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IMAGE PROCESSING APPARATUS, IMAGE PROCESSING METHOD, AND MEDIUM STORING PROGRAM

Abstract

An image processing apparatus includes a modem that receives image data via facsimile (FAX), one or more memories storing one or more programs and one or more processors executing the program to cause the image processing apparatus to acquire status information indicating a state of a user from a chat service, and a printer that prints an image based on the received image data on a recording medium, wherein the processor causes the image processing apparatus to acquire the status information about a user corresponding to sender information about the received image data, and wherein the printer, based on acquisition of specific status information, prints the image based on the received image data on the recording medium without the image processing apparatus accepting the user's print instruction after the acquisition of the status information.

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Background/Summary

BACKGROUND

Field

[0001] The present disclosure relates to an image processing apparatus, an image processing method, and a medium storing a program.

Description of the Related Art

[0002] There is a technique where an image processing apparatus transmits received images to a cloud server that provides a cloud storage service or a chat service. Japanese Patent Application Laid-Open No. 2023-15663 discusses a technique that enables a setting as to whether to simply print a document received via facsimile (FAX) or store the document in a "FAX reception box" without printing.

[0003] Images based on image data received via FAX are desirably printed in a situation where the intended user to receive the printout can immediately receive the printout.

[0004] In the case of an image processing apparatus discussed in Japanese Patent Application Laid-Open No. 2023-15663, the setting whether to print a document received by the image processing apparatus via FAX is desirably switched by the user operating the operation unit of the image processing apparatus. For example, if the user frequently alternates between working in the office and working from home and wants printouts to be printed only when the user is working in the office (situation where the user is likely to be able to receive the printouts), the setting is desirably changed each time, which is troublesome.

SUMMARY

[0005] The present disclosure is directed to reducing the effort for an image processing apparatus to print images based on image data received via facsimile (FAX) if there are situations where the user is likely to be able to immediately receive the printout and situations where they are not.

[0006] According to an aspect of the present disclosure, an image processing apparatus includes a modem configured to receive image data via facsimile (FAX), one or more memories storing one or more programs and one or more processors executing the program to cause the image processing apparatus to acquire status information indicating a state of a user from a chat service, and a printer configured to print an image based on the received image data on a recording medium, wherein the processor causes the image processing apparatus to acquire the status information about a user corresponding to sender information about the received image data, and wherein the printer is configured to, based on acquisition of specific status information, print the image based on the received image data on the recording medium without the image processing apparatus accepting the user's print instruction after the acquisition of the status information.

[0007] Further features of the present disclosure will become apparent from the following description of exemplary embodiments with reference to the attached drawings.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. **1** is a diagram illustrating an example of an overall configuration of a message

application service.
[0009] FIG. **2** is a diagram illustrating an example of a hardware configuration of a multifunction peripheral (MFP).
[0010] FIG. **3** is a diagram illustrating an example of a hardware configuration of a user terminal.
[0011] FIG. **4** is a diagram illustrating an example of a hardware configuration of a message application server.
[0012] FIG. **5** is a diagram illustrating an example of a hardware configuration of a tenant server.
[0013] FIG. **6** is a diagram illustrating an example of tenant information.
[0014] FIG. **7** is a diagram illustrating an example of a status table.
[0015] FIG. **8** is a diagram illustrating an example of a status table setting screen for setting the status table.
[0016] FIG. **9** is a diagram illustrating an example of a recipient user table.
[0017] FIG. **10** is a diagram illustrating an example of screens for setting the recipient user table.
[0018] FIG. **11** is a diagram illustrating an example of a sequence for setting the recipient user table.
[0019] FIG. **12** is a flowchart illustrating an example of setting processing of the recipient user table.
[0020] FIG. **13** is a diagram illustrating an example of a sequence in spooling a facsimile (FAX) job based on the status table.
[0021] FIG. **14** is a diagram illustrating an example of a sequence in printing images based on spooled image data depending on a change in status.
[0022] FIG. **15** is a diagram illustrating an example of a chat screen of a message application.
[0023] FIG. **16** is a flowchart illustrating an example of processing of a FAX job received by the MFP.

DESCRIPTION OF THE EMBODIMENTS

[0024] Exemplary embodiments of the present disclosure will be described in detail below with reference to the drawings. The following exemplary embodiments are not intended to limit the scope of the claims, and all combinations of features described in the exemplary embodiments are not necessarily essential to the present disclosure.
[0025] In an exemplary embodiment of the present disclosure, a multifunction peripheral (MFP) having a print, scan, and facsimile (FAX) functions will be described as an example of an image processing apparatus. The image processing apparatus according to the present exemplary embodiment is not limited to an MFP, and may be any apparatus that can implement the present exemplary embodiment. Examples include an apparatus without a scan function, and an apparatus that transmits print instructions to an image forming apparatus including a printing unit.
[0026] The present exemplary embodiment will be described using FAX reception jobs as an example. However, the present disclosure is not limited thereto, and can be applied to print jobs other than FAX reception jobs.
[0027] The exemplary embodiment of the present disclosure will now be described.
[0028] FIG. **1** is a diagram illustrating an example of an overall configuration of a message application service. The message application service is an example of a cloud service, and also a chat service. The cloud service according to the present exemplary embodiment is not limited to a message application service, and may be, for example, a mail, storage, or information management service in the cloud.
[0029] The message application service includes, for example, MFPs **10** that are image processing apparatuses, user terminals **20**, a message application server **30**, and a tenant server **40**. The MFPs **10**, the user terminals **20**, and the servers **30** and **40** are connected via a network **70** and can communicate with each other. The network **70** is a wireless or wired network including the Internet, a wide area network (WAN), and/or a local area network (LAN). The MFPs **10** are connected to a public switched telephone network (PSTN) **80** and can control FAX communication

protocols.
[0030] The MFPs **10** have a function of receiving image data, and have the capability to print images based on the image data on recording media. For example, the MFPs **10** can receive image data from the network **70**, such as the Internet, and the PSTN **80**. The MFPs **10** according to the present exemplary embodiment refer to image processing apparatuses that also have a function of communicating with the message application server **30** via the network **70** and transmitting and receiving image data. The MFPs **10** can thus receive image data from the message application server **30** and print images based on the received image data. The MFPs **10** can read documents and generate image data based on the read document images, and transmit the image data generated based on the read document images to the message application server **30**. What the MFPs **10** transmit and receive is not limited to image data. For example, the MFPs **10** can transmit and receive various types of data and signals, such as signals used in controlling FAX communication protocols. While FIG. **1** illustrates an example where two MFPs **10** are connected, any number of MFPs **10** may be connected.
[0031] The user terminals **20** are examples of information terminals that users use to use the message application service. Examples include smartphones, tablet terminals, and personal computers. While FIG. **1** illustrates an example where three user terminals **20** are connected, any number of user terminals **20** may be connected. The users operate the user terminals **20** to access the message application server **30** in a cloud **60**, exchange messages with other users, and use installed applications. The user terminals **20** and the message application server **30** are connected to the wired or wireless communication network (network **70**) and can transmit and receive data to/from each other. In the present exemplary embodiment, the Internet is assumed as an example of the communication network **70**. However, dedicated lines may be used.
[0032] The message application server **30** is a cloud server deployed in the cloud **60** and is a server that provides a service using a message application **306** (see FIG. **4**). The message application server **30** performs processing related to message exchange in general, such as message transmission and reception processing with the user terminals **20** and display of message transmission and reception screens.
[0033] The tenant server **40** is a cloud server deployed in the cloud **60** and is a server that stores and provides pieces of tenant information. Details of the tenant information stored in the tenant server **40** will be described below with respect to FIG. **6**.
[0034] Part or all of the capabilities of the tenant server **40** described below and the processing performed by the tenant server **40** may be substituted by the message application server **30**. In such a case, the tenant server **40** is not required in the present configuration.
[0035] FIG. **2** is a diagram illustrating an example of a hardware configuration of an MFP **10**. The MFP **10** includes a control unit **110**, an operation unit **116**, a reading unit **118**, a printing unit **120**, a wireless communication unit **122**, a FAX communication unit **124**, and a communication unit **126**. The control unit **110** includes a central processing unit (CPU) **111**, a read-only memory (ROM) **112**, a random access memory (RAM) **113**, a hard disk drive (HDD) **114**, and various interfaces (I/Fs).
[0036] The various I/Fs include an operation unit I/F **115**, a reading unit I/F **117**, a printing unit I/F **119**, a wireless communication unit I/F **121**, a FAX unit I/F **123**, and a communication unit I/F **125**.
[0037] The operation unit I/F **115** is a connection unit between the control unit **110** and the operation unit **116**, and connects the control unit **110** and the operation unit **116**. The reading unit I/F **117** is a connection unit between the control unit **110** and the reading unit **118**, and connects the control unit **110** and the reading unit **118**. The printing unit I/F **119** is a connection unit between the control unit **110** and the printing unit **120**, and connects the control unit **110** and the printing unit **120**. The wireless communication unit I/F **121** is a connection unit between the control unit **110** and the wireless communication unit **122**, and connects the control unit **110** and the wireless communication unit **122**. The FAX unit I/F **123** is a connection unit between the control unit **110**

and the FAX communication unit **124**, and connects the control unit **110** and the FAX communication unit **124**. The communication unit I/F **125** is a connection unit between the control unit **110** and the communication unit **126**, and connects the control unit **110** and the communication unit **126**.

[0038] The control unit **110** including the CPU **111** controls operation of the entire MFP **10**. The CPU **111** reads control programs stored in the ROM **112** or the HDD **114** into the RAM **113**, and performs various types of control including a read control and a print control. The ROM **112** stores control programs executable by the CPU **111**. The ROM **112** also stores a boot program and font data. The RAM **113** is a main storage memory of the CPU **111**, and is used as a work area and a temporary storage area for loading various control programs stored in the ROM **112** and the HDD **114**. The HDD **114** stores image data, print data, various programs, various addresses, and various types of setting information, for example. The HDD **114** is a storage medium, which is not limited to the HDD **114** and may be a flash memory, a solid-state drive (SSD), or an embedded MultiMediaCard (eMMC).

[0039] The MFP **10** according to the present exemplary embodiment is configured so that the single CPU **111** performs processes illustrated in flowcharts to be described below, using the single memory (RAM **113**). However, this is not restrictive. For example, a plurality of CPUs, RAMs, ROMs, and HDDs can cooperate to perform the processes. Hardware circuits such as an application-specific integrated circuit (ASIC) and a field-programmable gate array (FPGA) may be used to perform some of the processes.

[0040] The operation unit **116** includes a display unit such as a touchscreen, and hardware keys, for example. The operation unit **116** displays information to the user and accepts input from the user. Examples of the input from the user include input of instructions for causing the MFP **10** to perform desired processing, input of characters and symbols to the MFP **10**, and operation inputs for the user to browse information. Examples of the input of instructions for causing the MFP **10** to perform desired processing include inputting instructions to perform processes executable by the MFP **10**, such as print instructions. Examples of the operation inputs for the user to browse information include inputs for selecting a file or changing a display size to browse data stored in the HDD **114**. The touchscreen may use any typical input method or detection method such as resistive, infrared, electromagnetic induction, and capacitive methods. Examples of the hardware keys may include a keyboard including keys labeled with alphabets and numerals, and physical buttons for instructing processing like a “start” key and a “reset” key. Toggle switches, rocker switches, push-button switches, rotary switches, slide switches, key lock switches, and/or tactile switches may also be used, for example.

[0041] Examples of the reading unit **118** include a scanner. The reading unit **118** reads a document by moving the document or a sensor, and generates image data such as binary data based on the read document image. The image data generated by the reading unit **118** is transmitted to an external apparatus such as an information processing apparatus, stored in an external recording device such as a Universal Serial Bus (USB) device, or printed on recording sheets, for example.

[0042] The printing unit **120** receives image data to be printed (target image data to be printed) from the CPU **111**, and prints the images on recording sheets fed from a feed cassette (not illustrated). The operation of the printing unit **120** is not limited to printing on sheets of paper, and may be performed on non-paper media such as overhead projector (OHP) sheets.

[0043] The wireless communication unit **122** wirelessly connects the control unit **110** with external wireless devices. The user terminals **20** are examples of the wireless devices connected to the MFP **10**.

[0044] The FAX communication unit **124** includes a modem and a network control unit (NCU) for FAX communication, for example. The FAX communication unit **124** connects to the PSTN **80** and controls FAX communication protocols by controlling the modem and NCU.

[0045] The communication unit **126** transmits image data and various types of information in the

MFP **10** to external apparatuses connected to the network **70**, and receives print data and various types of information from information processing apparatuses connected to the network **70**. Examples of the various types of information include status information and setting information. The transmission and reception via the network **70** can be implemented, for example, by electronic mail (email) transmission and reception, or file transmission and reception using other protocols (such as the File Transfer Protocol [FTP], Server Message Block [SMB], and Web Distributed Authoring and Versioning [WebDAV]). The communication unit **126** can also transmit and receive image data and message data over the network **70** in response to access from the user terminals **20** and the message application server **30** using Hypertext Transfer Protocol [HTTP] communication. The users can access the MFP **10** from the web browsers on the user terminals **20** via the network **70** and configure various settings of the MFP **10** (remote user interface [UI] function).

[0046] FIG. **3** is a diagram illustrating an example of a hardware configuration of a user terminal **20**. While the user terminals **20** according to the present exemplary embodiment are assumed to be devices such as smartphones and tablet personal computers (PCs), the user terminals **20** are not limited thereto. For example, any other information processing apparatus that can connect to the network **70** through a wired connection using the Ethernet® or a wireless connection using radio waves, such as Wireless Fidelity (Wi-Fi®) communication, can be used. The wireless connection method is not limited to Wi-Fi® communication. For example, Bluetooth® and other communication methods may be used.

[0047] The user terminal **20** includes an operation panel **201**, a camera **204**, a near-field communication (NFC) communication unit **205**, a Bluetooth® communication unit **206**, a CPU **207**, a ROM **208**, a RAM **209**, an HDD **210**, and a wireless LAN communication unit **211**.

[0048] The CPU **207** reads control programs stored in the ROM **208** or the HDD **210** and performs various types of processing for controlling operation of the user terminal **20**. The ROM **208** stores control programs executable by the CPU **207**. The RAM **209** is a main storage memory of the CPU **207**, and is used as a work area and a temporary storage area for loading various control programs stored in the ROM **208** and the HDD **210**.

[0049] The HDD **210** stores, for example, image data, print data, various programs, various application programs, various addresses, and various types of setting information. The HDD **210** is a storage medium, which is not limited to an HDD and may be a flash memory, an SSD, or an eMMC.

[0050] The user terminal **20** according to the present exemplary embodiment is configured so that the single CPU **207** performs processes illustrated in the flowcharts to be described below using the single memory (RAM **209**). However, this is not restrictive. For example, a plurality of CPUs, RAMs, ROMs, and HDDs can cooperate to perform the processes. Hardware circuits such as an ASIC and an FPGA may be used to perform some of the processes. The operation panel **201** has a touchscreen function capable of detecting the user's touch operations, and displays various screens provided by an operating system (OS) and applications. The operation panel **201** is also used to check information stored in the message application server **30**. The user can input desired operation instructions to the user terminal **20** by inputting touch operations to the operation panel **201**. The user terminal **20** includes not-illustrated hardware keys, and the user can input operation instructions to the user terminal **20** using the hardware keys. The detection method for detecting the user's touch operations on the touchscreen may be any typical detection method such as resistive, infrared, electromagnetic induction, and capacitive methods. Software keys may be displayed on the touchscreen so that operation instructions are input by user operation on the touchscreen. Any OS may be used as the OS. Examples include Windows, macOS, Unix, Linux, Android, and iOS. Examples of the applications may include applications for performing email transmission, browsing, chat, camera imaging, image display, and setting configuration functions.

[0051] The camera **204** captures images based on the user's imaging instructions. The images captured by the camera **204** are stored in a predetermined area of the HDD **210**. A program capable

of analyzing Quick Response (QR) codes may be stored in the ROM **208** or the HDD **210** in advance, or an application with that function may be installed, so that information can be acquired from QR codes® read by the camera **204**. The information acquisition is not limited to QR codes®. For example, one-dimensional codes such as barcodes, or two-dimensional codes such as DataMatrix, MaxiCode, Portable Data File 417 (PDF417), and Aztec codes may be analyzed for information acquisition.

[0052] The user terminal **20** can connect to various wireless devices via the NFC communication unit **205**, the Bluetooth® communication unit **206**, and the wireless LAN communication unit **211**, and transmit and receive data. The Bluetooth® communication unit **206** of the user terminal **20** may support the Bluetooth® Low Energy standard and/or the Bluetooth® Classic standard.

[0053] While the user terminal **20** according to the present exemplary embodiment establishes wireless network connections, a not-illustrated wired port may be disposed to establish a wired network connection, for example.

[0054] FIG. **4** is a diagram illustrating an example of a hardware configuration of the message application server **30**. The message application server **30** refers to a chat server that provides a chat service.

[0055] The message application server **30** mainly includes a CPU **301**, a ROM **302**, a RAM **303**, a communication unit **304**, and an HDD **305**.

[0056] The CPU **301** reads control programs stored in the ROM **302** and the message application **306** stored in the HDD **305**, loads the programs into the RAM **303**, and performs various types of processing for controlling operation of the message application server **30**. The ROM **302** stores the control programs executable by the CPU **301**. The RAM **303** is a main storage memory of the CPU **301**, and is used as a work area and a temporary storage area for loading various control programs stored in the ROM **302** and the HDD **305**.

[0057] The HDD **305** stores various types of data such as messages, image data, channel information, and application programs. The HDD **305** is a storage medium, which is not limited to an HDD and may be a flash memory, an SSD, or an eMMC.

[0058] The message application server **30** according to the present exemplary embodiment is configured so that the single CPU **301** performs processes illustrated in the flowcharts to be described below, using the single memory (RAM **303**). However, this is not restrictive. For example, a plurality of CPUs, RAMs, ROMs, and HDDs can cooperate to perform the processes. Hardware circuits such as an ASIC and an FPGA may be used to perform some of the processes.

[0059] The message application **306** is an application installed on the HDD **305**, and runs on the CPU **301** or the RAM **303**.

[0060] The communication unit **304** is used to communicate with other devices. For example, data can be transmitted and received to/from various devices, such as the user terminals **20** and the MFPs **10**, via the communication unit **304**. The communication unit **304** may perform wired communication using the Ethernet, or wireless communication such as Wi-Fi® communication. An operation example of the message application server **30** when a message is posted using a user terminal **20** will be described. The CPU **301** loads the message application **306** read from the HDD **305** into the RAM **303**, and receives the posted message transmitted from the user terminal **20** via the communication unit **304** under the control of the message application **306**. The CPU **301** then stores the posted message received from the user terminal **20** in the HDD **305**. The CPU **301** can notify the user terminal **20** or other user terminals **20** of the posting of the message over the network **70** via the communication unit **304** as appropriate. The notified user terminal(s) **20** display(s) the notification on its/their operation panel **201** of touchscreen form.

[0061] FIG. **5** is a diagram illustrating an example of a hardware configuration of the tenant server **40**.

[0062] The tenant server **40** includes a CPU **401**, a ROM **402**, a RAM **403**, a communication unit **404**, and an HDD **405**.

[0063] The CPU **401** reads control programs stored in the ROM **402** or the HDD **405** and performs various types of processing for controlling tenant information **601**. The tenant information **601** to be stored will be described below. The ROM **402** stores control programs executable by the CPU **401**. The RAM **403** is a main storage memory of the CPU **401**, and is used as a work area and a temporary storage area for loading various control programs stored in the ROM **402** and HDD **405**.
[0064] The HDD **405** stores the tenant information **601**, for example. The HDD **405** is a storage medium, which is not limited to an HDD and may be a flash memory, an SSD, or an eMMC.
[0065] The tenant server **40** according to the present exemplary embodiment is configured so that the single CPU **401** performs various processes illustrated in the flowcharts to be described below using the single memory (RAM **403**). However, this is not restrictive. For example, a plurality of CPUs, RAMs, ROMs, and HDDs can cooperate to perform the processes. Hardware circuits such as an ASIC and an FPGA may be used to perform some of the processes.
[0066] The communication unit **404** is used to communicate with other devices. Data can be transmitted and received to/from various devices, such as the message application server **30**, via the communication unit **404**. The communication unit **404** may perform wired communication using the Ethernet, or wireless communication such as Wi-Fi® communication.
[0067] An operation example of the tenant server **40** when the tenant server **40** transmits the tenant information **601** to an MFP **10** will now be described. The CPU **401** initially receives an acquisition request for specific information in the tenant information **601** from the MFP **10** via the communication unit **404** and the network **70**. As described herein, the specific information refers to any of the pieces of various types of information managed by the tenant server **40** in the tenant information **601** to be described below, such as group information, user information, and channel information, and varies depending on user instructions. The CPU **401** accesses the tenant information **601** stored in the HDD **405** using a control program loaded from the ROM **402** into the RAM **403**, and acquires the requested specific information. Once the acquisition of the specific information is completed, the CPU **401** transmits the specific information to the MFP **10** from which the acquisition request for the specific information is transmitted, via the communication unit **404** and the network **70**.
[0068] As described above, part or all of the capabilities of the tenant server **40** and the processing performed by the tenant server **40** may be substituted by the message application server **30**.
[0069] FIG. **6** is a diagram illustrating an example of the tenant information **601**. In the present exemplary embodiment, the tenant information **601** is, for example, stored in the HDD **405** of the tenant server **40**.
[0070] The tenant information **601** includes one or more groups. In the example of FIG. **6**, the tenant information **601** includes two groups, namely, group 1 and group 2, whereby group information **602** and group information **610** are managed.
[0071] Depending on the configuration of the message application **306**, there may be cases where a piece of tenant information includes only one piece of group information. In such a case, the tenant information **601** and the group information are the same.
[0072] The group information **602** and the group information **610** each include pieces of information that constitute the group. For example, the group information **602** includes user information **603**, channel information **604**, printer information **606**, associated application information **60**, and file information **608**.
[0073] The user information **603** includes information about each user belonging to the group. For example, the user information **603** includes identifiers (IDs) specific to the respective users. The user information **603** also includes respective pieces of status information **609**. The status information **609** is an information set indicating what states the users are currently in, including attendance statuses indicating whether the users are at the office or working from home, and situation statuses indicating the current situations of the users. Examples of the attendance statuses include “at office”, “from home”, and “out”. Examples of the situation statuses include “available”

and “away from desk”. In addition to the examples illustrated in FIG. **7**, various states such as “active” and “away” can be managed. The status information **609** is not limited to the attendance statuses or the situation statuses. Various statuses can be used depending on the service that manages and provides the statuses.

[0074] The channel information **604** is information for grouping the pieces of user information **603**, and includes a list **605** where the pieces of user information about the users belonging to each channel are summarized. For example, the channel information **604** includes IDs specific to respective channels.

[0075] The printer information **606** indicates machine information about the MFPs **10**. Examples of the machine information about the MFPs **10** include manufacturer information, model number, serial number, media access control (MAC) address, and Internet Protocol (IP) address. Applications using the group information **602** can transmit various commands to a given MFP **10** by referring to or acquiring the group information **602**.

[0076] The associated application information **607** is information about applications associated with the message application **306** corresponding to group 1. Examples of the applications associated with the message application **306** include various Microsoft® Office applications (software).

[0077] The file information **608** is information about files stored and shared within the group. For example, when an MFP **10** prints, the file information **608** is transmitted to the MFP **10**.

[0078] In the present exemplary embodiment, a place where chat messages exchanged between individual users are displayed and that is not managed as a channel will be referred to as a talk room. Channels may have functions such as a schedule sharing function, aside from a chat displaying function. Such names are not limited thereto, and channels and talk rooms may be set with different names depending on the provider of the service.

[0079] To acquire the user list of, e.g., group 1, the message application **306** acquires the list of the user information **603** in the group information **602**, stored in the HDD **405** of the tenant server **40**, via the communication unit **304** and the network **70**. The message application **306** also acquires and uses the channel information **604**, the printer information **606**, the associated application information **607**, the file information **608**, and the status information **609** as appropriate in a similar manner.

[0080] FIG. **7** is a diagram illustrating an example of a status table **701**. In the present exemplary embodiment, the status table **701** is, for example, stored in the HDD **114** of each MFP **10**.

[0081] The status table **701** includes parameters corresponding to the status information **609** retained in the tenant server **40**. In the present exemplary embodiment, as examples of the parameters, the foregoing situation statuses are stored in a “state” column of the status table **701**, the attendance statuses in a “work location” column, and operation modes of the MFP **10** when the respective statuses are acquired in a “mode” column. For example, when the state status is “available” and the working location status is “at office”, the operation mode stored in the status table **701** of FIG. **7** is “print”. As will be described below, the MFP **10** performs the operations corresponding to the operation modes based on the status table **701**.

[0082] As described herein, the operation mode “print” refers to a mode where the MFP **10** prints upon FAX reception without spooling. The operation mode “spool” refers to processing where the MFP **10**, when receiving information including image data, does not print immediately but stores the received information including the image data in the RAM **113** or the HDD **114** of the MFP **10**, or a nonvolatile area such as a cloud storage, for example. The HDD **114** and the cloud storage are examples of a storage device. The spool processing is an example of storage processing. Images based on the image data spooled by the MFP **10** are printed in response to the user's print instructions. Operation examples in these modes will be described below.

[0083] The status table **701** may be stored in the MFP **10** (for example, in the HDD **114**) or in an external device that can communicate with the MFP **10**. In the present exemplary embodiment, the

status table **701** is configured so that the user can freely specify operation modes via the operation unit **116** of the MFP **10**. However, this is not restrictive, and the status table **701** may be an unmodifiable one.

[0084] FIG. **8** is a diagram illustrating an example of a status table setting screen **810** for setting the status table **701**. The status table setting screen **810** is displayed on the operation unit **116** of the MFP **10**.

[0085] State items **811** correspond to the "state" column of the status table **701**. Work location items **812** correspond to the "work location" column of the status table **701**. The user can select operation modes corresponding to the respective statuses by selecting selection fields **813**. The options selectable in the selection fields **813** represent the operation modes that the MFP **10** can perform. If an image processing apparatus according to the present exemplary embodiment is an apparatus that does not perform recording, operation modes that can be performed by an apparatus that performs recording based on instructions from the image processing apparatus may be included as options. If a change button **814** is selected, the MFP **10** updates the status table **701** stored in the HDD **114** with the set values. Alternatively, the operation modes selected by the user in the selection fields **813** may be registered upon selection without providing the change button **814**. The number of status tables **701** to be stored is not limited to one, and a plurality of status tables **701** may be stored. For example, the plurality of status tables **701** can be named like "weekday" and "holiday" for identification. The status table setting screen **810** may include a not-illustrated "new registration" button in addition to the change button **814**. In such a case, when the new registration button is selected, the MFP **10** may store a new status table **701** instead of updating the values of the existing table. The storage location of the new status table **701** may the same as or different from that where the exiting status table **701** is stored (for example, the HDD **114**). The new status table **701** can be stored in any location to which the CPU **111** of the MFP **10** can refer during the operation of the present exemplary embodiment.

[0086] FIG. **9** is a diagram illustrating an example of a recipient user table **901**. In the present exemplary embodiment, the recipient user table **901** is, for example, stored in the HDD **114** of the MFP **10**.

[0087] The recipient user table **901** is a table associating FAX sender information (hereinafter, may be referred to simply as sender information) with the user information **603** about recipient users. In the present exemplary embodiment, sender FAX numbers when FAX documents are received will be described as examples of the sender information. The sender information is not limited to FAX numbers, and may be area codes, Session Initiation Protocol (SIP) addresses, or names, for example. The recipient users are users about whom the MFP **10** requests the status information **609** of the tenant server **40**. A sender FAX number refers to the FAX number of an MFP or FAX machine that is different from the MFP **10** and faxes various types of information including image data to the MFP **10**. The user information **603** refers to the foregoing information managed by the tenant server **40**. In other words, the recipient user table **901** is a table to which the MFP **10** refers for the user information **603** corresponding to the sender information based on the sender information when receiving a FAX document. The recipient user table **901** also stores access token information corresponding to the user information **603**. Instead of the access token information, which typically has an expiration date, the recipient user table **901** may store authentication-related information such as user IDs, mail addresses, phone numbers, passwords, and passcodes.

[0088] Users who receive FAX documents from senders with unregistered FAX numbers may be set in the recipient user table **901**. In the present exemplary embodiment, the recipient user table **901** represents an example where "others" is registered in the sender FAX number as an example of receiving FAX documents from unregistered numbers. The user may register "all" (not illustrated) or a blank as the sender FAX number so that the status information **609** about the same user is acquired in response to image data received from any FAX number. In such a case, the CPU **111** of the MFP **10** receiving a FAX document can skip the process of referring to the sender information

and the recipient user table **901** in the processing to be described below.
[0089] The user may specify and register only the area code of the sender FAX number, i.e., the first one to three digits of the FAX number in the recipient user table **901** to register recipient users corresponding to the geographic area where the FAX sender is located.
[0090] The recipient user table **901** may be stored in the MFP **10** (for example, in the HDD **114**) or in an external device that can communicate with the MFP **10**. In the present exemplary embodiment, the MFP **10** is configured to acquire the sender information via various communication units. However, the MFP **10** may acquire the sender information by accepting the user's input via the operation unit **116**, for example, and register or update the recipient user table **901**.
[0091] The information for identifying senders (sender information) is not limited to FAX numbers. For example, if the MFP **10** receives various types of information including image data via the network **70**, the IP addresses or MAC addresses of the sender user terminals **20** may be acquired and registered in the recipient user table **901** for sender identification.
[0092] FIG. **10** is a diagram illustrating an example of screens for setting the recipient user table **901**. FIG. **10** illustrates a user information add/modify screen **1010** for registering a new item in the recipient user table **901**, a user information input screen **1020**, and a user information registration completion screen **1030**. The group of screens is displayed on the operation unit **116** of the MFP **10**.
[0093] When a not-illustrated menu screen displayed on the operation unit **116** of the MFP **10** transitions to a recipient user table setting screen via user operation, the user information add/modify screen **1010** is displayed on the operation unit **116** of the MFP **10**.
[0094] The user information add/modify screen **1010** is a screen that displays information currently registered in the recipient user table **901**. An area **1011** is an area that displays the information about the current recipient user table **901**. A button **1012** is an add button. When this button **1012** is selected, the user information add/modify screen **1010** displayed on the operation unit **116** of the MFP **10** transitions to the user information input screen **1020**.
[0095] The user information add/modify screen **1010** may include, for example, a not-illustrated modify button for modifying the information registered in the recipient user table **901**, and/or a not-illustrated delete button for deleting information registered in the recipient user table **901**.
[0096] The user information input screen **1020** is a screen for adding information to the recipient user table **901**. The user can select selection items **1021** or **1023**.
[0097] An input item **1022** is an item that inputs a FAX number. If the selection item **1021** is selected, the user can input FAX sender information to be registered into the input item **1022**.
[0098] If the selection item **1023** is selected, the user can register user information **603** about the user who receives FAX documents from senders not registered in the recipient user table **901**. More specifically, when the selection item **1023** is selected, “others” is input to the recipient user table **901**.
[0099] An input item **1024** is an item for inputting authentication information intended for authentication of the user information **603**. The authentication information is not limited to an ID and a password, and any authentication-related information can be used. Examples include a mail address, a phone number, and a passcode. A button **1025** is a confirmation button. When this button **1025** is selected, the currently input content is added to the recipient user table **901**. When the button **1025** is selected, the user information input screen **1020** displayed on the operation unit **116** of the MFP **10** transitions to the user information registration completion screen **1030**.
[0100] The inputs to the input items **1022** and **1024** are made from the operation unit **116** of the MFP **10**. For example, physical buttons on the operation unit **116**, such as a keyboard and a numerical keypad, may be operated. A not-illustrated software keyboard may be displayed on the screen of the MFP **10** and operated. The CPU **111** of the MFP **10** may detect the selection of the input item **1021** and automatically display the not-illustrated software keyboard so that the user can

input the FAX number into the input item **1022** without selecting the input item **1022**.
[0101] The screens may be configured so that the user can also specify the storage location of various types of information including image data received by the MFP **10** during the “spool” operation mode. For example, the user information input screen **1020** may display a not-illustrated storage location selection button to have the user select the storage location from one or more options such as the HDD **114** and the cloud storage. For example, the user information input screen **1020** may further display not-illustrated buttons, input fields, and/or selection fields to set a condition for temporarily spooling image data, such as a spooling time, so that the spooled data can be moved or deleted when the condition is met.
[0102] The user information registration completion screen **1030** is a screen for notifying the user that the addition of the information to the recipient user table **901** is completed. When the user selects a back button **1031**, the user information registration completion screen **1030** transitions to the user information add/modify screen **1010**. Alternatively, the user information registration completion screen **1030** may transition to a screen displayed before the user information add/modify screen **1010**, such as a home screen. The user information registration completion screen **1030** may further display a not-illustrated “add more” button, or “yes” and “no” buttons along with a message “add more?”, for example, and if the user presses the “add more” button or “yes” button, more entries may be registered. In such a case, the screen may transition to the user information input screen **1020** again.
[0103] The user information add/modify screen **1010** may include, for example, a not-illustrated modify button for modifying the information registered in the recipient user table **901**. For example, the user selects one of the users displayed in the area **1011** and selects the modify button, or selects the modify button and then selects one of the users displayed. The CPU **111** of the MFP **10** detects the selection of the modify button and the selection of the user, causes a screen transition to the user information input screen **1020**, and displays the sender information registered for the selected user in the input item **1022**. The user information input screen **1020** may be configured to further include a not-illustrated confirmation button, so that when the confirmation button is selected, the recipient user table **901** is modified with the data input at that timing as the information about the selected user.
[0104] The user information add/modify screen **1010** may include, for example, a not-illustrated delete button for deleting information registered in the recipient data table **901**. For example, the user selects one of the users displayed in the area **1011** and selects the delete button, or selects the delete button and then selects one of the users displayed. The CPU **111** of the MFP **10** detects the selection of the delete button and the selection of the user, and deletes the stored information corresponding to the selected user from the recipient user table **901**. Before the deletion of the information, the user information add/modify screen **1010** may display a not-illustrated “execute delete” button, or “yes” and “no” buttons along with a message “delete?”, for example, and if the user selects the “execute delete” button or the “yes” button, the information may be deleted.
[0105] As will be described below, the authentication information input in the input item **1024** when the button **1025** is selected is transmitted to the tenant server **40**. If the authentication fails due to unregistered items or the user's input errors, a notification thereof may be displayed on the operation unit **116** of the MFP **10**.
[0106] The CPU **111**, in displaying the notification, may display the user information input screen **1020** on the operation unit **116** again, display the input information again, or display some or all of the items blank.
[0107] As will be described below, the user information input screen **1020** may be configured so the account information about the individual user and the channel to which the user belongs can also be input or the channel information **604** can be input, and the CPU **111** may accept such inputs.
[0108] The recipient user table **901** may be registered by performing the following not-illustrated

processing. The user initially logs into the user account of the message application service by inputting authentication information intended for authentication of the user information **603**. Alternatively, based on the user's login to the MFP **10**, the CPU **111** logs into the user account corresponding to the information about the user logged in to the MFP **10**. Next, the CPU **111** of the MFP **10** communicates with the tenant server **40** to acquire information managed by the tenant server **40**, such as the group information **602**, the user information **603**, the channel information **604**, and the list **605** related to the login user account. The CPU **111** finally displays the acquired information on the operation unit **116**, and the user selects the user information **603** and the channel information **604** from the displayed information, whereby the information is registered in the recipient user table **901**.

[0109] When the channel information **604** is registered in the recipient user table **901**, the CPU **111** may check the states of all the users in the list **605** where the user information belonging to the channel is summarized. The CPU **111** here may execute printing if any one of the users is in a state corresponding to the print mode. In such a configuration, the user registers the authentication information about some or all of the users belonging to the target channel in the recipient user table **901**.

[0110] FIG. **11** is a diagram illustrating an example of a sequence for setting the recipient user table **901**. This sequence is started when information is added to the recipient user table **901**, i.e., at timing when the user information input screen **1020** is displayed on the operation unit **116** of the MFP **10**. In this sequence, the processing performed by the MFP **10** and the tenant server **40** will be described.

Step S**1101**: Input Sender Information

[0111] In step S**1101**, the CPU **111** of the MFP **10** accepts input of FAX sender information via the operation unit **116**. Specifically, the user selects the selection item **1021** and inputs the sender information into the input item **1021**, or selects the selection item **1023**, and the CPU **111** accepts the sender information.

Step S**1102**: Input Authentication Information

[0112] In step S**1102**, the CPU **111** accepts input of authentication information via the operation unit **116**. Specifically, the user inputs the authentication information into the input item **1024**, and the CPU **111** accepts the authentication information.

Step S**1103**: Transmit Request

[0113] In step S**1103**, the CPU **111** transmits an access token request to the tenant server **40**. Step S**1103** is performed when the button **1025** is selected. When transmitting the access token request, the CPU **111** transmits the authentication information accepted in step S**1102** to the tenant server **40**.

Step S**1104**: Receive Answer

[0114] In step S**1104**, the CPU **401** of the tenant server **40** performs authentication processing using the authentication information received from the MFP **10**. If the authentication is successful, the CPU **401** transmits the authenticated user information **603** and the access token information to the MFP **10**. The CPU **111** of the MFP **10** receives these pieces of information. That the authentication is successful refers to a case where the authentication information received from the MFP **10** matches authentication information registered in the HDD **405** of the tenant server **40**. If the authentication fails, the CPU **401** transmits a notification of the failed authentication to the MFP **10**. That the authentication fails refers to a case where the authentication information received from the MFP **10** does not match any of the pieces of authentication information registered in the HDD **405** of the tenant server **40**. If the authentication fails, the CPU **401** does not necessarily notify the MFP **10** of the failure, and may discontinue or abort the processing at that point in time. In such a case, the sequence may be configured so that the CPU **111** of the MFP **10** discontinues the processing when the user information and the access token information are not transmitted from the CPU **401** of the tenant server **40** within a predetermined time.

Step S**1105**: Generate Table Information

[0115] In step S**1105**, the CPU **111** associates the sender information acquired in step S**1101** with the access token information acquired in step S**1104**, and adds the information to the recipient user table **901**.

[0116] Once the generation of the table information is completed, the processing ends.

[0117] FIG. **12** is a flowchart illustrating an example of setting processing of the recipient user table **901**.

[0118] This processing is started when information is added to the recipient user table **901**, i.e., when the user information input screen **1020** is displayed on the operation unit **116** of the MFP **10**. The processing proceeds as appropriate based on the operations of the user and responses from the tenant server **40**. The steps of the flowcharts according to the present exemplary embodiment are performed by the CPU **111** of the MFP **10** reading control programs stored in the ROM **112** or the HDD **114** into the RAM **113** and executing the control programs.

Step S**1201**: Input Sender Information

[0119] In step S**1201**, the CPU **111** accepts input of FAX sender information via the operation unit **116**. Specifically, the user selects the selection item **1021** and inputs the sender information into the input item **1022**, or selects the selection item **1023**, and the CPU **111** accepts the sender information. The accepted sender information is temporarily stored in the RAM **113**. Once the input of the sender information is completed, the processing proceeds to step S**1202**.

Step S**1202**: Input Authentication Information

[0120] In step S**1202**, the CPU **111** accepts input of authentication information via the operation unit **116**. Specifically, the user inputs the authentication information into the input item **1024**, and the CPU **111** accepts the authentication information. The accepted authentication information is temporarily stored in the RAM **113**. Once the input of the authentication information is completed and the button **1025** is selected by the user, the processing proceeds to step S**1203**.

Step S**1203**: Transmit Request

[0121] In step S**1203**, the CPU **111** transmits an access token request to the tenant server **40**. When transmitting the access token request, the CPU **111** also transits the sender information and the authentication information that are accepted in steps S**1201** and S**1202** and temporarily stored in the RAM **113** to the tenant server **40**. Once the transmission of the request is completed, the processing proceeds to step S**1204**.

Step S**1204**: Authentication Determination

[0122] In step S**1204**, the CPU **111** waits for a response from the tenant server **40**. An example of the response to be transmitted from the tenant server **40** is a notification indicating whether the authentication succeeds or fails. If the authentication is successful, the response also includes the user information and the access token information. The CPU **111** detects the reception of the response from the tenant server **40**. If the authentication is determined to be successful from the received response (YES in step S**1204**), the CPU **111** temporarily stores the user information and the access token information received from the tenant server **40** into the RAM **113**, and the processing proceeds to step S**1205**. If the authentication is determined to be unsuccessful from the response received from the tenant server **40** (NO in step S**1204**), the CPU **111** determines that the registration in the recipient user table **901** fails, and the processing ends.

Step S**1205**: Add User Information

[0123] In step S**1205**, the CPU **111** associates the sender information, the user information, and the access token information temporarily stored in the RAM **113**, and adds the pieces of information to the recipient user table **901**.

[0124] Once the addition of the user information is completed, the processing ends. After the end of the processing of step S**1205**, the CPU **111** deletes the sender information temporarily recorded in step S**1201** from the RAM **113**.

[0125] FIG. **13** is a diagram illustrating an example of a sequence when a FAX job is spooled based

on the status table **701**. This sequence is started by an MFP **10** receiving a FAX job via its FAX communication unit **124**. A FAX job refers to a job for performing a series of processes up to the recording of image data received via FAX on recording media, in addition to FAX reception processing. In this sequence, processing performed by the MFP **10**, the tenant server **40**, and the message application server **30** will be described. The recipient user table **901** according to the present exemplary embodiment stores sender FAX numbers, recipient users, and access token information in association with each other.

Step S**1301**: Receive FAX Job

[0126] In step S**1301**, the CPU **111** of the MFP **10** performs analysis processing on FAX job information received via the FAX communication unit **124**, and stores the FAX sender information in the RAM **113**.

Step S**1302**: Refer to Recipient User Table

[0127] In step S**1302**, based on the FAX sender information stored in the RAM **113** in step S**1301**, the CPU **111** searches the recipient user table **901** stored in the HDD **114** for the access token information about the recipient user corresponding to the sender information, and acquires the access token information.

Step S**1303**: Request Status Information

[0128] In step S**1303**, the CPU **111** transmits the access token information corresponding to the sender information acquired in step S**1302** to the tenant server **40**, and requests the status information **609** about the recipient user corresponding to the access token information.

Step S**1304**: Receive Status Information

[0129] In step S**1304**, the CPU **401** of the tenant server **40** acquires the status information **609** about the user requested by the MFP **10** from the tenant information **601** stored in the HDD **405**, based on the access token information transmitted from the MFP **10**. If the status information **609** about the user requested by the MFP **10** is successfully acquired, the CPU **401** transmits the status information **609** about the user requested by the MFP **10** to the MFP **10**. The CPU **111** of the MFP **10** receives the status information **609**.

Step S**1305**: Refer to Status Table

[0130] In step S**1305**, the CPU **111** acquires operation mode information (operation mode) corresponding to the status information **609** received in step S**1304**, based on the status table **701** stored in the HDD **114**. The CPU **111** stores the status information **609** transmitted from the tenant server **40** in step S**1304** into the HDD **114**. In step S**1402**, described below, the status information **609** stored here will be referred to. The following sequence proceeds on the assumption that the acquired operation mode is “spool”.

Step S**1306**: Spool Image Data

[0131] In step S**1306**, to move the received FAX job information to a nonvolatile area, the CPU **111** moves the FAX job information from the RAM **113** to the HDD **114**. Such a control will be called spool control. The spool control refers to processing (storage processing) for, when the MFP **10** receives information including image data, storing the received information including the image data into the RAM **113** of the MFP **10** or a nonvolatile area such as the HDD **114** without immediately printing the image data. Images based on the image data spooled by the MFP **10** are printed in response to the user's print instructions. The moving destination is not limited to the HDD **114** of the MFP **10**, and may be an external nonvolatile area (storage) such as a cloud storage and a flash memory. With the image data received via FAX stored into the nonvolatile area by the spool control, the FAX job information can be retained without being lost even if the subsequent processing is interrupted due to events such as a power outage and a power-off of the MFP **10**. If, for example, the FAX job information is stored in the cloud storage, users with access permissions can browse the FAX job information through the cloud service. This enables ubiquitous access for improved convenience.

Step S**1307**: Chat Execution Request

[0132] In step S**1307**, the CPU **111** generates a chat execution request for the recipient user corresponding to the received FAX sender information, based on the access token information acquired in step S**1302**. Next, the CPU **111** transmits this chat execution request to the message application server **30** (transmission instruction). The chat message the CPU **111** requests to post here is "the MFP **10** has received a FAX document, and the image data is spooled".

Step S**1308**: Post Chat Message

[0133] In step S**1308**, the CPU **301** of the message application server **30** transmits a notification that the chat execution request is issued in step S**1307** to the user terminal **20** along with the chat message. The notification and the chat message may be actively transmitted by the CPU **301** of the message application server **30**, or passively transmitted, for example, based on a timeline acquisition request from the user terminal **20**. The message application **306** installed on the HDD **210** of the user terminal **20** displays the chat message (chat message **1503**; see FIG. **15**) received from the message application server **30** on the operation panel **201** of the user terminal **20** to notify the recipient user.

[0134] The chat message notified in step S**1308** may include part of the FAX job information. For example, the chat message **1503** includes the FAX sender information. When issuing the chat execution request in step S**1307**, the MFP **10** also transmits the FAX job information, whereby the message application server **30** can acquire the FAX job information.

[0135] FIG. **14** is a diagram illustrating an example of a sequence when images based on spooled image data are printed based on a change in status. This sequence represents processing that takes place when, in or after step S**1307**, the CPU **111** detects a change in the status information **609** about the same user and the operation mode corresponding to the changed status information **609** is found to be "print" based on the status table **701**. The status may be manually input and updated via the message application **306** by the user operating the user terminal **20**, or automatically estimated and updated based on information such as an update history of the tenant information **601** and an operation history of the user terminal **20**. This processing is performed without the user's print instructions. In this sequence, processing performed by the MFP **10**, the tenant server **40**, and the message application server **30** will be described.

Step S**1401**: Request Status Information

[0136] In step S**1401**, the CPU **111** of the MFP **10** transmits the access token information acquired from the recipient user table **901** in step S**1302** to the tenant server **40**, and requests status information. What is requested in step S**1401** is the status information **609** about the recipient user corresponding to the sender information about the image data spooled in step S**1306**. The CPU **111** may request the status information **609** about all the users stored in the tenant server **40**.

Step S**1402**: Receive Status Information

[0137] In step S**1402**, the CPU **401** of the tenant server **40** acquires the status information **609** about the user requested by the MFP **10** from the tenant information **601** stored in the HDD **405** based on the access token information transmitted from the MFP **10**. If the status information **609** about the user requested by the MFP **10** is successfully acquired, the CPU **401** transmits the status information **609** about the user requested by the MFP **10** to the MFP **10**. The CPU **111** of the MFP **10** receives the status information **609**. If the status information **609** transmitted from the tenant server **40** is different from the status information **609** received in step S**1304**, the CPU **111** of the MFP **10** determines that a change is detected, and performs the processing of step S**1403**.

Step S**1403**: Refer to Status Table

[0138] In step S**1403**, the CPU **111** acquires the operation mode information corresponding to the status information **609** acquired in step S**1402**, based on the status table **701** stored in the HDD **114**. The following sequence proceeds on the assumption that the mode indicated by the acquired operation mode information is "print".

Step S**1404**: Check for Spooled Image Data

[0139] In step S**1404**, the CPU **111** searches for image data that is received by the MFP **10** and

spooled in the HDD **114** by the spool control of step S**1306**. While the spool control is performed in step S**1306**, there can be no spooled image data in step S**1404** if, for example, the user operates the operation unit **116** of the MFP **10** and prints the spooled image data before the status information **609** is updated.

Step S**1405**: Print Images Based on Spooled Image Data

[0140] In step S**1405**, the CPU **111** prints images based on the image data received and spooled by the MFP **10**, searched for in step S**1404**. More specifically, the printing unit **120** of the MFP **10** records the images based on the image data received based on the FAX job received by the MFP **10** in step S**1301** on recording media. Printing on recording sheets is an example thereof. If, in step S**1306**, the image data received by the MFP **10** is spooled not in the HDD **114** but in a cloud storage, for example, the MFP **10** acquires the image data from the spooling cloud storage and prints the image data. Step S**1405** is performed without the user's print instructions. The MFP **10** may perform the print processing for printing the images based on the image data received by the MFP **10** via FAX in response to the user's print instructions.

Step S**1406**: Chat Execution Request

[0141] In step S**1406**, the CPU **111** generates a chat execution request for the recipient user corresponding to the sender information about the received FAX job, based on the access token information acquired from the recipient user table **901** in step S**1302**. Next, the CPU **111** transmits the chat execution request to the message application server **30** (transmission instruction). The chat message the CPU **111** requests to post here is “the MFP has received a FAX document, and the printing of the images based on the spooled FAX-received image data is completed”.

Step S**1407**: Post Chat Message

[0142] In step S**1407**, the CPU **301** of the message application server **30** transmits a notification that the chat execution request is issued from the MFP **10** in step S**1406** to the user terminal **20**.

[0143] The notification may be actively transmitted by the CPU **301** of the message application server **30**, or passively transmitted, for example, based on a timeline acquisition request from the user terminal **20**. The message application **306** installed on the HDD **210** of the user terminal **20** displays the chat message (chat message **1504**) received from the message application server **30** on the operation panel **201** of the user terminal **20** to notify the recipient user.

[0144] Once the issuance of the chat message request in step S**1406** is completed, the CPU **111** ends the processing.

[0145] The notification to the recipient user in steps S**1405** and S**1406** is not essential, and the MFP **10** does not necessarily need to issue the notification that the spooled image data is printed.

[0146] The status information **609** requested in step S**1401** may be the information about the status of the user corresponding to the sender information about image data remaining in the HDD **114**, instead of the status of the user corresponding to the sender information about the image data spool-controlled in step S**1306**. In such a case, for example, the processing of step S**1404** and step S**1608**, described below, can be omitted since there will be no processing for jobs that have been cleared by the user operating the operation unit **116** of the MFP **10** to print the spooled image data before the status information **609** is updated.

[0147] FIG. **15** is a diagram illustrating an example of a chat screen **1500** of the message application **306**. The chat screen **1500** is a screen provided by the message application **306** and a chat screen displayed on the operation panel **201** of the user terminal **20**.

[0148] A display field **1501** displays information about the user. The chat screen **1500** is a screen used by user A. A display field **1502** is a field that displays a list of chat partners with chat history. The chat screen **1500** displays a chat screen with an MFP **10**.

[0149] The chat message **1503** is the one posted in step S**1308**, an example of a chat message for notifying the user that the MFP **10** has received a FAX document and the image data is spooled. The chat message **1504** is the one posted in step S**1407**, an example of a chat message for notifying the user that the spooled image data has been printed.

[0150] The types and layout of the pieces of information displayed on the chat screen **1500** are just an example, and may differ from the example depending on the provider of the message application **306** and the user who customizes the message application **306**.
[0151] The MFP **10** may be configured to accept the user's print instructions from the chat screen **1500** so that the user can instruct the MFP **10** to print images based on the spooled image data via the chat screen **1500**. With such a configuration, when the MFP **10** spools the image data received by the MFP **10**, the recipient user corresponding to the sender information can transmit print instructions to the MFP **10** performing the spool processing via the chat screen **1500**. Receiving the print instructions, the MFP **10** prints the images based on the image data spooled in the HDD **114** using the printing unit **120**, for example.
[0152] If a plurality of MFPs **10** is connected and can communicate spooled image data with each other, the user may transmit the print instructions to any one of the MFPs **10**, such as the one closest to the user's current location.
[0153] The user's print instructions from the chat screen **1500** may be issued using a software button displayed by the message application **306** or a physical button on the user terminal **20**. The print instructions may be given by the user replying with a sentence such as “print it” in the chat. The user terminal **20** may include a gyro sensor, for example, and may be configured to transmit the print instructions to the MFP **10** in response to the user's specific action, such as a shake, after the display of the chat message **1503**.
[0154] FIG. **16** is a flowchart illustrating an example of processing of a FAX job received by an MFP **10**. Specifically, FIG. **16** illustrates processing where the MFP **10** spools or prints the received image data based on the acquired status information **609** about the user and the status table **701**. This processing is started by the MFP **10** receiving the FAX job via the FAX communication unit **124**.
Step S**1601**: Receive FAX Job
[0155] In step S**1601**, the CPU **111** of the MFP **10** temporarily stores the received FAX job information in the RAM **113**. Once the reception of the FAX job is completed, the processing proceeds to step S**1602**.
Step S**1602**: Search for User Information
[0156] In step S**1602**, the CPU **111** of the MFP **10** searches the recipient user table **901** stored in the HDD **114** for the user information **603** corresponding to the sender information based on the sender information about the FAX job information stored in the RAM **113** in step S**1601**. Once the search for the user information **603** is completed, the processing proceeds to step S**1603**.
Step S**1603**: Determination as to Finding of User Information
[0157] In step S**1603**, the CPU **111** of the MFP **10** determines whether the user information **603** corresponding to the sender information is found in the recipient user table **901** in step S**1602**. If the CPU **111** determines that the user information **603** corresponding to the sender information is found in the recipient user table **901** (YES in step S**1603**), the processing proceeds to step S**1604**. If the CPU **111** determines that the user information **603** corresponding to the sender information is not found in the recipient user table **901** (NO in step S**1603**), the processing proceeds to step S**1612** irrespective of the information in the recipient user table **901**.
Step S**1604**: Request Status Information
[0158] In step S**1604**, the CPU **111** of the MFP **10** acquires the access token information corresponding to the found user information **603** from the recipient user table **901**. The CPU **111** also transmits the access token information to the tenant server **40** and requests the status information **609**. Once the request of the status information **609** is completed, the processing proceeds to step S**1605**.
Step S**1605**: Determination as to Acquisition of Status Information
[0159] In step S**1605**, the CPU **111** of the MFP **10** waits until the status information **609** is transmitted from the tenant server **40**. If the CPU **111** determines that the status information **609** is

transmitted from the tenant server **40** and is successfully acquired (YES in step S**1605**), the processing proceeds to step S**1606**. If the CPU **111** determines that the status information **609** is not successfully acquired yet (NO in step S**1605**), the processing returns to step S**1605** and the CPU **111** continues waiting.

Step S**1606**: Search Status Table

[0160] In step S**1606**, the CPU **111** of the MFP **10** searches the status table **701** for the operation mode corresponding to the status information **609** based on the status information **609** acquired in step S**1605**, and acquires the operation mode.

S**1607**: Determine Operation Mode

[0161] In step S**1607**, the CPU **111** of the MFP **10** determines whether the operation mode corresponding to the status information **609** acquired in step S**1606** is “spool” or “print”. If the CPU **111** determines that the operation mode corresponding to the acquired status information **609** is “spool” (NO in step S**1607**), the processing proceeds to step S**1608**. If the CPU **111** determines that the operation mode corresponding to the acquired status information **609** is “print” (YES in step S**1607**), the processing proceeds to step S**1611**.

Step S**1608**: Determine Whether Spool Processing is Completed

[0162] In step S**1608**, the CPU **111** of the MFP **10** determines whether the spool processing of the FAX job being processed is completed. If the CPU **111** determines that the spool processing of the FAX job being processed is completed (YES in step S**1608**), the processing proceeds to step S**1604**. If the CPU **111** determines that the spool processing of the FAX job being processed is not completed (NO in step S**1608**), the processing proceeds to step S**1609**.

Step S**1609**: Spool Processing

[0163] In step S**1609**, the CPU **111** of the MFP **10** moves the FAX job information stored in the RAM **113** in step S**1601** to the HDD **114** to perform the spool processing of the image data. Once the spool processing of the image data is completed, the processing proceeds to step S**1610**.

Step S**1610**: Notify “Completion of Spooling”

[0164] In step S**1610**, the CPU **111** of the MFP **10** notifies the message application server **30** that the image data is spooled by the MFP **10**. In other words, in step S**1610**, the CPU **111** posts the chat message **1503** to the user via the message application server **30** and the message application **306**. Once the notification of the “completion of spooling” is completed, the processing proceeds to step S**1604**. This notification is transmitted to the talk room corresponding to the user about whom the status information **609** is acquired.

Step S**1611**: Determine Whether Spool Processing is Completed

[0165] In step S**1611**, the CPU **111** of the MFP **10** determines whether the spool processing of the FAX job being processed is completed. If the CPU **111** determines that the spool processing of the FAX job being processed is not completed (NO in step S**1611**), the processing proceeds to step S**1612**. If the CPU **111** determines that the spool processing of the FAX job being processed is completed (YES in step S**1611**), the processing proceeds to step S**1613**.

Step S**1612**: Print

[0166] In step S**1612**, the CPU **111** of the MFP **10** issues instructions to print images based on the image data stored in the RAM **113** in step S**1601**, and the printing unit **120** prints the images. Once the printing is completed, the processing proceeds to step S**1615**.

Step S**1613**: Determine Whether There is Spooled Image Data Remaining

[0167] In step S**1613**, the CPU **111** of the MFP **10** determines whether the image data stored by the spool processing in step S**1609** remains in the HDD **114**. If the CPU **111** determines that the image data stored by the spool processing remains in the HDD **114** (YES in step S**1613**), the processing proceeds to step S**1614**. If the CPU **111** determines that the image data stored by the spool processing does not remain in the HDD **114** (NO in step S**1613**), the processing proceeds to step S**1615**. Examples of the reason why the image data stored by the spool processing does not remain in the HDD **114** include the user directly operating the operation unit **116** in the MFP **10** to print the

images based on the image data and quitting printing.
Step S**1614**: Print Images Based on Spooled Image Data
[0168] In step S**1614**, the CPU **111** of the MFP **10** issues instructions to print the images based on the image data stored in the HDD **114** by the spool processing, and the printing unit **120** prints the images. Once the printing of the images based on the spooled image data is completed, the processing proceeds to step S**1615**. When the images based on the spooled image data are printed by the MFP **10**, the CPU **111** deletes the spooled image data. This deletion is not essential, and the spooled image data may continue to be retained even after the images based on the spooled image data are printed by the MFP **10**.
Step S**1615**: Notify "Completion of Printing"
[0169] In step S**1615**, the CPU **111** of the MFP **10** notifies the message application server **30** of the completion of printing by the MFP **10**. In other words, in step S**1615**, the CPU **111** posts the chat message **1504** to the user via the message application server **30** and the message application **306**. This notification is transmitted to the talk room corresponding to the user about whom the status information **609** is acquired. Once the notification of the "completion of printing" is completed, the processing ends. When the processing of step S**1615** ends, the CPU **111** deletes the sender information temporarily recorded in step S**1601** from the RAM **113**.
[0170] With the foregoing configuration, the print processing or the spool processing on the job received by the MFP **10** can be performed with reference to the status table **701**, the recipient user table **901**, and the status information **609** stored in the tenant server **40**. The MFP **10** can perform printing by detecting a change in the status information **609** stored in the tenant server **40**.
[0171] Conventionally, if an MFP performs spool processing of received image data, the spooled image data has been printed in response to user actions, such as operating the MFP to issue print instructions, transmitting print instructions in the chat, and bringing the user terminal close to the MFP.
[0172] According to the present exemplary embodiment, if image data is spooled, the image processing apparatus detects a change of the status information **609** into specific status information **609** indicating that the user can immediately receive the printout, and prints the images based on the image data without user operation. The present exemplary embodiment can thus provide the effect of reducing the effort to print the images of the received image data in situations where the user can immediately receive the printout.
[0173] In cases where the recipient user is unable to immediately receive the FAX document received by the MFP **10**, such as when the recipient user is absent, the FAX document is not immediately printed upon reception. This provides the effect of guaranteeing safety in terms of information security.
[0174] In the present exemplary embodiment, as described above, the operation modes of the MFP **10** are associated with the situation statuses and the attendance statuses as the status information **609**. However, the status information **609** may include only the situation statuses, and there may be cases where the effects of the present exemplary embodiment can thereby be provided. However, to enhance the effects of the present exemplary embodiment, a plurality of indices of different attributes are desirably used for the status information **609** as in the present exemplary embodiment.
[0175] In the present exemplary embodiment, the recipient user table **901** is configured so that the user information **603** is registered therein. However, the channel information **604** may be registered instead of the user information **603**. This configuration enables checking the states of all the users in the list **605** where the user information belonging to the channel information **604** is summarized, and can print if any one of the users is in a state corresponding to the print mode. With such a configuration, the users register the authentication information about some or all of the users belonging to the target channel in the recipient user table **901**. As described above, the MFP **10** acquires and registers the access token information about each user, and acquires the status

information **609** about each user. The users may register the channel information **604** in the recipient user table **901** by inputting channel IDs. In such a configuration, the MFP **10** issues the chat execution request not to individual users, but to a shared channel, such as a group chat.
[0176] In this configuration, the MFP **10** may print when one of the users in the list **605** where the user information belonging to the channel information **604** is summarized transmits print instructions to the MFP **10** via the chat screen **1500**. In the present exemplary embodiment, the MFP **10** is configured to perform the processing for acquiring the status information **609** in step S**1304**, with the reception of the FAX job in step S**1301** as a trigger. However, the MFP **10** may be configured to periodically acquire the status information **609** and store the status information **609** in the HDD **114** before the reception of the FAX job. The sequence can thereby be continued without accessing the tenant server **40**.
[0177] If the recipient user of the image data received by the MFP **10** can be identified or the cloud service can be accessed without using authentication information, the access token information does not necessarily need to be handled. For example, if the cloud service manages the users with only the IDs specific to the respective users without an authentication process, the users may register their IDs in the recipient user table **901** instead of the access token information. In such a case, the authentication information-related processing in steps S**1102** to S**1104**, S**1201** to S**1204**, S**1303**, and S**1401** according to the present exemplary embodiment can be omitted.
[0178] If there are situations where a user is likely to be able to immediately receive the printout and situations where they are not, the effort for the image processing apparatus to print images based on image data received via FAX can be reduced.

Other Embodiments

[0179] Embodiment(s) of the present disclosure can also be realized by a computer of a system or apparatus that reads out and executes computer executable instructions (e.g., one or more programs) recorded on a storage medium (which may also be referred to more fully as a ‘non-transitory computer-readable storage medium’) to perform the functions of one or more of the above-described embodiment(s) and/or that includes one or more circuits (e.g., application specific integrated circuit (ASIC)) for performing the functions of one or more of the above-described embodiment(s), and by a method performed by the computer of the system or apparatus by, for example, reading out and executing the computer executable instructions from the storage medium to perform the functions of one or more of the above-described embodiment(s) and/or controlling the one or more circuits to perform the functions of one or more of the above-described embodiment(s). The computer may comprise one or more processors (e.g., central processing unit (CPU), micro processing unit (MPU)) and may include a network of separate computers or separate processors to read out and execute the computer executable instructions. The computer executable instructions may be provided to the computer, for example, from a network or the storage medium. The storage medium may include, for example, one or more of a hard disk, a random-access memory (RAM), a read only memory (ROM), a storage of distributed computing systems, an optical disk (such as a compact disc (CD), digital versatile disc (DVD), or Blu-ray Disc (BD)™), a flash memory device, a memory card, and the like.
[0180] While the present disclosure has been described with reference to exemplary embodiments, it is to be understood that the disclosure is not limited to the disclosed exemplary embodiments. The scope of the following claims is to be accorded the broadest interpretation so as to encompass all such modifications and equivalent structures and functions.
[0181] This application claims the benefit of Japanese Patent Application No. 2024-017771, filed Feb. 8, 2024, which is hereby incorporated by reference herein in its entirety.

Claims

1. An image processing apparatus comprising: a modem configured to receive image data via facsimile (FAX); one or more memories storing one or more programs and one or more processors executing the program to cause the image processing apparatus to acquire status information indicating a state of a user from a chat service; and a printer configured to print an image based on the received image data on a recording medium, wherein the processor causes the image processing apparatus to acquire the status information about a user corresponding to sender information about the received image data, and wherein the printer is configured to, based on acquisition of specific status information, print the image based on the received image data on the recording medium without the image processing apparatus accepting the user's print instruction after the acquisition of the status information.

2. The image processing apparatus according to claim 1, wherein the image processing apparatus performs different processing depending on the acquired status information.

3. The image processing apparatus according to claim 2, wherein in a case where the acquired status information is the specific status information, print processing for printing the image based on the received image data on the recording medium is performed, and in a case where the acquired status information is not the specific status information, storage processing for storing the received image data in a storage device is performed.

4. The image processing apparatus according to claim 3, wherein the print processing is not performed until the acquisition of the specific status information.

5. The image processing apparatus according to claim 4, wherein the received image data is stored in the storage device until the acquisition of the specific status information.

6. The image processing apparatus according to claim 5, wherein the image processing apparatus is configured to accept the user's setting of the specific status information.

7. The image processing apparatus according to claim 1, further comprising a communicator, wherein the communicator is configured to transmit a notification transmission instruction to a chat server via a network.

8. The image processing apparatus according to claim 7, wherein the notification transmission instruction is an instruction to transmit a notification of processing content of the image processing apparatus.

9. The image processing apparatus according to claim 8, wherein the notification is a notification that storage processing for storing the received image data in a storage device is performed, the storage processing being performed in a case where the acquired status information is not the specific status information.

10. The image processing apparatus according to claim 8, wherein the notification is a notification that print processing for printing the image based on the received image data on the recording medium is performed, the print processing being performed in a case where the acquired status information is the specific status information.

11. The image processing apparatus according to claim 8, wherein the notification is transmitted to a talk room corresponding to the user about whom the status information is acquired.

12. The image processing apparatus according to claim 8, wherein the notification is transmitted to a channel to which the user about whom the status information is acquired belongs.

13. The image processing apparatus according to claim 8, wherein the notification is presented in a chat.

14. The image processing apparatus according to claim 1, wherein the image processing apparatus is configured to accept the print instruction from an external apparatus configured to communicate with the image processing apparatus via a network.

15. The image processing apparatus according to claim 1, wherein the processor cause the image processing apparatus to accept the print instruction.

16. The image processing apparatus according to claim 1, wherein the processor causes the image

processing apparatus to acquire the status information about the user belonging to a channel associated with the sender information about the received image data.

17. The image processing apparatus according to claim 1, wherein the printer is configured to print the image based on the received image data on the recording medium, the image data received from a cloud storage.

18. An image processing method for an image processing apparatus, the method comprising: receiving image data via facsimile (FAX); acquiring status information indicating a state of a user from a chat service; and printing an image based on the received image data on a recording medium, wherein the status information about a user corresponding to sender information about the received image data is acquired, and wherein, based on acquisition of specific status information, the image based on the received image data is printed on the recording medium without the image processing apparatus accepting the user's print instruction after the acquisition of the status information.

19. A non-transitory computer readable storage medium for storing a program causing an image processing apparatus to perform an image processing method, the image processing method comprising: receiving image data via facsimile (FAX); acquiring status information indicating a state of a user from a chat service; and printing an image based on the received image data on a recording medium, wherein the status information about a user corresponding to sender information about the received image data is acquired, and wherein, based on acquisition of specific status information, the image based on the received image data is printed on the recording medium without the image processing apparatus accepting the user's print instruction after the acquisition of the status information.