the predetermined calculation period, from the use count information table corresponding to the set of the registration number and the model number selected in step S30 (S50). For example, if the calculation period is from July 1 to July 31, then the counter information, whose reception time is equal to or later than July 1, and closest to July 31, is extracted.

[0150] The fee calculation unit 45 calculates a difference between the counter information in step S40 and the counter information in step S50 (S60). The difference is a use amount of the image forming apparatus 20 for the customer with respect to the set of the registration number and the model number. The counter information is extracted from the use count information table with respect to the set of the registration number and the model number, and thus, the use amount can be calculated for each customer even when the customer of the image forming apparatus is changed in the middle of the calculation period.

[0151] The fee calculation unit 45 determines whether all of the sets of the registration number and the model number, extracted in step S20, have been selected (S70). In the case where the determination is NO in step S70, the process repeats from step S30.

[0152] In the case where the determination is YES in step S70, it is determined whether the usage fees with respect to all of the customer IDs of the list in step S10 are calculated (S80). In the case where the determination is NO in step S80, the process repeats from step S20.

[0153] In the case where the determination is YES in step S80, the process of Fig. 8 ends.

[0154] <<Modified example of use amount calculation>>

[0155] Fig. 9 is a flowchart illustrating a modified example of a procedure of calculating counter information. Different processes between Fig. 9 and Fig. 8 will be mainly described. The process of step S40 is different between Fig. 9 and Fig. 8.

[0156] In step S40, the fee calculation unit 45 takes out the counter information, whose reception time is the earliest after the end of the previous calculation period, from the use count information table (S40). As illustrated in Table 6, the fee calculation unit 45

records the actual calculation period (hereinafter, in order to distinguish it from the calculation period, referred to as "use amount recorded period") every time the fee calculation unit 45 calculates the use amount. For example, in the case where the calculation period is from July 1 to July 31, and the reception times of the counter information used for calculating the use amount are from July 2 to July 25, the use amount recorded period is from July 2 to July 25.

[0157] Therefore, in step S40 of Fig. 9, the fee calculation unit 45 takes out the counter information, whose reception time is the earliest from after July 26, from the use count information table. This method is advantageous in that, even if there is counter information which is not transmitted by the image forming apparatus 20 in the regular notification due to a communication error, etc., and which is not recorded in the use amount, the counter information can be recorded in the use amount after communications are recovered. For example, it is assumed that the image forming apparatus 20 has been unable to transmit to the management apparatus 40 the use amount from June 1 to June 30. In this case, when calculating the use amount from July 1 to July 31, the management apparatus 40 can collectively calculate the use amount from June 1 to June 30 and the use amount from July 1 to July 31.

[0158] (Calculation example of use amount)

[Table 6]

	CUSTOMER ID	REGISTRATION NUMBER	MODEL NUMBER	COUNTER INFORMATION DIFFERENCE	USE AMOUNT RECORDED PERIOD
1	CS500-0001	T2222001	K1234-0000	COLOR: 50 MONO.: 0	01/01/2015 - 01/03/2015
2	CS500-1530	T2222002	K1234-0000	COLOR: 0 MONO.: 34	01/15/2015 - 01/31/2015
3	CS500-7680	T2222003	K1234-0122	COLOR: 11 MONO.: 16	02/10/2015 - 02/12/2015
4	CS500-7680	T2222003	K1234-0144	COLOR: 20 MONO.: 20	02/14/2015 - 02/17/2015

[0159] Table 6 illustrates an example of a calculation result of use amount calculated by the fee calculation unit 45. The calculation result of use amount includes a customer ID, a registration number, a model number, a counter information difference, and a use amount recorded period. The counter information difference indicates the use amount in the calculation period.

[0160] In the first record and the second record, the model number is the same while the

customer ID and the registration number are different. According to the use amount recorded period, it is understood that the customer of the same image forming apparatus 20 is changed in the middle of the calculation period, and in this case, the use amount can be also calculated for each customer.

[0161] Further, in the third record and the fourth record, the customer ID and the registration number are the same, but the model number is different, which indicates that the same customer has rented multiple image forming apparatuses 20. In this case, the use amount can be calculated for each of the image forming apparatuses 20 because the model number is different even if the registration number is the same. Use amounts are calculated for the same customer. The customer can manage the use amount for each of the image forming apparatuses 20.

[0162] It should be noted that the fee calculation unit 45 calculates the billing fee of the customer by multiplying the counter information difference in Table 6 with a per-counter billing fee. It should be noted that the per-counter billing fee is stored in a table in which the per-counter billing fee is associated with the customer ID, the registration number, and the model number. With the above operation, it is possible to provide a billing for each customer, a billing for each registration number, or a billing for each model number (type of image forming apparatus).

[0163] <Process of stopping the use of the image forming apparatus>

[0164] Next, referring to Figs. 10A and 10B, a process of stopping the use of the image forming apparatus 20 will be described. Figs. 10A and 10B are examples of a sequence diagram illustrating a process of stopping the use of the image forming apparatus 20. There may be a case where the rental period of a contract is indefinite, but in general a contract is terminable. For example, there may be a case where the contract is terminated at the end of July, but, if the image forming apparatus 20 is kept installed in and after August at the customer's site, it is possible that the customer mistakenly uses the image forming apparatus 20. In this case, it is possible that an extra use amount is calculated. Therefore, when the contract is terminated, the management apparatus 40 or the operational user stops the use of the image forming apparatus 20. Further, with the above operation, the operational user cannot use the image forming apparatus 20 after expiration of the contract period (an example of a use permitted period), and it is possible to fix the final counter information to be recorded.

[0165] Fig. 10A illustrates a management-apparatus-driven process of stopping the use of the image forming apparatus 20.

[0166] S1: The operator of the management apparatus 40 inputs the contract termination to the management apparatus 40 by specifying the registration number. The management apparatus 40 stores the specified registration number for which the contract termination is input. Alternatively, in the case where the contract period is defined and

stored in the management apparatus 40, the operator may not need to input the contract termination.

- [0167] It should be noted that, other than the case of expiration of the contract period, the operator may set stopping the use for all registration numbers of a customer whose payment track record of the last month is "NO" in the customer management table of Table 1.
- [0168] S2: The use amount notification unit 24 of the image forming apparatus 20 periodically transmits the regular notification to the management apparatus 40.
- [0169] S3: The use count management unit 42 of the management apparatus 40 registers a record in the use count information table. Further, the equipment management unit 43 determines whether the contract termination is specified for the registration number, whether the registration number is a stopping-the-use target, and whether the reception time is after the expiration date of the contract period.
- [0170] S4: In the case where at least one of the determinations in step S3 is YES, the equipment management unit 43 of the management apparatus 40 transmits a use state response (printing not permitted) to the image forming apparatus 20. Further, the installation state of the equipment management table is updated to "setting not done".
- [0171] S5: The use restriction unit 25 of the image forming apparatus 20 removes the use permission 2003 and the registration state confirmation done 2002 from the storage unit 2000 in response to the use state response (printing not permitted). With the above operation, the subsequent printing operation is not permitted.
- [0172] Fig. 10B illustrates an operational-user-driven process of stopping the use of the image forming apparatus 20.
- [0173] S1: When the operational user recognizes the expiration of the contract period, etc., the operational user performs an operation for returning the image forming apparatus 20 in order to stop the use.
- [0174] S2: The use restriction unit 25 of the image forming apparatus 20 transmits the return notification to the management apparatus 40. The return notification includes the registration number, the model number, and the counter information.
- [0175] S3: The use count management unit 42 of the management apparatus 40 registers a record in the use count information table. Further, the equipment management unit 43 updates the installation state of the equipment management table to "setting not done".
- [0176] S4: the equipment management unit 43 of the management apparatus 40 transmits a return notification response (printing not permitted) to the image forming apparatus 20.
- [0177] S5: The use restriction unit 25 of the image forming apparatus 20 removes the use permission 2003 and the registration state confirmation done 2002 from the storage unit 2000 in response to the use state response (printing not permitted). With the above operation, the subsequent printing operation is not permitted.

- [0178] With the process described above, the final counter information to be recorded can be fixed.
- [0179] In the equipment system 100 according to an embodiment, the registration number is provided for the contract, and the use amount is calculated with respect to the set of the registration number and the model number. As a result, even if the same image forming apparatus 20 is rented by different customers, the counter information can be aggregated for each customer.
- [0180] (Embodiment 2)
- [0181] In an embodiment 2, an equipment system 100, in which it is not necessary for the image forming apparatus 20 to transmit the registration number in the regular notification, will be described.
- [0182] As described in the embodiment 1, the registration number is associated with the model number, and registered in the equipment management table according to the initial notification. Therefore, in the case where the image forming apparatus 20 transmits the regular notification, it is not necessary to transmit the registration number.
- [0183] It should be noted that, in the present specification, elements with the same reference numeral perform the same function, and thus, there may be a case where the redundant description of which is omitted, or only the difference of which is described.
- [0184] Fig. 11 is an example of a sequence diagram illustrating a procedure of the image forming apparatus 20 of transmitting an initial notification and a regular notification to the management apparatus 40. A difference between Fig. 11 and Fig. 6 will be mainly described. The process of step S10 is different between Fig. 11 and Fig. 6.
- [0185] S10: When the image forming apparatus 20 registers itself in the management apparatus 40 (when the registration state confirmation response is received), the use amount notification unit 24 of the image forming apparatus 20 performs a regular notification. The regular notification includes the model number and the counter information, but does not include the registration number.
- [0186] Fig. 12 is an example of a flowchart illustrating a procedure of the use count management unit 42 of registering a record in the use count information table based on the regular notification.
- [0187] The use count management unit 42 reads in the equipment management table the registration number, which is tied to the model number transmitted in the regular notification, and the installation state of which is "setting done" (S10). In other words, even if a plurality of the same model numbers are registered in the equipment management table, there is only one model number whose installation state is "setting done". Therefore, a single registration number can be identified.
- [0188] Further, the use count management unit 42 associates the registration number

identified in step S10 with the model number obtained from the regular notification, and registers the registration number with the model number in the use count information table (S20).

[0189] With the process described above, a set of the registration number and the model number can be registered in the use count information table even if the image forming apparatus 20 does not transmit the registration number in the regular notification. Therefore, similar to the embodiment 1, even if the same image forming apparatus 20 is rented by different customers in the middle of the calculation period, the counter information can be aggregated for each customer.

[0190] (Embodiment 3)

[0191] In an embodiment 3, an equipment system, in which it is not necessary for the image forming apparatus 20 to transmit the registration number in none of the initial notification and the regular notification, will be described.

[0192] Fig. 13 is an example of a sequence diagram illustrating a procedure of the image forming apparatus 20 of transmitting an initial notification and a regular notification to the management apparatus 40. A difference between Fig. 13 and Fig. 6 will be mainly described. The processes of step S6 and step S10 in Fig. 13 are different from Fig. 6. The process of steps S10 has been described in the embodiment 2.

[0193] S6: The registration state confirmation unit 22 transmits the PIN, the model number, and the counter information as a registration state confirmation request to the management apparatus 40. In other words, the registration state confirmation unit 22 does not transmit the registration number. The above registration state confirmation request is an initial notification.

[0194] Fig. 14 is an example of a flowchart illustrating a process of updating an equipment management table in response to the initial notification. It should be noted that a difference between Fig. 14 and Fig. 7 will be mainly described.

[0195] S7-1: The equipment management unit 43 of the management apparatus 40 determines whether the initial notification (the PIN, the model number, and the counter information) is received.

[0196] S7-2: When the initial notification is received, the equipment management unit 43 determines whether the PIN has been registered in the PIN table 4001. Different from the embodiment 1, the registration number is not transmitted in the embodiment 3. However, the PIN is created and concealed for every initial notification. Therefore, a person who has purchased (or rented) the image forming apparatus 20 can be authenticated by using the PIN alone.

[0197] S7-3: In the case where the PIN has been registered in the PIN table 4001, the equipment management unit 43 reads from the PIN table 4001 the registration number associated with the PIN.

- [0198] S7-4: Next, the equipment management unit 43 associates the model number received in step S7-1 with the registration number read in step S7-3, and registers the model number with the registration number in the equipment management table. With the above operation, the registration number can be tied with the model number.
- [0199] S7-5: The equipment management unit 43 updates the installation state of the equipment management table to "setting done". As described above, the equipment management table can be updated.
- [0200] With the process described above, a set of the registration number and the model number can be registered in the use count information table even if the image forming apparatus 20 does not transmit the registration number in the initial notification nor in the regular notification. Therefore, similar to the embodiment 1, even if the same image forming apparatus 20 is rented by different customers in the middle of the calculation period, the counter information can be aggregated for each customer.
- [0201] <Other application>
- [0202] As described above, preferable embodiments have been described. The present disclosure is not limited to the above-described embodiments. Various modifications and replacements may be possible in a range without departing from the spirit of the present disclosure.
- [0203] For example, Fig. 5 is an example of a functional block diagram of the management apparatus 40, the image forming apparatus 20, the sales server 60, and the information terminal 10 in which functions are divided according to main functions in order to facilitate understanding of processes performed by the management apparatus 40, the image forming apparatus 20, the sales server 60, and the information terminal 10. The dividing method of the processes and names of the functions are not intended to limit the present disclosure. The processes of the management apparatus 40, the image forming apparatus 20, the sales server 60, and the information terminal 10 may be further divided into smaller process units according to the content of the processes. Further, a process unit may be divided into further processes.
- [0204] Further, one or more of the databases in the storage units 2000, 4000, and 6000 illustrated in Fig. 5 may exist in a network.
- [0205] Further, multiple management apparatuses 40 may be included in the equipment system 100, and the functions of the management apparatus 40 may be distributed in multiple servers.
- [0206] Further, the image forming apparatus 20 is used as an example of an apparatus, which is sold to (rented by) a customer, and the use amount of which is calculated and used for usage-based billing in an embodiment, but the apparatus is not limited to the image forming apparatus 20. For example, the present disclosure may be applied to a PC, a wearable computer, application software, a video conference terminal, an electric

white board, a projector, a car-navigation terminal, a camera, a game machine, medical equipment, agricultural equipment such as a tiller, an automobile, etc., to which fee is billed according to use time.

[0207] Further, in an embodiment, the image forming apparatus 20 may transmit to the management apparatus 40 a customer ID (an example of the second identification information) instead of the registration number in the regular notification. The management apparatus 40 can identify a customer from the customer ID, and perform the aggregation. There is a case where it is possible to substitute the second identification information with another identification information as long as the other identification information is changed every time the user of the image forming apparatus 20 is changed.

[0208] The transmission and reception unit 21 is an example of a transmission unit, the transmission and reception unit 41 is an example of a reception unit, the equipment management apparatus 43 is an example of an obtaining unit, the use count management unit 42 is an example of a use amount information recording unit, the fee calculation unit 45 is an example of an aggregation unit.

[0209] The present application is based on and claims the benefit of priority of Japanese Priority Application No. 2015-131274 filed on June 30, 2015, and Japanese Priority Application No. 2016-090329 filed on April 28, 2016, the entire contents of which are hereby incorporated by reference.

Reference Signs List

- [0210] 10 information terminal
- 20 image forming apparatus
- 22 registration state confirmation unit
- 23 use count recording unit
- 24 use amount notification unit
- 40 management apparatus
- 42 use count management unit
- 43 equipment management unit
- 60 sales server
- 80 settlement institution
- 100 equipment system

Citation List

Patent Literature

- [0211] [PTL 1] Japanese Laid-Open Patent Application No. 2004-151703

Claims

- [Claim 1] An information processing system comprising: a first information processing apparatus and a second information processing apparatus, capable of communicating with each other via a network, wherein
- the second information processing apparatus includes
- a transmission unit configured to transmit use amount information of the second information processing apparatus and first identification information of the second information processing apparatus, and
- the first information processing apparatus includes
- a reception unit configured to receive the use amount information and the first identification from the second information processing apparatus,
- an obtaining unit configured to obtain second identification information of the second information processing apparatus from the second information processing apparatus, or obtain the second identification information based on the first identification information received by the reception unit,
- a use amount information recording unit configured to associate the use amount information with the first identification information and the second identification information and store the use amount information with the first identification information and the second identification information in a first storage unit, and
- an aggregation unit configured to aggregate the use amount information for each set of the first identification information and the second identification information,
- wherein in the case where the reception unit receives the first identification information together with a use permission request from the second information processing apparatus,
- the obtaining unit associates the second identification information registered beforehand in a second storage unit with the first identification information received by the reception unit together with the use permission request, and with a use permitted state, stores the second identification information with the first identification information and the use permitted state in the second storage unit, and transmits use permitted information to the second information processing apparatus.
- [Claim 2] The information processing system according to claim 1, wherein the first identification information is used for uniquely identifying the second information processing apparatus, and the second identification information is changed every time a user of the second information processing apparatus is changed.
- [Claim 3] The information processing system according to claim 1 or 2, wherein
- the use amount information recording unit associates date and time information with the use amount information, the first identification information, and the second identification information, and stores the date and time information with the use amount information, the first identification information, and the second identification information in the first storage unit, and
- the aggregation unit calculates a difference between the use amount information of the earliest date and time information in a preset aggregation period and the use amount information of the latest date and time information in the aggregation period.

- [Claim 4] The information processing system according to claim 1 or 2, wherein the use amount information recording unit associates date and time information with the use amount information, the first identification information, and the second identification information, and stores the date and time information with the use amount information, the first identification information, and the second identification information in the first storage unit, and the aggregation unit records a period in which the use amount information is aggregated, and calculates a difference between the use amount information of the earliest date and time information after the period and the use amount information of the latest date and time information after the period.
- [Claim 5] The information processing system according to claim 1, wherein in the case where the reception unit receives the first identification information and third identification information together with the use permission request from the second information processing apparatus, the obtaining unit, in the case where the third identification information is stored in third storage unit, associates the second identification information with the first identification information and stores the second identification information with the first identification information in the second storage unit, and transmits the use permitted information to the second information processing apparatus.
- [Claim 6] The information processing system according to any one of claims 1 through 5, wherein the reception unit does not receive the second identification information when the reception unit receives the use amount information and the first identification information from the second information processing apparatus, the obtaining unit reads from the second storage unit the second identification information, which is associated with the first identification information received by the reception unit, for which the use permitted state is registered, and the use amount information recording unit associates the use amount information and the first identification information with the second identification information read from the second storage unit by the obtaining unit, and stores the use amount information and the first identification information with the second identification information in the first storage unit.
- [Claim 7] The information processing system according to any one of claims 1 through 6, wherein in the case where a use permitted period of the second information processing apparatus has expired, the obtaining unit removes from the second storage unit the use permitted state which is associated with the first identification information and the second identification information in the second storage unit, and transmits use not-permitted information to the first information processing apparatus.
- [Claim 8] The information processing system according to any one of claims 1 through 7, wherein the transmission unit of the second information processing apparatus transmits a use stoppage request and the first identification information, and in the case where the reception unit receives the use stoppage request and the first identification information, the obtaining unit removes the use permitted state associated with

the first identification information received by the reception unit, and transmits use not-permitted information to the first information processing apparatus.

[Claim 9]

An information processing apparatus capable of communicating with a second information processing apparatus via a network, the information processing apparatus comprising:
 a reception unit configured to receive use amount information of the second information processing apparatus and first identification information of the second information processing apparatus from the second information processing apparatus;
 an obtaining unit configured to obtain the second identification information of the second information processing apparatus from the second information processing apparatus, or obtain the second identification information associated with the first identification information received by the reception unit;
 a use amount information recording unit configured to associate the use amount information with the first identification information and the second identification information and store the use amount information with the first identification information and the second identification information in first storage unit; and
 an aggregation unit configured to aggregate the use amount information for each set of the first identification information and the second identification information,
 wherein in the case where the reception unit receives the first identification information together with a use permission request from the second information processing apparatus,
 the obtaining unit is configured to associate the second identification information registered beforehand in a second storage unit with the first identification information received by the reception unit together with the use permission request, and with a use permitted state, to store the second identification information with the first identification information and the use permitted state in the second storage unit, and to transmit use permitted information to the second information processing apparatus.

[Claim 10]

An information processing apparatus capable of communicating with a second information processing apparatus via a network, the second information processing apparatus comprising:
 a reception unit configured to receive use amount information of the second information processing apparatus and first identification information of the second information processing apparatus from the second information processing apparatus;
 an obtaining unit configured to obtain second identification information of the second information processing apparatus from the second information processing apparatus, or obtain the second identification information based on the first identification information received by the reception unit;
 a use amount information recording unit configured to associate the use amount information with the first identification information and the second identification information and store the use amount information with the first identification information and the second identification information in a first storage unit; and
 an aggregation unit configured to aggregate the use amount information for each set of the first identification information and the second identification information, wherein
 the information processing apparatus includes a transmission unit configured to transmit the

use amount information of the information processing apparatus and the first identification information of the information processing apparatus,
 wherein in the case where the reception unit receives the first identification information together with a use permission request from the second information processing apparatus,
 the obtaining unit is configured to associate the second identification information registered beforehand in a second storage unit with the first identification information received by the reception unit together with the use permission request, and with a use permitted state, to store the second identification information with the first identification information and the use permitted state in the second storage unit, and to transmit use permitted information to the second information processing apparatus.

[Claim 11] An information processing method of an information processing system in which a first information processing apparatus and a second information processing apparatus are capable of communicating with each other, the information processing method comprising:
 transmitting, by the second information processing apparatus, use amount information of the second information processing apparatus and first identification information of the second information processing apparatus;
 receiving, by the first information processing apparatus, the use amount information of the second information processing apparatus and the first identification information of the second information processing apparatus from the second information processing apparatus;
 obtaining, by the first information processing apparatus, the second identification information of the second information processing apparatus from the second information processing apparatus, or obtaining the second identification information based on the first identification information received in the receiving;
 associating, by the first information processing apparatus, the use amount information with the first identification information and the second identification information and storing the use amount information with the first identification information and the second identification information in a first storage unit; and
 aggregating, by the first information processing apparatus, the use amount information for each set of the first identification information and the second identification information,
 wherein in the case where the first identification information is received together with a use permission request from the second information processing apparatus,
 associating the second identification information registered beforehand in a second storage unit with the received first identification information together with the use permission request, and
 with a use permitted state,
 storing the second identification information with the first identification information and the use permitted state in the second storage unit, and
 transmitting use permitted information to the second information processing apparatus.

[Claim 12] A program causing an information processing apparatus, capable of communicating with a second information processing apparatus via a network, to function as units, comprising:
 a reception unit configured to receive use amount information of the second information processing apparatus and first identification information of the second information processing

apparatus from the second information processing apparatus;
an obtaining unit configured to obtain second identification information of the second information processing apparatus from the second information processing apparatus, or obtain the second identification information based on the first identification information received by the reception unit;
a use amount information recording unit configured to associate the use amount information with the first identification information and the second identification information and store the use amount information with the first identification information and the second identification information in a first storage unit; and
an aggregation unit configured to aggregate the use amount information for each set of the first identification information and the second identification information,
wherein in the case where the reception unit receives the first identification information together with a use permission request from the second information processing apparatus,
the obtaining unit associates the second identification information registered beforehand in a second storage unit with the first identification information received by the reception unit together with the use permission request, and with a use permitted state, stores the second identification information with the first identification information and the use permitted state in the second storage unit, and transmits use permitted information to the second information processing apparatus.