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(54) **NON-TRANSITORY COMPUTER-READABLE STORAGE MEDIUM STORING PRINTING CONTROL PROGRAM, FAX CONTROL DEVICE, AND FAX CONTROL METHOD**

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(57) **ABSTRACT**

There is provided a non-transitory computer-readable storage medium storing a printing control program, the printing control program causing a computer to execute display processing, acquisition processing, and instruction processing. In the display processing, a setting image is displayed in response to a request from a general-purpose printer driver. In the acquisition processing, a FAX transmission destination to be a destination of FAX is acquired via the setting image. In the instruction processing, print control data including the FAX transmission destination is passed to the general-purpose printer driver and the general-purpose printer driver is caused to execute a print instruction conforming to the print control data and serving as a FAX transmission instruction to a printer having a FAX transmission function.

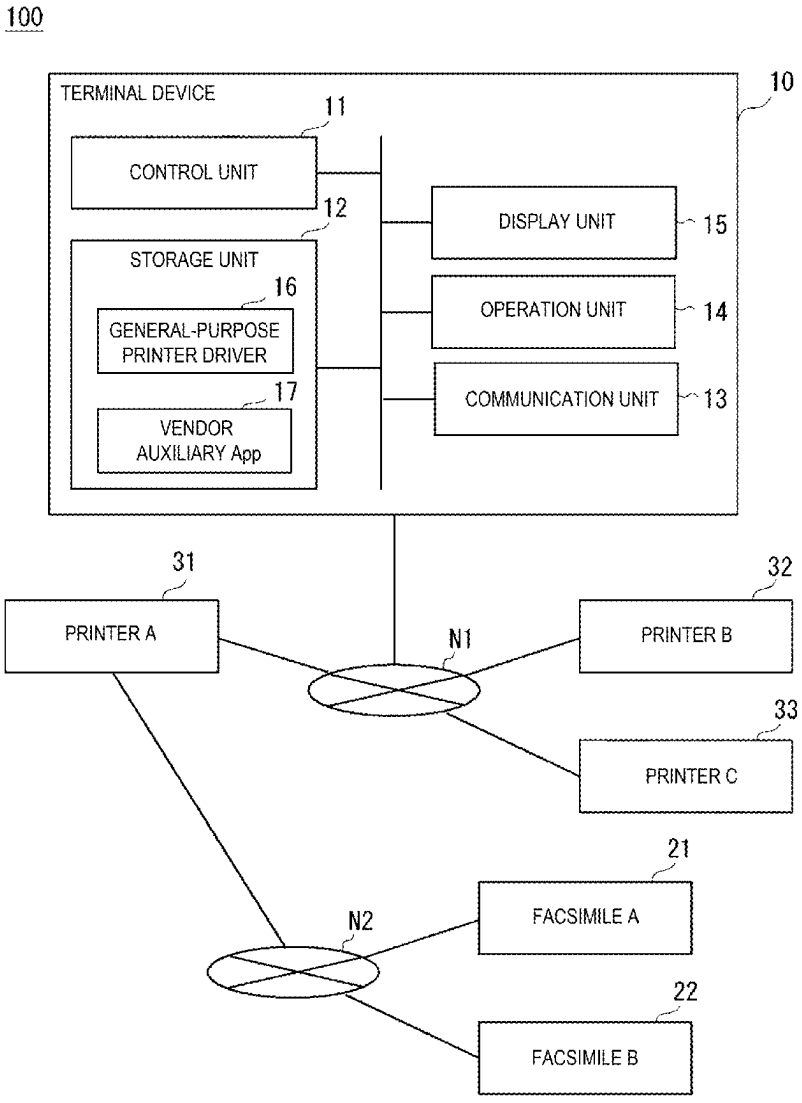


FIG. 1

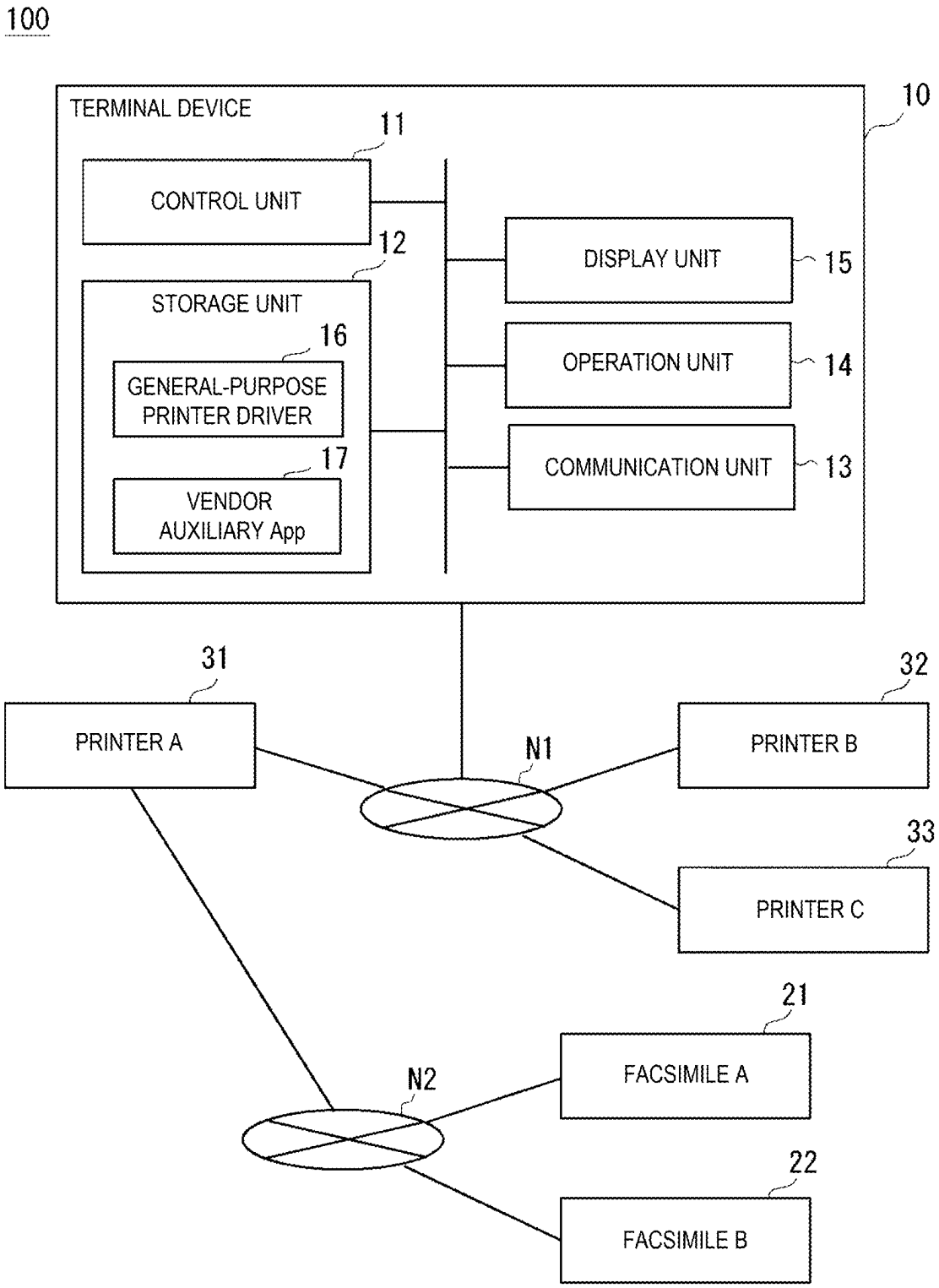

100
TERMINAL DEVICE
10
11
CONTROL UNIT
12
STORAGE UNIT
16
GENERAL-PURPOSE PRINTER DRIVER
17
VENDOR AUXILIARY App
DISPLAY UNIT
15
OPERATION UNIT
14
COMMUNICATION UNIT
13
31
PRINTER A
32
PRINTER B
N1
33
PRINTER C
21
FACSIMILE A
N2
22
FACSIMILE B

FIG. 2

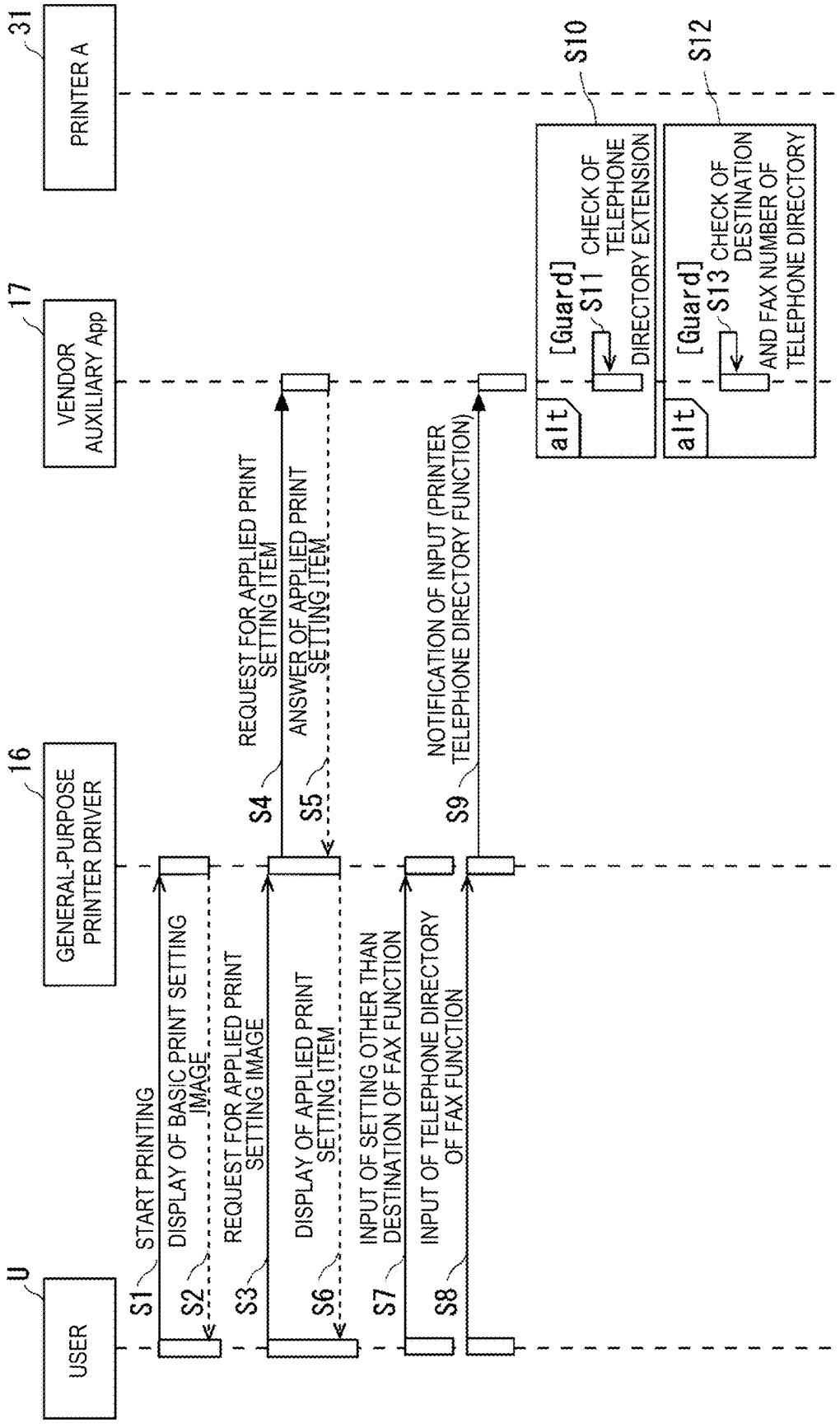

U
USER
16
GENERAL-PURPOSE PRINTER DRIVER
17
VENDOR AUXILIARY App
31
PRINTER A
S1 START PRINTING
S2 DISPLAY OF BASIC PRINT SETTING IMAGE
S3 REQUEST FOR APPLIED PRINT SETTING IMAGE
S4 REQUEST FOR APPLIED PRINT SETTING ITEM
S5 ANSWER OF APPLIED PRINT SETTING ITEM
S6 DISPLAY OF APPLIED PRINT SETTING ITEM
S7 INPUT OF SETTING OTHER THAN DESTINATION OF FAX FUNCTION
S8 INPUT OF TELEPHONE DIRECTORY OF FAX FUNCTION
S9 NOTIFICATION OF INPUT (PRINTER TELEPHONE DIRECTORY FUNCTION)
S10
alt
[Guard]
S11 CHECK OF TELEPHONE DIRECTORY EXTENSION
S12
alt
[Guard]
S13 CHECK OF DESTINATION AND FAX NUMBER OF TELEPHONE DIRECTORY

FIG. 3

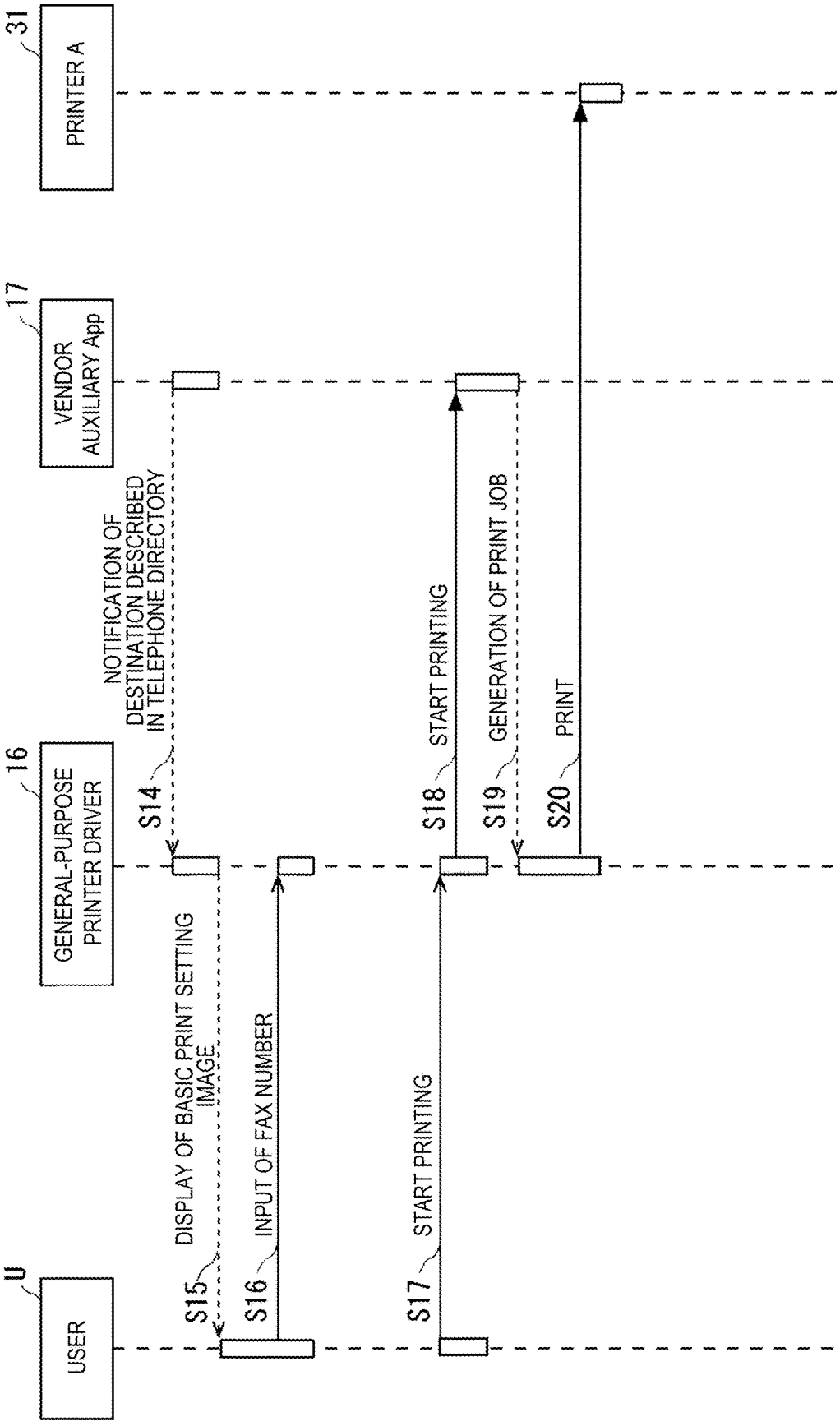

U
USER
16
GENERAL-PURPOSE PRINTER DRIVER
17
VENDOR AUXILIARY App
31
PRINTER A
S14
NOTIFICATION OF DESTINATION DESCRIBED IN TELEPHONE DIRECTORY
S15
DISPLAY OF BASIC PRINT SETTING IMAGE
S16
INPUT OF FAX NUMBER
S17
START PRINTING
S18
START PRINTING
S19
GENERATION OF PRINT JOB
S20
PRINT

FIG. 4

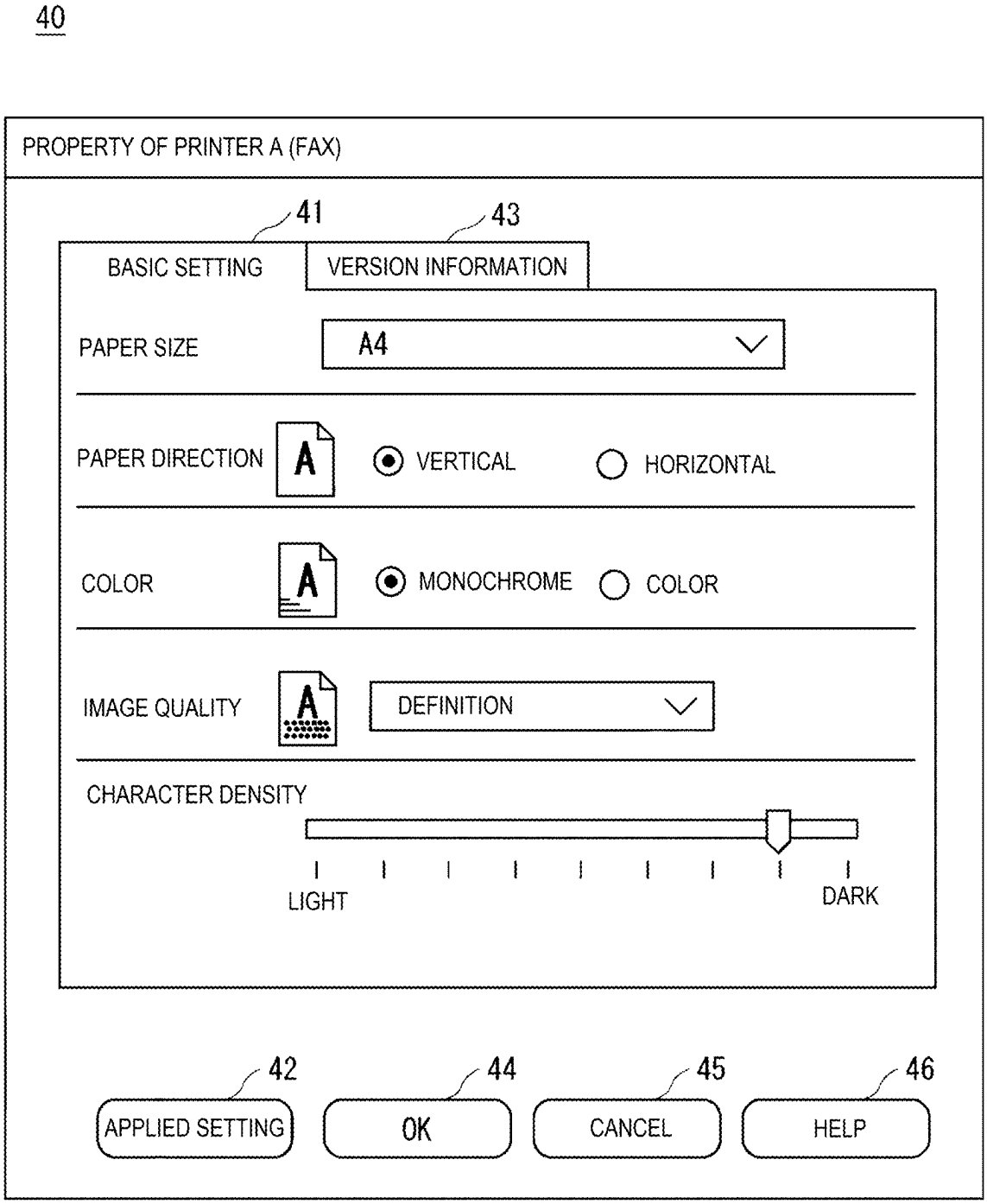

40
PROPERTY OF PRINTER A (FAX)
41
43
BASIC SETTING
VERSION INFORMATION
PAPER SIZE
A4
PAPER DIRECTION
VERTICAL
HORIZONTAL
COLOR
MONOCHROME
COLOR
IMAGE QUALITY
DEFINITION
CHARACTER DENSITY
LIGHT
DARK
42
44
45
46
APPLIED SETTING
OK
CANCEL
HELP

FIG. 5

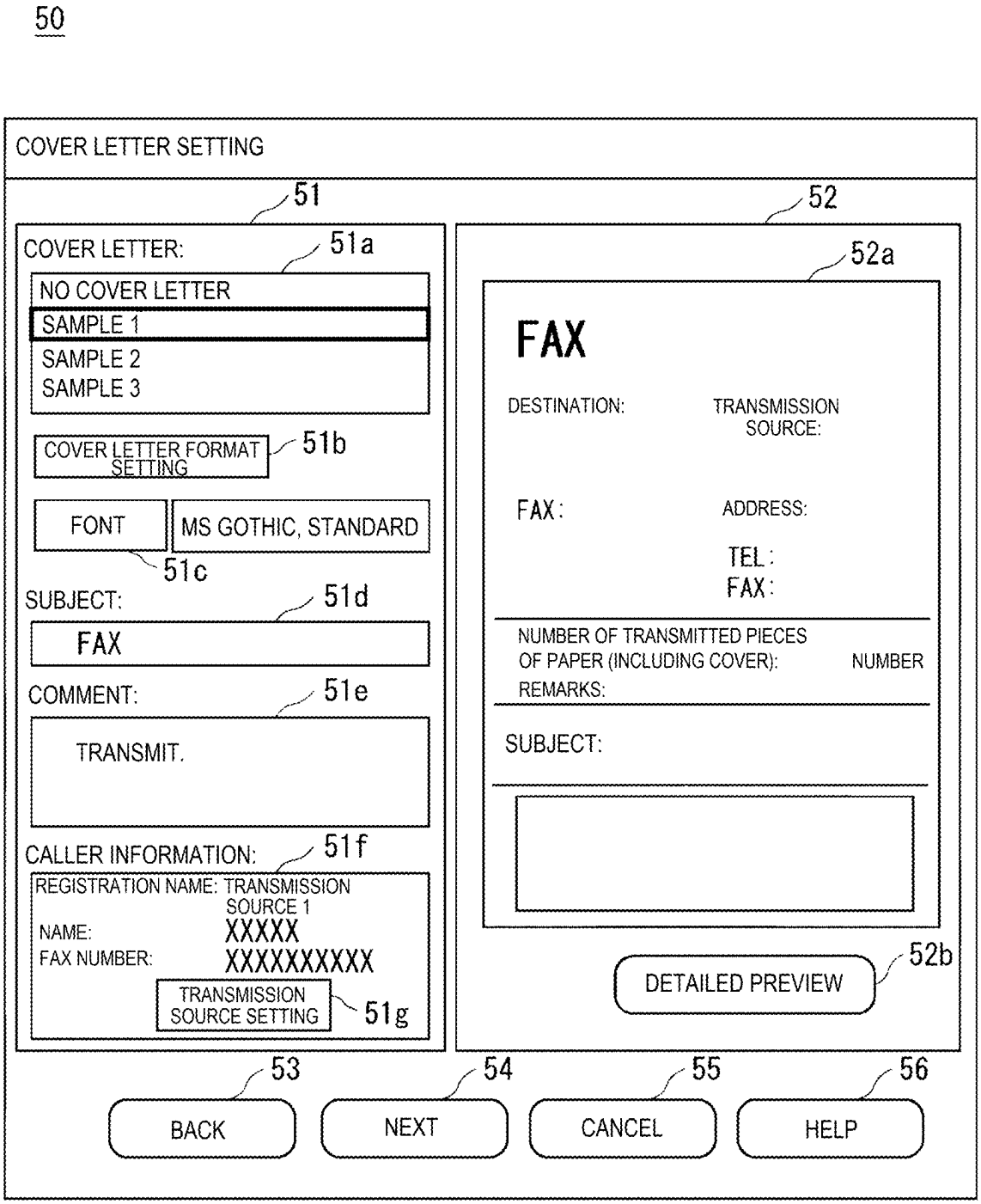

50
COVER LETTER SETTING
51
52
COVER LETTER:
51a
NO COVER LETTER
SAMPLE 1
SAMPLE 2
SAMPLE 3
COVER LETTER FORMAT SETTING
51b
FONT
MS GOTHIC, STANDARD
51c
SUBJECT:
51d
FAX
COMMENT:
51e
TRANSMIT.
CALLER INFORMATION:
51f
REGISTRATION NAME: TRANSMISSION SOURCE 1
NAME: XXXXX
FAX NUMBER: XXXXXXXXXX
TRANSMISSION SOURCE SETTING
51g
52a
FAX
DESTINATION:
TRANSMISSION SOURCE:
FAX:
ADDRESS:
TEL:
FAX:
NUMBER OF TRANSMITTED PIECES OF PAPER (INCLUDING COVER):
NUMBER
REMARKS:
SUBJECT:
DETAILED PREVIEW
52b
53
54
55
56
BACK
NEXT
CANCEL
HELP

FIG. 6

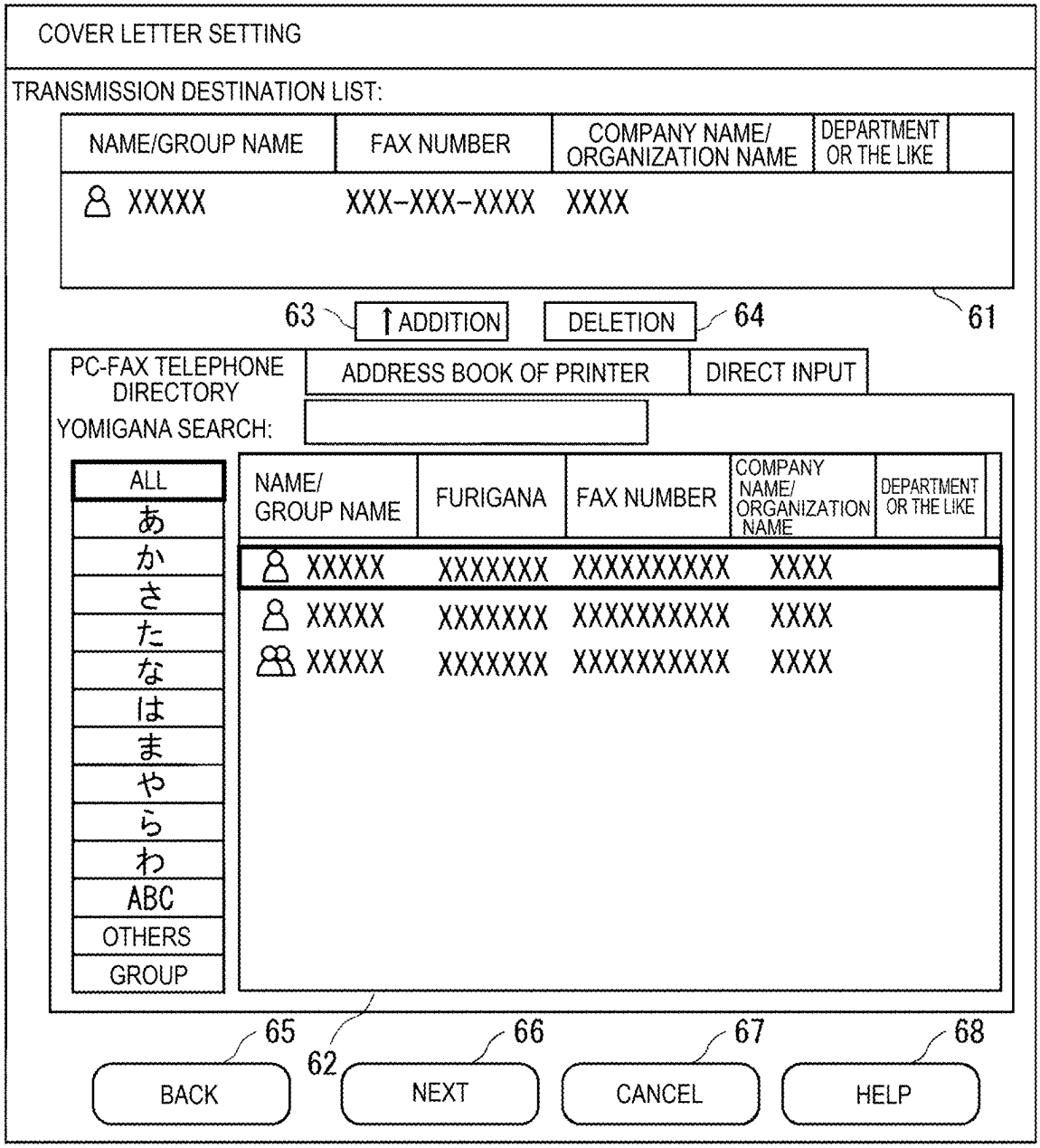

60
COVER LETTER SETTING
TRANSMISSION DESTINATION LIST:
NAME/GROUP NAME
FAX NUMBER
COMPANY NAME/ ORGANIZATION NAME
DEPARTMENT OR THE LIKE
XXXXX
XXX-XXX-XXXX
XXXX
63
ADDITION
DELETION
64
61
PC-FAX TELEPHONE DIRECTORY
ADDRESS BOOK OF PRINTER
DIRECT INPUT
YOMIGANA SEARCH:
ALL
あ
か
さ
た
な
は
ま
や
ら
わ
ABC
OTHERS
GROUP
NAME/ GROUP NAME
FURIGANA
FAX NUMBER
COMPANY NAME/ ORGANIZATION NAME
DEPARTMENT OR THE LIKE
XXXXX XXXXXXX XXXXXXXXXX XXXX
XXXXX XXXXXXX XXXXXXXXXX XXXX
XXXXX XXXXXXX XXXXXXXXXX XXXX
65
62
66
67
68
BACK
NEXT
CANCEL
HELP

FIG. 7

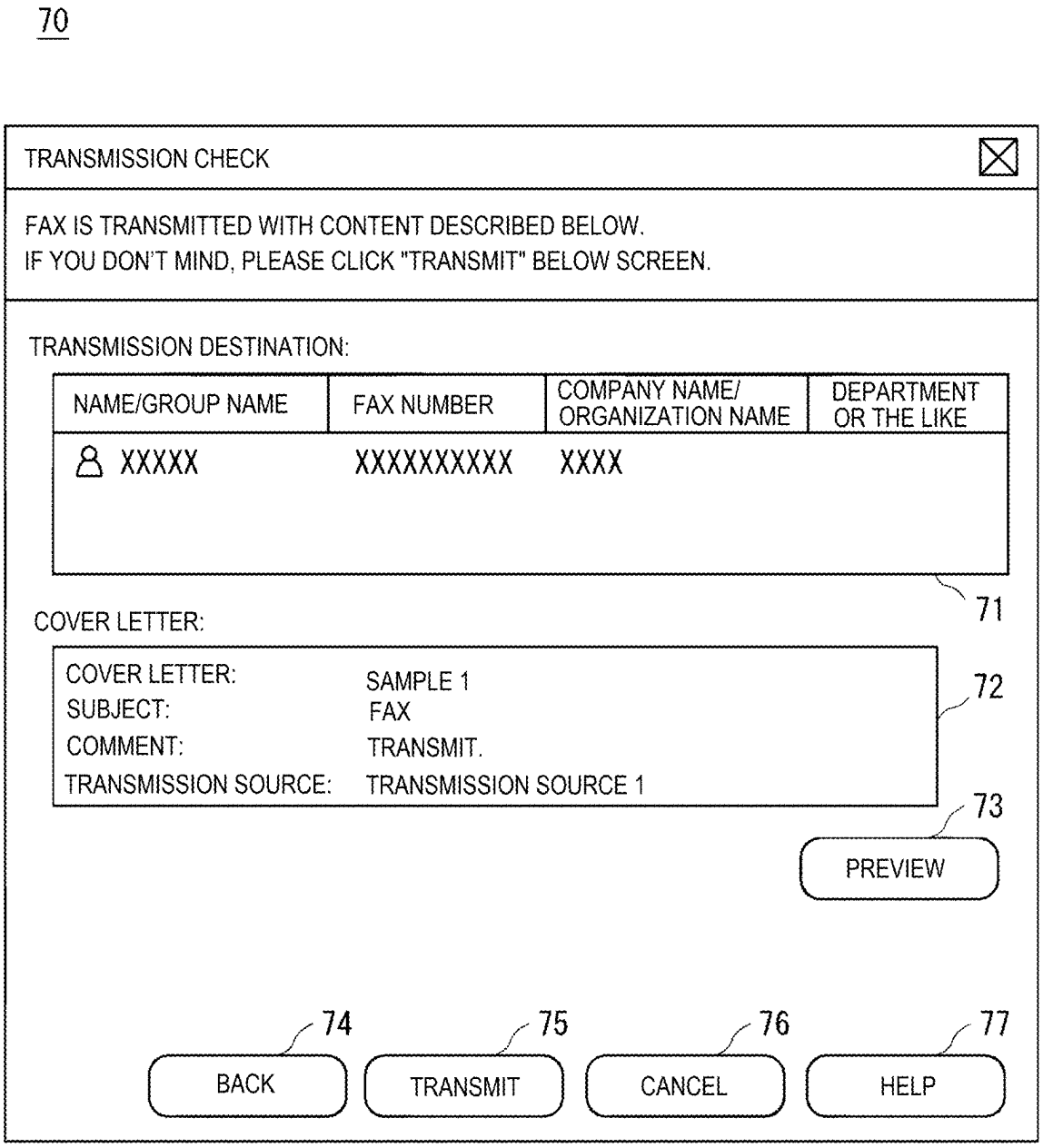

70
TRANSMISSION CHECK
FAX IS TRANSMITTED WITH CONTENT DESCRIBED BELOW.
IF YOU DON'T MIND, PLEASE CLICK "TRANSMIT" BELOW SCREEN.
TRANSMISSION DESTINATION:
NAME/GROUP NAME
FAX NUMBER
COMPANY NAME/ ORGANIZATION NAME
DEPARTMENT OR THE LIKE
XXXXX
XXXXXXXXXX
XXXX
71
COVER LETTER:
COVER LETTER: SAMPLE 1
SUBJECT: FAX
COMMENT: TRANSMIT.
TRANSMISSION SOURCE: TRANSMISSION SOURCE 1
72
73
PREVIEW
74
BACK
75
TRANSMIT
76
CANCEL
77
HELP

FIG. 8

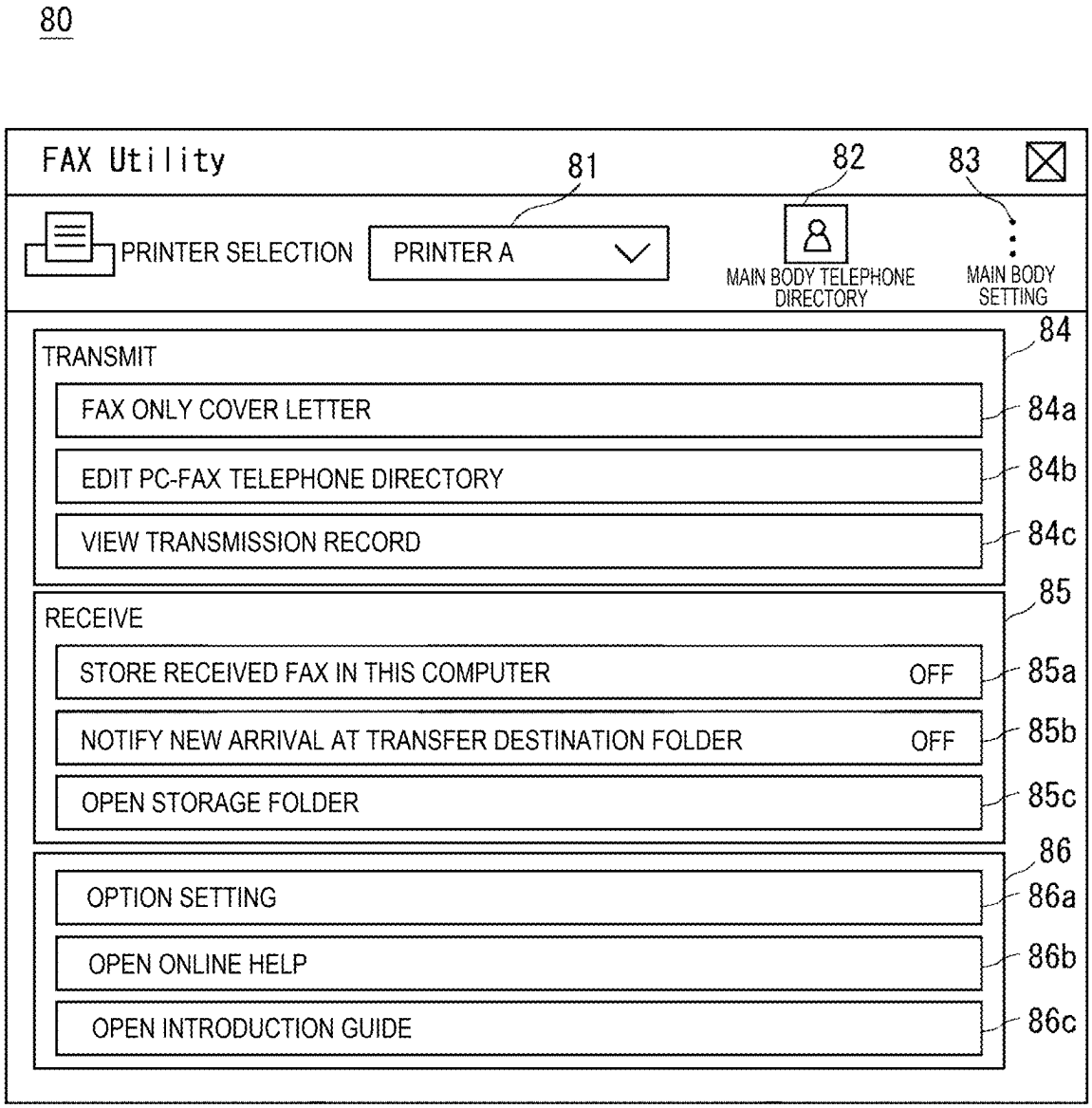

80
FAX Utility
81
82
83
PRINTER SELECTION
PRINTER A
MAIN BODY TELEPHONE DIRECTORY
MAIN BODY SETTING
84
TRANSMIT
FAX ONLY COVER LETTER
84a
EDIT PC-FAX TELEPHONE DIRECTORY
84b
VIEW TRANSMISSION RECORD
84c
85
RECEIVE
STORE RECEIVED FAX IN THIS COMPUTER
OFF
85a
NOTIFY NEW ARRIVAL AT TRANSFER DESTINATION FOLDER
OFF
85b
OPEN STORAGE FOLDER
85c
86
OPTION SETTING
86a
OPEN ONLINE HELP
86b
OPEN INTRODUCTION GUIDE
86c

FIG. 9

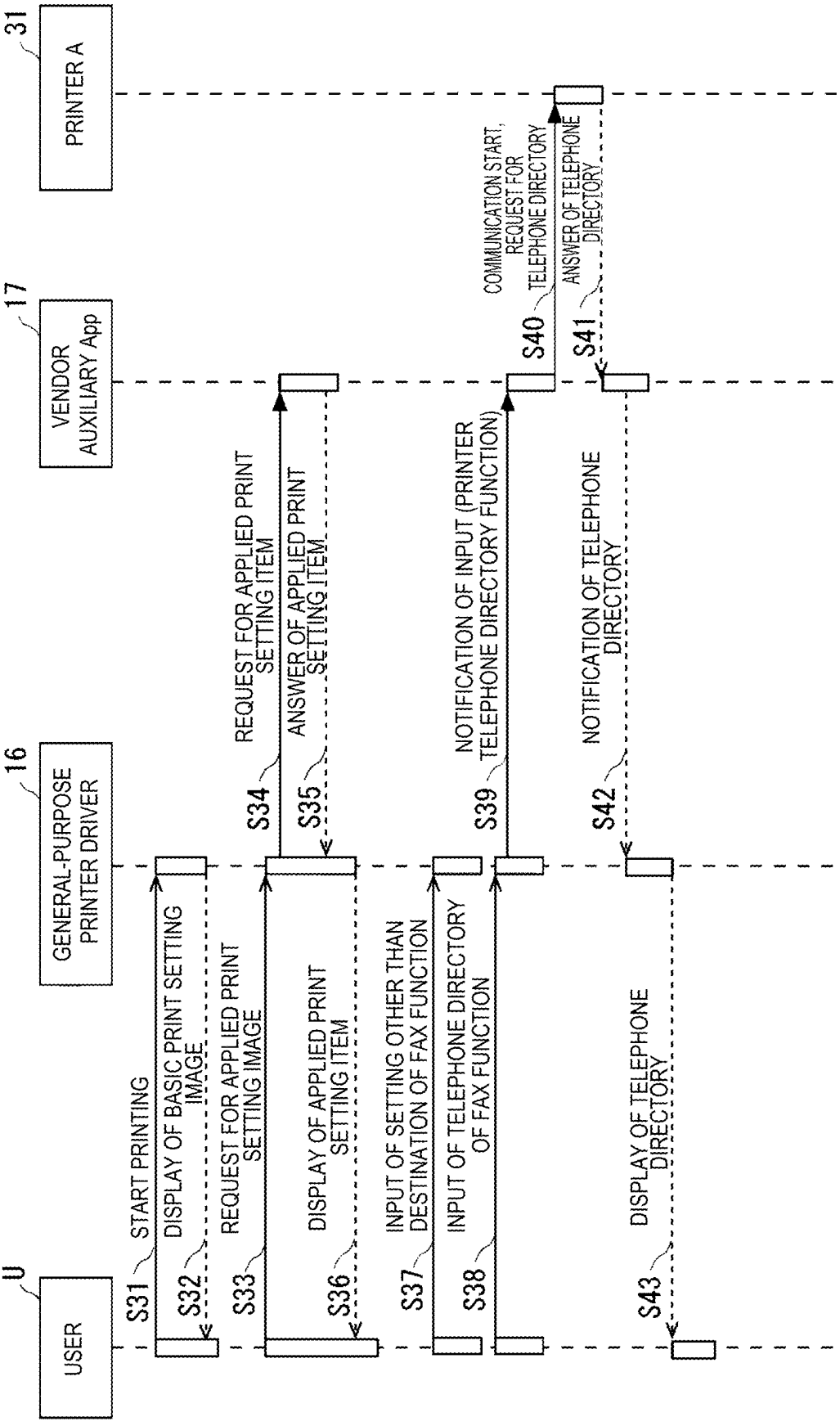

U
USER
16
GENERAL-PURPOSE PRINTER DRIVER
17
VENDOR AUXILIARY App
31
PRINTER A
S31 START PRINTING
S32 DISPLAY OF BASIC PRINT SETTING IMAGE
S33 REQUEST FOR APPLIED PRINT SETTING IMAGE
S34 REQUEST FOR APPLIED PRINT SETTING ITEM
S35 ANSWER OF APPLIED PRINT SETTING ITEM
S36 DISPLAY OF APPLIED PRINT SETTING ITEM
S37 INPUT OF SETTING OTHER THAN DESTINATION OF FAX FUNCTION
S38 INPUT OF TELEPHONE DIRECTORY OF FAX FUNCTION
S39 NOTIFICATION OF INPUT (PRINTER TELEPHONE DIRECTORY FUNCTION)
S40 COMMUNICATION START, REQUEST FOR TELEPHONE DIRECTORY
S41 ANSWER OF TELEPHONE DIRECTORY
S42 NOTIFICATION OF TELEPHONE DIRECTORY
S43 DISPLAY OF TELEPHONE DIRECTORY

FIG. 10

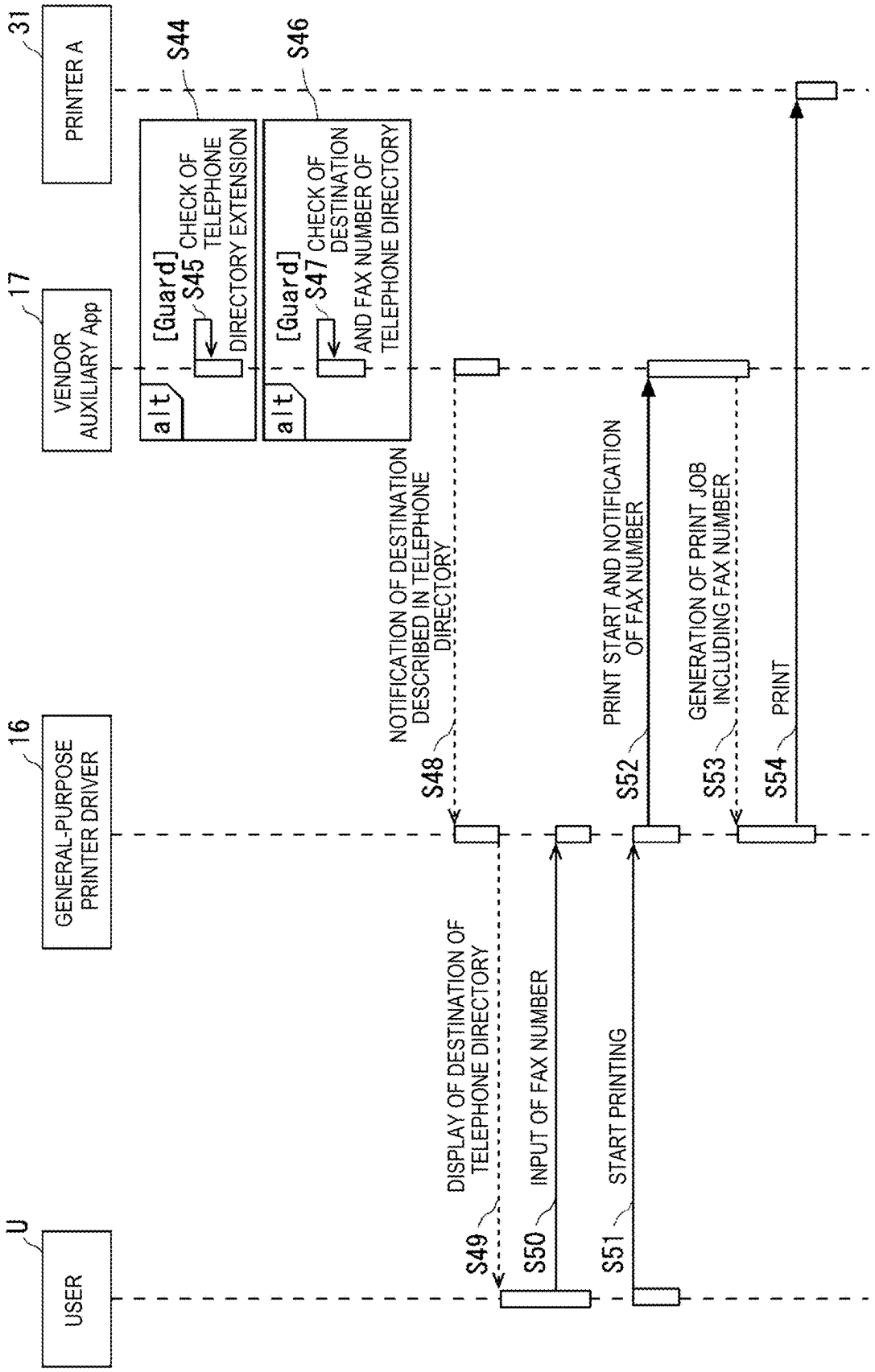
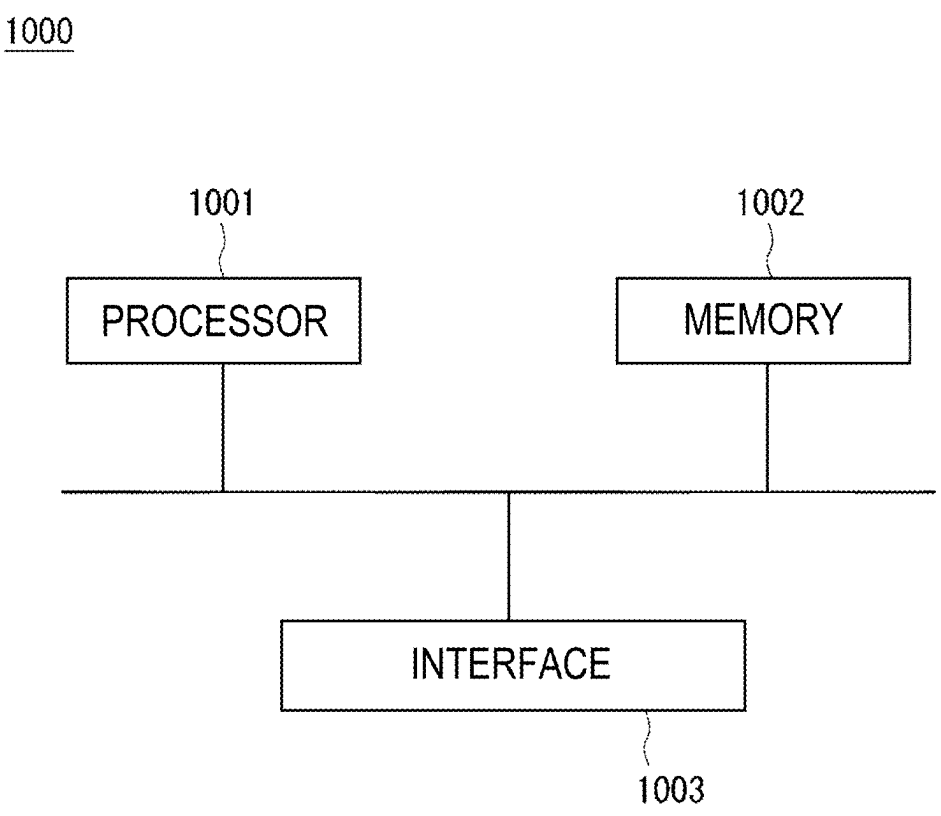

U
USER
16
GENERAL-PURPOSE PRINTER DRIVER
17
VENDOR AUXILIARY App
31
PRINTER A
alt
[Guard]
S45 CHECK OF TELEPHONE DIRECTORY EXTENSION
S44
alt
[Guard]
S47 CHECK OF DESTINATION AND FAX NUMBER OF TELEPHONE DIRECTORY
S46
NOTIFICATION OF DESTINATION DESCRIBED IN TELEPHONE DIRECTORY
S48
DISPLAY OF DESTINATION OF TELEPHONE DIRECTORY
S49
INPUT OF FAX NUMBER
S50
START PRINTING
S51
PRINT START AND NOTIFICATION OF FAX NUMBER
S52
GENERATION OF PRINT JOB INCLUDING FAX NUMBER
S53
PRINT
S54

FIG. 11



NON-TRANSITORY COMPUTER-READABLE STORAGE MEDIUM STORING PRINTING CONTROL PROGRAM, FAX CONTROL DEVICE, AND FAX CONTROL METHOD

[0001] The present application is based on, and claims priority from JP Application Serial Number 2024-020970, filed Feb. 15, 2024, the disclosure of which is hereby incorporated by reference herein in its entirety.

BACKGROUND

1. Technical Field

[0002] The present disclosure relates to a non-transitory computer-readable storage medium storing a printing control program, a FAX control device, and a FAX control method.

2. Related Art

[0003] JP-A-2021-56754 discloses a technique for causing a printer to perform booklet printing in an information processing device in which an operating system (OS) standard printer driver, which is an OS standard printing program, is incorporated.

[0004] JP-A-2021-56754 is an example of the related art.

[0005] However, a general-purpose printer driver such as an OS standard printer driver used in the technique described in JP-A-2021-56754 does not support FAX transmission. Thus, it is desired to develop a technique for enabling FAX transmission in an environment in which printing processing using a general-purpose printer driver is performed.

SUMMARY

[0006] According to an aspect of the present disclosure, there is provided a non-transitory computer readable storage medium storing a printing control program, the printing control program causing a computer to execute: display processing of displaying a setting image in response to a request from a general-purpose printer driver; acquisition processing of acquiring, via the setting image, a FAX transmission destination to be a destination of FAX; and instruction processing of passing print control data including the FAX transmission destination to the general-purpose printer driver and causing the general-purpose printer driver to execute a print instruction conforming to the print control data and serving as a FAX transmission instruction to a printer having a FAX transmission function.

[0007] According to an aspect of the present disclosure, there is provided a FAX control device including: a general-purpose printer driver; a display processing unit configured to display a setting image in response to a request from the general-purpose printer driver; an acquisition processing unit configured to acquire, via the setting image, a FAX transmission destination to be a destination of a FAX; and an instruction processing unit configured to pass print control data including the FAX transmission destination to the general-purpose printer drive and cause the general-purpose printer driver to execute a print instruction conforming to the print control data and serving as a FAX transmission instruction to a printer having a FAX transmission function.

[0008] According to an aspect of the present disclosure, there is provided a FAX control method including: display processing of displaying a setting image in response to a request from a general-purpose printer driver; acquisition processing of acquiring, via the setting image, a FAX transmission destination to be a destination of FAX; and instruction processing of passing print control data including the FAX transmission destination to the general-purpose printer driver and causing the general-purpose printer driver to execute a print instruction conforming to the print control data and serving as a FAX transmission instruction to a printer having a FAX transmission function.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. **1** is a block diagram illustrating a configuration example of a print system according to an embodiment.

[0010] FIG. **2** is a sequence diagram illustrating a first example of FAX transmission processing in the print system illustrated in FIG. **1**.

[0011] FIG. **3** is a sequence diagram following FIG. **2**.

[0012] FIG. **4** is a diagram illustrating an example of a user interface image displayed in the FAX transmission processing illustrated in FIGS. **2** and **3**.

[0013] FIG. **5** is a diagram illustrating another example of the user interface image displayed in the FAX transmission processing illustrated in FIGS. **2** and **3**.

[0014] FIG. **6** is a diagram illustrating another example of the user interface image displayed in the FAX transmission processing illustrated in FIGS. **2** and **3**.

[0015] FIG. **7** is a diagram illustrating another example of the user interface image displayed in the FAX transmission processing illustrated in FIGS. **2** and **3**.

[0016] FIG. **8** is a diagram illustrating another example of the user interface image displayed in the FAX transmission processing illustrated in FIGS. **2** and **3**.

[0017] FIG. **9** is a sequence diagram illustrating a second example of the FAX transmission processing in the print system illustrated in FIG. **1**.

[0018] FIG. **10** is a sequence diagram following FIG. **9**.

[0019] FIG. **11** is a diagram illustrating an example of hardware components of a device.

DESCRIPTION OF EMBODIMENTS

[0020] An embodiment of the present disclosure is explained below with reference to the drawings. Figures are merely exemplification for explaining the embodiment of the present disclosure. Not all of elements explained in the embodiment of the present disclosure are essential elements of the present disclosure.

EMBODIMENT

Configuration of a System

[0021] An exemplary configuration of a print system according to the present embodiment is explained with reference to FIG. **1**. FIG. **1** is a block diagram illustrating the configuration example of the print system according to the embodiment.

[0022] As illustrated in FIG. **1**, a print system **100** according to the present embodiment can include a terminal device **10**, a facsimile A(**21**), a facsimile B(**22**), a printer A(**31**), a printer B(**32**), and a printer C(**33**).

[0023] The terminal device **10** is an information processing device including a communication function such as a personal computer (PC), a smartphone, or a tablet terminal and can be used by a user who desires FAX transmission and

printing. The terminal device **10** is connected to the printer A(**31**), the printer B(**32**), and the printer C(**33**) via a network N**1** for, for example, processing of transmitting a print request. The print request can include a FAX transmission request transmitted to the facsimile A(**21**), the facsimile B(**22**), or the like.

[0024] Although not illustrated, the print system **100** can include a plurality of terminal devices **10**. Since the print system **100** is configured to be capable of performing FAX transmission from a printer, the print system **100** can also be referred to as a FAX system or a FAX transmission system.

[0025] All of the printer A(**31**), the printer B(**32**), and the printer C(**33**) are examples of a printer having a FAX transmission function. When receiving print data, the printer A(**31**), the printer B(**32**), and the printer C(**33**) can print the print data on a medium. When receiving print data designating a FAX transmission destination, the printer A(**31**), the printer B(**32**), and the printer C(**33**) can transmit FAX to the FAX transmission destination. The printers can also be configured to be capable of receiving FAX as well. The printers produce prints by performing printing and perform m FAX transmission to produce transmission data serving as a transmission object.

[0026] For convenience, the print system **100** is explained on the premise that three printers are provided in the print system **100** as explained above. However, at least one printer only has to be provided in the print system **100**. The printers only have to be devices having a facsimile transmission function, a communication function, and a print function but may be a multifunction peripheral having other functions such as a scanner function and a copy function. The printers can also be referred to as a printing apparatus or an image forming apparatus. A printing scheme in the printers do not matter. Various printing schemes such as an inkjet printing scheme and a laser printing scheme can be applied.

[0027] The facsimile A(**21**) and the facsimile B(**22**) are examples of a facsimile machine that receives FAX. As an example of a FAX transmission destination from the printer A(**31**), the facsimile A(**21**) and the facsimile B(**22**) connected to the printer A(**31**) via a network N**2** are illustrated. However, the FAX transmission destination is not limited to these facsimiles. For example, when the printer B(**32**) or the printer C(**33**) is connected to the network N**2**, the printer B(**32**) or the printer C(**33**) can perform FAX transmission with the facsimile A(**21**) and the facsimile B(**22**) set as FAX transmission destinations. The FAX transmission destination is not limited to at least one of the facsimile A(**21**) and the facsimile B(**22**) and may be another not-illustrated facsimile device and the number of facsimile devices may be three or more. The facsimile devices such as the facsimile A(**21**) and the facsimile B(**22**) can be configured to be capable of transmitting FAX as well. The network N**2** is usually a public telephone network.

[0028] The print system **100** performs, according to user operation from the terminal device **10**, FAX transmission from a selected printer among the printer A(**31**), the printer B(**32**), and the printer C(**33**) to a FAX transmission destination selected by the user operation. The print system **100** performs, according to user operation from the terminal device **10**, printing from a selected printer among the printer A(**31**), the printer B(**32**), and the printer C(**33**). A configuration example of the terminal device **10** is explained in detail below. Explanation of configuration examples of the printers and configuration examples of the facsimile machines is omitted.

Configuration of the Terminal Device **10**

[0029] As illustrated in FIG. **1**, the terminal device **10** can include a control unit **11**, a storage unit **12**, a communication unit **13**, an operation unit **14**, and a display unit **15**.

[0030] The control unit **11** controls the entire terminal device **10**. The control unit **11** can include, for example, an arithmetic processing device, a working memory, and a storage device that stores a control program, parameters, and the like. The arithmetic processing device can be a central processing unit (CPU), a graphics processing unit (GPU), or the like. The control unit **11** can also be implemented as a system on a chip (SoC). As it is seen from the examples explained above, the control unit **11** can be configured to store the control program in an executable state. However, the control unit **11** can also be configured to store a part of the control program as a circuit configuration like a field programmable gate array (FPGA) or can be configured as a dedicated circuit.

[0031] The control program can include a program for the arithmetic processing device to execute processing relating to printing in cooperation with the storage unit **12**, the communication unit **13**, the operation unit **14**, and the display unit **15**. The control program can include an OS. Since the OS is an OS equipped in the terminal device **10**, the OS is an OS of a type corresponding to a model and the like of the terminal device **10**. The control program can include a Web browser in the OS or outside the OS. In the following explanation, an example in which at least a part of the control program is stored in the storage unit **12** provided separately from the control unit **11** is explained. However, the storage unit **12** may be a part of a storage device in the control unit **11**. That is, the storage unit **12** can be grasped as a part of the control unit **11**.

[0032] The storage unit **12** is, for example, a storage device by a hard disk drive, a solid state drive, or another memory. The storage unit **12** stores, as part of the control program, a general-purpose printer driver **16** and a vendor auxiliary Application program **17** explained below in a state executable from the control unit **11**. In the following explanation, the vendor auxiliary Application program is abbreviated as vendor auxiliary App. The storage unit **12** can store various data such as a file to be printed or a FAX transmission target.

[0033] The communication unit **13** is a part that conforms to a predetermined communication standard such as various mobile communication standards and a Wi-Fi (registered trademark, the same applies below) standard and communicates with external devices such as the printer A(**31**), the printer B(**32**), and the printer C(**33**) via the network N**1**, via a wireless or wired connection. The communication unit **13** can be configured by one or a plurality of communication interfaces capable of performing such communication. The network N**1** is usually a Local area network (LAN).

[0034] The operation unit **14** is a part that receives operation by the user of the terminal device **10** and can be referred to as operation reception unit as well. The operation unit **14** can be implemented by, for example, any one or a plurality among a physical button, a touch panel mounted on the display unit **15**, a pointing device, and a keyboard. In a configuration in which the operation unit **14** includes the

touch panel, the operation unit **14** including the display unit **15** and the touch panel can be collectively referred to as operation panel of the terminal device **10**.

[0035] The display unit **15** is a part for displaying a user interface (UI) image for operating the terminal device **10** and is configured by a display device such as a liquid crystal display or an organic electroluminescence display. The display unit **15** can also include a display and a drive circuit that drives the display.

[0036] The general-purpose printer driver **16** is explained. The general-purpose printer driver **16** is an OS-standard printer driver included in an OS included in the control program or attached to the OS. The general-purpose printer driver **16** can be a program capable of controlling various types of printers to execute printing. The general-purpose printer driver **16** can also be referred to as OS general-purpose printing program or general-purpose printing program.

[0037] The general-purpose printer driver **16** is a driver that uses a general-purpose protocol for a search for a printer and for printing. For example, the general-purpose printer driver **16** uses mDNS/DNS-SD for the search for a printer and uses IPP for the printing in the printer. Here, DNS is an abbreviation of Domain Name System. mDNS is an abbreviation of multicast DNS. DNS-SD is an abbreviation of DNS Service Discovery. IPP is an abbreviation of Internet Printing Protocol.

[0038] As it is seen from this example as well, the general-purpose printer driver **16** can be, for example, an IPP Class driver. IPP is an example of a standard protocol for controlling management of a printer and printing. The IPP acquires and controls printer information according to HTTP (Hyper Text Transfer Protocol) POST requests and responses. In the IPP, it is possible to perform printer setting and printer state acquisition. Here, secure communication can be performed by using HTTP Secure (HTTPS) instead of the HTTP.

[0039] The vendor auxiliary App **17** is explained. The vendor auxiliary App **17** is an application program assisting the general-purpose printer driver **16**, and is used to expand the functions of the general-purpose printer driver **16**. Therefore, the general-purpose printer driver **16** may have a function of starting the vendor auxiliary App **17** and transmitting a print job to the vendor auxiliary App **17**. The vendor auxiliary App **17** may be, for example, Print Support Application (PSA).

[0040] The vendor auxiliary App **17** may be a program for assisting the general-purpose printer driver **16** and causing a computer to execute printing control suitable for the performance of a target printer, that is, printing control for supporting a unique function of the printer. In the present embodiment, a FAX transmission function is included as a function unique to the printer. Here, the computer indicates the terminal device **10** or the control unit **11**. When acquiring a print job from the general-purpose printer driver **16**, the vendor auxiliary App **17** can convert the print job such that printing and FAX transmission using unique functions for a designated printer can be executed by the printer.

[0041] The vendor auxiliary App **17** is an application program provided by, for example, a vendor of a printer. The vendor auxiliary App **17** can be provided to the user of the terminal device **10** by being disclosed in, for example, an application store of an OS provider. Alternatively, the vendor auxiliary App **17** can be provided to the user by being included in the OS or attached to the OS.

[0042] The vendor auxiliary App **17** includes a printing control program described below. That is, the printing control program can also be implemented as, for example, a PSA. The printing control program is a program for causing a computer to execute display processing, acquisition processing, and instruction processing explained below. Here, the computer also indicates the terminal device **10** or the control unit **11**.

[0043] The display processing causes the display unit **15** to display a setting image in response to a request from the general-purpose printer driver **16**. The setting image can be a UI image for setting. In the following explanation, the setting image is explained as a setting UI image. An example of the setting UI image is explained below in an example of the FAX transmission processing. This request is executed by inter-process communication between the general-purpose printer driver **16** and the printing control program. This request can be executed, for example, when user operation for displaying a detailed setting UI image is received from the operation unit **14** in the general-purpose printer driver **16**.

[0044] In the acquisition processing, a FAX transmission destination to be a destination of FAX is acquired via the setting UI image. In this acquisition processing, user operation for designating a FAX transmission destination can be acquired by receiving the user operation from the operation unit **14** via the setting UI image.

[0045] In the instruction processing, the print control data including the FAX transmission destination is passed to the general-purpose printer driver **16** to cause the general-purpose printer driver **16** to execute a print instruction to the printer according to the print control data. This printer is a printer having a FAX transmission function and, in the example illustrated in FIG. **1**, the printer indicates a printer selected by user operation from the terminal device **10** among the printer A(**31**), the printer B(**32**), and the printer C(**33**). Since the print control data is data including the FAX transmission destination, the print instruction explained above is a FAX transmission instruction.

[0046] The general-purpose printer driver **16** that has received such a request for the print instruction can perform FAX transmission instruction by giving a print instruction to a target printer. For example, when the target printer is the printer A(**31**) and the FAX transmission destinations are the facsimile A(**21**) and the facsimile B(**22**), for example, processing explained below is performed. That is, the general-purpose printer driver **16** sends the print instruction to the printer A(**31**) and the printer A(**31**) having received the print instruction transmits target print data to the facsimile A(**21**) and the facsimile B(**22**) by FAX.

[0047] The printing control program is a program for causing a computer to execute FAX transmission. Therefore, the printing control program can also be referred to as FAX transmission program. Further, since the printing control program is a program for performing FAX transmission, the printing control program can also be referred to as FAX control program.

[0048] In other words, the present embodiment can provide a FAX control method including the display processing, the acquisition processing, and the instruction processing explained above. The FAX control method is a method of executing FAX transmission. Therefore, the FAX control method can also be referred to as FAX transmission method. Since the FAX control method is a method of performing

FAX transmission as a part of print control, the FAX control method can also be referred to as print control method.

[0049] Further, in other words, the terminal device **10** includes the general-purpose printer driver **16** and a first acquisition processing a unit, second acquisition processing unit, and a notification processing unit explained below. The terminal device **10** can also be referred to as FAX transmission device or printing control device for the same reason as the reason for rephrasing the FAX control method.

[0050] A display processing unit displays a setting UI image in response to a request from the general-purpose printer driver **16**. An acquisition processing unit acquires a FAX transmission destination to be a destination of FAX via the setting UI image. The acquisition processing unit can also be referred to as a destination acquisition unit for acquiring the destination of the FAX. An instruction processing unit passes print control data including the FAX transmission destination to the general-purpose printer driver **16** and causes the general-purpose printer driver **16** to execute a print instruction conforming to the print control data and serving as a FAX transmission instruction to a printer having a FAX transmission function. The instruction processing unit requests the general-purpose printer driver **16** to execute the print instruction. Therefore, the instruction processing unit can also be referred to as an instruction requesting unit or a print instruction requesting unit.

Effects of the Present Embodiment

[0051] Before a more specific example of the FAX transmission processing in the present embodiment is explained, effects of the present embodiment are explained.

[0052] As explained above, in the print system **100**, the printing control program causes the general-purpose printer driver **16** to perform the FAX transmission instruction as the print instruction. Thus, according to the present embodiment, it can be said that, in the printing processing using the general-purpose printer driver **16**, it is possible to execute the FAX transmission processing that cannot be handled only by the general-purpose printer driver **16**. That is, according to the present embodiment, it is possible to perform FAX transmission in an environment in which printing processing using a general-purpose printer driver is performed, that is, perform FAX transmission using a general-purpose printer driver.

[0053] In order to supplement such effects, the present embodiment, and a print system according to a comparative example are compared. In the print system according to the comparative example, a printer is controlled using a general-purpose printer driver incorporated in the Windows (registered trademark, the same applies below) OS as a standard without using a printer driver of a vendor. In the general-purpose printer driver in this comparative example as well, a general-purpose protocol is used for a search for a printer and printing. Further, in the general-purpose printer driver in the comparative example as well, a mechanism for starting a vendor auxiliary Application program linked with a printer and customizing a custom print setting and IPP communication at the time of printing is provided. Naturally, the vendor auxiliary Application and the general-purpose printer driver according to the comparative example do not include the printing control program explained above.

[0054] However, the general-purpose printer driver itself does not support FAX transmission. The custom print setting in the comparative example is limited to general setting relating to printing. In print setting items that can be set, there are no items such as designation of a destination of FAX and designation of a telephone directory for the designation of the destination of the FAX. Thus, the mechanism according to the comparative example cannot perform FAX transmission from the terminal device.

[0055] As explained above, in the comparative example, FAX transmission cannot be performed in the printing processing using the general-purpose printer driver. On the other hand, as explained above, according to the present embodiment, the printing control program for causing the general-purpose printer driver **16** to perform FAX transmission instruction designating a destination as print instruction is introduced. Thus, according to the present embodiment, it can be said that, also in the printing processing using the general-purpose printer driver **16**, the FAX transmission processing that cannot be executed in the comparative example can be executed.

First Example of the FAX Transmission Processing

[0056] A first example of the FAX transmission processing according to the present embodiment is explained with reference to FIGS. **2** to **8**. FIG. **2** is a sequence diagram illustrating example of the FAX transmission processing in the print system **100** illustrated in FIG. **1**. FIG. **3** is a sequence diagram following FIG. **2**. FIGS. **4** to **8** are diagrams illustrating examples of UI images displayed in the FAX transmission processing illustrated in FIGS. **2** and **3**.

[0057] In the following explanation as well an example is explained in which the vendor auxiliary App **17** is implemented with the printing control program for performing the display processing, the acquisition processing, and the instruction processing explained above. In the following explanation, an example in the case in which a FAX transmission request is made from the terminal device **10** to the printer A(**31**) is explained. The same applies when a FAX transmission request is made to the other printers such as the printer B(**32**) and the printer C(**33**). In the first example, FAX transmission processing in the case in which a telephone directory function is used to designate a FAX transmission destination is explained. The telephone directory can also be referred to as address book.

[0058] First, a user U starts an application program for, for example, starting and editing a FAX transmission target file such as a document file. Then, the user U performs, from the operation unit **14**, for example, operation for selecting the printer A(**31**) having a FAX function in print setting of the FAX transmission target file and selecting a property. With this operation, the general-purpose printer driver **16** receives an instruction to start printing (step S**1**).

[0059] The general-purpose printer driver **16** having received the instruction to start printing from the user U displays a basic print setting image such as the UI image illustrated in FIG. **4** (step S**2**).

[0060] A UI image **40** includes a basic setting tab **41** for receiving user operation for performing basic setting, which is basic setting of printing and may include an applied setting button **42** for receiving user operation for shifting to an applied print setting image for performing detailed setting for printing and applied setting such as FAX transmission setting. In the basic setting tab **41**, it is possible to receive, as the basic setting, setting of a paper size, a paper direction, and a color indicating which of color and monochrome is selected. Besides, in the basic setting tab **41**, reception of

setting of image quality and character density may be enabled. In a state in which the UI image **40** is displayed, the user U can perform these kinds of basic setting.

[0061] The UI image can include a version information tab **43**, an OK button **44**, a cancel button **45**, and a help button **46**. The OK button **44** is a button selected when content of the basic setting is stored and the UI image **40** is closed. The cancel button **45** is a button selected when the content of the basic setting is discarded and the UI image **40** is closed. The help button **46** is a button selected when a UI image or a page of a site describing information supporting the user U at the time of setting in the UI image **40** is displayed. The applied setting button **42** can also be not included in the UI image **40**. In that case, the OK button **44** only has to be a button selected when the content of the basic setting is stored and the UI image **40** is closed and is shifted to the applied print setting image.

[0062] In a state in which the UI image **40** is displayed, the user U selects the applied setting button **42** with the operation unit **14** to request the general-purpose printer driver **16** to display the applied print setting image (step S**3**). This request can also be received by the user U performing, from the operation unit **14**, for example, operation for selecting the print button in a state in which the printer A(**31**) having the FAX function is selected in the print setting for the FAX transmission target file. Thus, even when the UI image **40** does not include the applied setting button **42**, the user U can make this request.

[0063] The general-purpose printer driver **16** having received this request requests the vendor auxiliary App **17** to transmit an applied print setting item that can be set as a vendor function (step S**4**). The vendor auxiliary App **17** transmits a predetermined applied print setting item to the general-purpose printer driver **16** as an answer to the request (step S**5**). The general-purpose printer driver **16** having received the answer embeds, in a predetermined UI image, an applied print setting item that can be set as the vendor function and displays the application print setting item on the display unit **15** (step S**6**).

[0064] In step S**6**, for example, a UI image **50** illustrated in FIG. **5** can be displayed as such a UI image. The processing in steps S**4** to S**6** may be processing explained below. That is, the general-purpose printer driver **16** may request an applied print setting image in step S**4**, receive the applied print setting image from the vendor auxiliary App **17** in step S**5**, and display the received applied print setting image as it is or embedded in a predetermined UI image.

[0065] The UI image **50** illustrated in FIG. **5** can include a cover letter setting field **51** and a preview field **52**. The cover letter setting field **51** can include a selection field **51***a* for selecting a cover letter desired by the user U out of no cover letter and a plurality of sample cover letters and a cover letter format setting button **51***b* for shifting to a UI image for setting a cover letter format.

[0066] When a next button **54** is selected in a state in which the no cover letter is selected in the selection field **51***a* in the cover letter setting field **51**, the setting is made such that FAX transmission is performed without a cover letter and the UI image shifts to the next UI image. When the next button **54** is selected in a state in which one of the sample cover letters is selected in the selection field **51***a*, the setting is made such that the FAX transmission based on the selected sample cover letter is performed, and the UI image shifts to the next UI image.

[0067] The cover letter setting field **51** can include a setting button **51***c* for setting a font of characters of a cover letter, a subject field **51***d* for inputting a subject of the cover letter, a comment field **51***e* for inputting a comment described in the cover letter, and a caller information field **51***f* indicating caller information. When the user U selects the setting button **51***c*, a UI image for selecting a font of characters is displayed and information concerning the selected font is displayed beside the setting button **51***c*. The caller information field **51***f* includes a caller setting button **51***g* for displaying a UI image for setting a caller. Information indicating a caller set by a UI image displayed by selection of the caller setting button **51***g* is displayed in the caller information field **51***f*.

[0068] The preview field **52** includes a preview display region **52***a* for displaying a preview image in which contents set in the other setting items in the cover letter setting field **51** are embedded in a sample cover letter selected in the cover letter setting field **51**. The preview field **52** can include a detailed preview button **52***b* for displaying a more detailed preview image.

[0069] The UI image **50** can include a return button **53** for returning to the previous UI image, the next button **54** for shifting to the next UI image, a cancel button **55**, and a help button **56**. The cancel button **55** is a button having the same function as the function of the cancel button **45**. Only a target of a UI Image is different. The help button **56** is a button having the same function as the function of the help button **46**. Information supporting setting in the UI image **50** is displayed when the help button **56** is selected.

[0070] Subsequently, in a state in which the UI image **50** is displayed by the processing of step S**6**, the user U inputs, from the operation unit **14**, setting for a print setting function other than a destination of the FAX function such as setting of a cover letter (step S**7**). Step S**7** may be executed, for example, at any timing after processing in step S**8** and before processing in step S**17** explained below. For example, it is also possible to adopt shift order of a UI image for performing setting of a cover letter after setting of a FAX transmission destination explained below is performed.

[0071] Subsequent to step S**7**, the user U performs input for designating a telephone directory read from the vendor auxiliary App **17** and the general-purpose printer driver **16** receives this input (step S**8**). Here, an example is explained in which the user U selects the next button **54** in the UI image **50**, whereby a PC-FAX telephone directory automatically stored in the storage unit **12** is designated. The PC-FAX telephone directory is an example of a telephone directory used for FAX transmission from the terminal device **10**. That is, in this example, the user U specifies the PC-FAX telephone directory stored in the storage unit **12** automatically by selection operation for the next button **54**. Naturally, the user U can select and specify one out of one or a plurality of PC-FAX telephone directories by inputting a path of the PC-FAX telephone directory stored in the storage unit **12**. However, a telephone directory to be designated is not limited to this and may be a telephone directory stored by the vendor auxiliary App **17** or the user U may directly input a plurality of FAX numbers and set the plurality of FAX numbers as a telephone directory of a FAX transmission destination. All of these three telephone directory designation methods are methods in which designation is completed by simply referring to data of a telephone directory inside the terminal device **10**.

[0072] When the input for designating a telephone directory is performed in step S**8**, the general-purpose printer driver **16** notifies the vendor auxiliary App **17** of the input (step S**9**).

[0073] In response to an instruction in step S**9**, the vendor auxiliary App **17** reads the input PC-FAX telephone directory and checks whether processing concerning a telephone directory can be performed (step S**10**). Specifically, the vendor auxiliary App **17** checks whether an extension of the telephone directory is a specific extension (step S**11**). The specific extension indicates an extension designed to be compatible. When the extension is not the specific extension, it is desirable to notify the user U and urge the user U to input a telephone directory again.

[0074] When it is determined that the input PC-FAX telephone directory is the telephone directory having the specific extension, the vendor auxiliary App **17** checks, for the read PC-FAX telephone directory, whether data corresponds to processing in the vendor auxiliary App **17** (step S**12**). Specifically, the vendor auxiliary App **17** reads the PC-FAX telephone directory and checks whether the input data satisfies a format of a destination and a FAX number (step S**13**).

[0075] In step S**13**, for example, the check is performed as explained below. First, the vendor auxiliary App **17** checks whether a FAX number is registered for the destination. The destination may be blank. When FAX numbers are not registered for destinations, the vendor auxiliary App **17** desirably notifies the user U and urges the user U to input a telephone directory again.

[0076] On the other hand, when a character string of one or more FAX numbers are registered for the destination, the vendor auxiliary App **17** checks whether a character string other than a character string that can be used for the FAX number such as 0 to 9, #, and * is not registered in the FAX number. When a character string other than the character string that can be used for the FAX number is registered, the vendor auxiliary App **17** desirably notifies the user U and urges the user U to input a telephone directory again.

[0077] On the other hand, when a character string other than the character string that can be used for the FAX number is not registered, the vendor auxiliary App **17** checks whether the number of characters of the FAX number is within the number of characters of the longest FAX number among the FAX numbers used in the entire world. When the number of characters is not within the number of characters of the longest FAX number, the vendor auxiliary App **17** desirably notifies the user U and urges the user U to input a telephone directory again. On the other hand, when the number of characters is within the number of characters of the longest FAX number, the vendor auxiliary App **17** proceeds to the next processing assuming that all the determinations in step S**13** are satisfied.

[0078] When it is determined in step S**13** that the determinations are satisfied, the vendor auxiliary App **17** notifies the destination described in the PC-FAX telephone directory after the check to the general-purpose printer driver **16** (step S**14**). The general-purpose printer driver **16** having received the notification embeds the PC-FAX telephone directory in a predetermined UI image to display a basic print setting image in which the destination is embedded (step S**15**). Accordingly, the user U can visually recognize the destination in the PC-FAX telephone directory. An example of a basic print setting image in which such a destination is embedded is a UI image **60** illustrated in FIG. **6**. In the following explanation, an example in which the UI image **60** is displayed is explained. In step S**15**, not only the destination but also another format may be embedded in the predetermined UI image or a UI image in which a format is also predetermined may be used as the predetermined UI image.

[0079] The UI image **60** can include a transmission destination list **61**, a telephone directory destination list **62**, an addition button **63**, and a delete button **64**. The telephone directory destination list **62** indicates a list of destinations registered in the PC-FAX telephone directory notified in step S**14**. In the telephone directory destination list **62**, all of the registered destinations or a part of destinations extracted based on user operation are arranged and displayed in predetermined order such as the order of 50 notes and alphabetical order. The destinations can include, for example, items such as a name or a group name, a furigana of the name of the group name, a FAX number, a company or organization name, and a department as information. The user selects one or a plurality of destinations out of the telephone directory destination list **62** and selects the add button **63** to thereby be able to copy or move the selected destination (destinations) to a transmission destination list **61** set as FAX transmission destinations. The user selects one or a plurality of destinations out of the transmission destination list **61** and selects the delete button **64** to thereby be able to delete the selected destination (destinations) from the transmission destination list **61** or move the selected destination (destinations) to the telephone directory destination list **62**.

[0080] The UI image **60** can include a return button **65**, a next button **66**, a cancel button **67**, and a help button **68**. The return button **65**, the next button **66**, and the cancel button **67** are respectively buttons having the same functions as the functions of the return button **53**, the next button **54**, and the cancel button **55**. Only a target of a UI Image is different. The help button **68** is a button having the same function as the function of the help button **56**. When the help button **68** is selected, information serving as support for setting in the UI image **60** is displayed.

[0081] Subsequently, in a state in which the UI image **60** is displayed by the processing in step S**15**, the user U inputs one or a plurality of destinations serving as FAX transmission destinations from the operation unit **14**, and selects the next button **66**. As explained above, the user U inputs the FAX number to the general-purpose printer driver **16** (step S**16**). One or a plurality of destinations can be input as explained below. That is, the user U selects a destination to be set as a FAX transmission destination out of the telephone directory destination list **62** and selects the add button **63**, whereby the destination is added to the transmission destination list **61** and the user can input the destination. For a destination added to the transmission destination list **61** by mistake, the user U selects the destination and selects the delete button **64** to thereby be able to exclude the destination from FAX transmission destinations.

[0082] Subsequently, when the input in step S**16** is completed by the selection of the next button **66**, for example, the general-purpose printer driver **16** displays a confirmation UI image such as a UI image **70** illustrated in FIG. **7**. The general-purpose printer driver **16** can also display the confirmation UI image via the vendor auxiliary App **17**.

[0083] The UI image **70** can include a transmission destination list **71**, cover letter information **72**, a preview button **73**, a return button **74**, a transmission button **75**, a cancel button **76**, and a help button **77**. The transmission destination list **71** displays information indicating one or a plurality of destinations set as FAX transmission destinations. The cover letter information **72** displays information indicating an overview of a cover letter transmitted to a FAX transmission destination. The preview button **73** is a button for displaying, as a preview, content of FAX to be transmitted and can display a UI image including the preview by being selected by the user U. The return button **74** is a button for returning to the previous UI image. The transmission button **75** is a button for performing instruction to start transmission of set FAX. The cancel button **76** is a button having the same function as the function of the cancel button **45**. A target of a UI image is only different. The help button **77** is a button having the same function as the function of the help button **46**. When the help button **77** is selected, information serving as support for operation in the UI image **70** is displayed.

[0084] When the user U determines that there is no problem as a result of checking the kinds of setting in a state in which the UI image **70** is displayed, the user U selects the transmission button **75** to notify a printing start to the general-purpose printer driver **16** (step S**17**). When the user U determines that there is a problem in any of the kinds of setting, the user U only has to select the return button **74**.

[0085] The general-purpose printer driver **16** having received the notification of the printing start in step S**17** notifies the printing start and notifies all destinations set by the user U to the vendor auxiliary App **17** (step S**18**).

[0086] Subsequently, the vendor auxiliary App **17** reads the destinations notified by the notification in step S**18** and repeats generation of a print job and notification to the general-purpose printer driver **16** by the number of the read destinations (step S**19**). In step S**19**, for the destinations, the vendor auxiliary App **17** notifies, to the general-purpose printer driver **16**, printing of a FAX transmission target file in print setting to which the print setting input in step S**7** by the user U and information indicating the read FAX number are given. Here, the given print setting can be included in the print job together with the print data indicating the FAX transmission target file as print control data. For example, the print control data can be data of IPP Attribute.

[0087] In response to the notification in step S**19**, the general-purpose printer driver **16** instructs printing by transmitting print jobs to the printer A(**31**) (step S**20**). The printer A(**31**) receives the print jobs and transmits print data by FAX to a FAX transmission destination that is one or a plurality of destinations indicated by the print jobs. For example, when destinations indicated by the FAX transmission destination is the facsimile A(**21**) and the facsimile B(**22**), the facsimile A(**21**) and the facsimile B(**22**) store the received print data. Alternatively, the facsimile A(**21**) and the facsimile B(**22**) perform printing based on the received print data to produce a print. The example is explained in which the destination indicated by the FAX transmission destination is the FAX number. However, the destination may be, for example, an e-mail address of facsimile.

[0088] The example is explained in which the instruction for printing via the general-purpose printer driver **16** is explained in steps S**19** and S**20**. However, for example, the vendor auxiliary App **17** may directly instruct the printer A(**31**) to perform printing. In that case, communication between the vendor auxiliary App **17** and the printer A(**31**) is desirably executed according to a protocol obtained by vendor extension of IPP or another SNMP or a protocol unique to the vendor. SNMP is an abbreviation for Simple Network Management Protocol.

[0089] As exemplified in steps S**8** to S**16**, the printing control program incorporated into the vendor auxiliary App **17** can include a program for causing a computer such as the terminal device **10** to execute destination specifying processing explained below. The destination specifying processing is processing of receiving call operation for a telephone directory from the user U via the setting UI image, displaying the telephone directory on the setting UI image according to the call operation, and causing the user U to specify a destination of FAX. The destination specifying processing is processing of designating a destination. Therefore, the destination specifying processing can also be referred to as destination designation processing.

[0090] As exemplified as the data of the IPP Attribute in step S**19**, the print control data can include data indicating attribute information indicating attributes of a printer set by the general-purpose printer driver **16**. The attribute information can be information indicating capability and a state of the printer A(**31**). For example, when the general-purpose printer driver **16** is an IPP Class driver, the attribute information can be IPP Attribute explained below. That is, in this case, the IPP attribute can indicate any one of, for example, Printer Attribute, Enable Printer, Printer Description Attribute, and the like set as setting values of IPP.

[0091] As exemplified in the notification processing in step S**19**, when one print data is received from the general-purpose printer driver **16** and N destinations are acquired as FAX transmission destinations, the instruction processing in the printing control program can be processing of performing processing explained below. That is, in this case, the instruction processing is processing of generating N print jobs respectively corresponding to the N destinations and transmitting the generated N print jobs to the general-purpose printer driver **16**. N is an integer equal to or larger than 1.

[0092] In a first example of the FAX transmission processing, effects explained below are achieved in the terminal device **10** in which the general-purpose printer driver **16** of the OS standard is incorporated. That is, when FAX transmission is performed, at the time of transmission of print jobs that are FAX transmission jobs, the terminal device **10** can transmit the print jobs to respective destinations at a time according to a destination of the telephone directory stored in the terminal device **10**. Transmitting a plurality of print jobs at a time as explained above cannot be implemented in the comparative example explained above.

[0093] However, the example is explained in which one or a plurality of destinations can be optionally designated in step S**16**. However, only one destination may be able to be designated. In this case, the acquisition processing in the printing control program is processing of acquiring only one destination at a time as a FAX transmission destination. In this case, N described above in the instruction processing corresponds to 1.

[0094] Concerning steps S**3** to S**6**, the general-purpose printer driver **16** may adopt a configuration adapted to FAX transmission as well according to a setting value of any IPP such as Enable-Printer or Printer Attribute in IPP printing. Accordingly, the general-purpose printer driver **16** can auto-

matically switch, based on the setting value, whether to display or hide the FAX transmission destination in the basic print setting image such as the UI image **40**. For example, the general-purpose printer driver **16** can automatically switch, based on the setting value, whether to display the applied setting button **42** in the UI image **40**.

[0095] The check of the telephone directory by the vendor auxiliary App **17** explained in steps S**10** to S**13** may be executed not when the telephone directory is designated as illustrated in FIG. **2** but when the print start instruction is received in step S**17**. In this case, notification of deficiency to the user U is omitted. Accordingly, although FAX is not transmitted to a destination having deficiency, the user can omit time and effort for inputting a telephone directory again.

[0096] Concerning step S**20**, the vendor auxiliary App **17** may have a function of displaying a print status for each of transmitted print jobs. Alternatively, the general-purpose printer driver **16** may have a function of displaying a print status for each of transmitted print jobs via the vendor auxiliary App **17**. In both of the configurations, a print status such as an error or a success for the print jobs can be presented to the user U.

[0097] The general-purpose printer driver **16** can also perform processing explained below when attribute information such as an explanatory value of a printer such as Printer Description Attribute supported by IPP printing is not adapted to color. In this case, in step S**20**, the general-purpose printer driver **16** converts print data to be automatically transmitted into monochrome data and transmits the monochrome data. Accordingly, even if the user U does not optionally set monochrome printing, the user U can automatically switch a printer not adapted to color to the monochrome printing.

[0098] The vendor auxiliary App **17** or another application program can add a function of displaying a pre-registered PC-FAX telephone directory like Windows FAX utility. For example, an instruction to display a setting image of the FAX Utility exemplified by a UI image **80** in FIG. **8** by the user U is given to the vendor auxiliary App **17** or another application program via the general-purpose printer driver **16**. The vendor auxiliary App **17** or another application program having received the instruction can display the setting image of the Fax Utility exemplified by the UI image **80**.

[0099] The UI image **80** may include a printer selection menu **81**, a main body telephone directory display button **82**, and a main body setting button **83**. In the printer selection menu **81**, a state in which the printer A(**31**) is currently selected is illustrated. However, user operation for changing the printer A(**31**) to the printer B(**32**) or the printer C(**33**) can be received. The main body telephone directory display button **82** can be a button for displaying a UI image that can be edited by opening the PC-FAX telephone directory. Alternatively, the main body telephone directory display button **82** can also be a button for opening the PC-FAX telephone directory stored in the main body of the terminal device **10** and displaying a UI image for selecting a FAX transmission destination. This UI image can be exemplified by the UI image **60** in FIG. **6**. The main body setting button **83** is a button for displaying a UI image for performing various kinds of setting.

[0100] The UI image **80** may include a transmission setting field **84**, a reception setting field **85**, and an option setting field **86**. The transmission setting field **84** can include a button **84***a* for transmitting only a cover letter by FAX, a button **84***b* for editing the PC-FAX telephone directory, and a button **84***c* for viewing a transmission record. The reception setting field **85** can include a button **85***a* for storing received FAX in the computer, a button **85***b* for notifying new arrival at a transfer destination folder, and a button **85***c* for opening a storage folder. The computer explained above indicates the terminal device **10**. All of the buttons **84***a*, **84***b*, **84***c*, **85***a*, **85***b*, and **85***c* also display UI images of contents indicated by the buttons. For example, the user U can shift the UI image to the UI image **50** in FIG. **5** by selecting the button **84***a*.

[0101] The option setting field **86** includes an option setting button **86***a* for shifting to a UI image for performing setting concerning FAX transmission and reception other than the items set in the transmission setting field **84** and the reception setting field **85**. The option setting field **86** can include a button **86***b* for opening online help, a button **86***c* for opening an introduction guide, and the like.

Second Example of the FAX Transmission Processing

[0102] A second example of the printing processing according to the present embodiment is explained with reference to FIGS. **9** and **10**. FIG. **9** is a sequence diagram illustrating the second example of the FAX transmission processing in the print system **100** illustrated in FIG. **1**. FIG. **10** is a sequence diagram following FIG. **9**. In the following explanation, changes from the first example are mainly described as the second example. However, the other points including application of various applied examples of the points are the same.

[0103] In the second example, as in the first example, an example is explained in which the vendor auxiliary App **17** is implemented with the printing control program for performing the display processing, the acquisition processing, and the instruction processing explained above. In the second example, as in the first example, an example is explained below in which a FAX transmission request is performed from the terminal device **10** to the printer A(**31**). However, the same applies when FAX transmission requests to the other printers are performed.

[0104] In the second example as well, the FAX transmission processing in the case in which a function of a telephone directory is used for designation of a FAX transmission destination is explained. However, the second example is different from the first example in that a telephone directory registered in a printer main body is used and is the same processing in other points. Thus, in the second example as well, the processing in steps S**1** to S**9** of the first example are applied (steps S**31** to S**39**). However, in step S**38**, the user U performs input for designating a telephone directory stored in the printer A(**31**) as a telephone directory read from the vendor auxiliary App **17**. The general-purpose printer driver **16** receives this input. In step S**39**, the general-purpose printer driver **16** notifies the input to the vendor auxiliary App **17**.

[0105] In response to this notification, the vendor auxiliary App **17** starts communication with the printer A(**31**) and requests a telephone directory registered in a main body of the printer A(**31**) (step S**40**). As explained above, the communication is desirably executed according to a protocol obtained by vendor extension of the IPP or another SNMP or a protocol unique to the vendor. The printer A(**31**) having

received the request in step S**40** transmits the stored telephone directory to perform an answer (step S**41**). Subsequently, the vendor auxiliary App **17** receives the notification of the telephone directory and returns the notification to the general-purpose printer driver **16** (step S**42**). The general-purpose printer driver **16** performs an answer to the user U by displaying content indicated by the received telephone directory on the UI image (step S**43**). Although not illustrated, the UI image displayed here can be, for example, a UI image indicating only a telephone directory destination list such as the telephone directory destination list **62** in the UI image **60** in FIG. **6**. However, here, it is indicated that the telephone directory destination list is not a PC-FAX telephone directory but a telephone directory registered in the printer A(**31**).

[0106] Next, the vendor auxiliary App **17** executes the check explained in steps S**10** to S**13** on the telephone directory answered in step S**41** (steps S**44** to S**47**). Subsequently, basically the same processing as the processing in steps S**14** to S**17** is executed (steps S**48** to S**51**). In step S**49**, as in step S**15**, for example, a UI image like the UI image **60** in FIG. **6** is displayed. However, here, it is indicated that the telephone directory destination list is not the PC-FAX telephone directory but is the telephone directory registered in the printer A(**31**).

[0107] The general-purpose printer driver **16** having received the notification of the printing start in step S**51** notifies the printing start to the vendor auxiliary App **17** and notifies FAX numbers of all destinations set by the user U to the vendor auxiliary App **17** (step S**52**).

[0108] Subsequently, the vendor auxiliary App **17** reads the Fax numbers notified by the notification in step S**52** and repeats the generation of the print job and the notification to the general-purpose printer driver **16** by the number of the read FAX numbers (step S**53**). In step S**53**, the same processing as the processing in step S**19** can be performed.

[0109] In response to the notification in step S**53**, as in step S**20**, the general-purpose printer driver **16** instructs printing by transmitting print jobs to the printer A(**31**) (step S**54**). The printer A(**31**) receives the print jobs and transmits print data by FAX to FAX transmission destinations, which are one or a plurality of FAX numbers indicated by the print jobs. For example, when the FAX numbers indicated by the FAX transmission destinations are the facsimile A(**21**) and the facsimile B(**22**), the facsimile A(**21**) and the facsimile B(**22**) store the received print data. Alternatively, in this case, the facsimile A(**21**) and the facsimile B(**22**) perform printing based on the received print data to produce a print. Here, an example is explained in which a destination indicated by a FAX transmission destination is a FAX number. However, the destination may be, for example, an e-mail address of facsimile.

[0110] In the second example, unlike the first example, FAX transmission processing can be performed using a telephone directory registered in the printer main body.

[0111] In the second example, the telephone directory registered in the printer main body is used. However, the vendor auxiliary App **17** can have a function of storing a telephone directory in the terminal device **10** in synchronization with the telephone directory registered in the printer main body.

Other Modifications

[0112] The present disclosure is not limited to the embodiment explained above and can be changed as appropriate without departing from the gist of the present disclosure. For example, the system configuration of the print system, the configurations of the devices configuring the system, the configurations of the programs included in the devices, the processing procedures of the devices, and the like are not limited to the exemplified ones. The print system can adopt a network configuration in which a terminal device is connected to a printer via a print server. In the embodiment explained above, the FAX communication using the public telephone line is explained. However, FAX communication is not limited to such FAX communication. That is, the present disclosure may be applied to a case in which FAX communication based on standards such as T.30, T.37, T.38, and T.62 of ITU-T is performed. ITU-T is an abbreviation for International Telecommunication Union Telecommunication Standardization Sector.

[0113] All of the devices provided in the print system according to the embodiment explained above can include, for example, hardware components explained below. Examples of the devices include a terminal device, printers, and facsimile machines in the example illustrated in FIG. **1**. FIG. **11** is a diagram illustrating an example of hardware components of a device.

[0114] A device **1000** illustrated in FIG. **11** can include a processor **1001**, a memory **1002**, and an interface **1003**. The interface **1003** can include, for example, a communication interface and an interface with an input and output device that are required according to the device.

[0115] The processor **1001** may be, for example, a CPU, a GPU, or a microprocessor unit (MPU) also referred to as microprocessor. The processor **1001** may include a plurality of processors. The memory **1002** is configured by, for example, a combination of a volatile memory and a non-volatile memory. Functions in the devices are implemented by the processor **1001** reading a program stored in the memory **1002** and executing the program while exchanging necessary information via the interface **1003**.

[0116] The program includes an instruction group (or software codes) for causing a computer to perform the one or more functions explained in the embodiment when the program is read in the computer. The program may be stored in a non-transitory computer-readable medium or a tangible storage medium. Not as a limitation but as an example, the computer-readable medium or the tangible storage medium includes a random-access memory (RAM), a read-only memory (ROM), a flash memory, a solid-state drive (SSD), or another memory technology. Not as a limitation but as an example, the computer-readable medium or the tangible storage medium includes a CD-ROM, a digital versatile disc (DVD), a Blu-ray (registered trademark) disk, or another optical disc storage or a magnetic cassette, a magnetic tape, a magnetic disk storage, or another magnetic storage device. The program may be transmitted on a transitory computer-readable medium or a communication medium. Not as a limitation but as an example, the transitory computer-readable medium or the communication medium includes a propagation signal of an electric, optical, acoustic, or another form.

[0117] The present disclosure is explained above with reference to the embodiment. However, the present disclosure is not limited to only the configuration in the embodi-

ment explained above. It goes without saying that the present disclosure includes various modifications, alterations, and combinations that can be made by those skilled in the art within the scope of the disclosure of the claims of the present application.

What is claimed is:

1. A non-transitory computer readable storage medium storing a printing control program, the printing control program causing a computer to execute:

display processing of displaying a setting image in response to a request from a general-purpose printer driver;

acquisition processing of acquiring, via the setting image, a FAX transmission destination to be a destination of FAX; and

instruction processing of passing print control data including the FAX transmission destination to the general-purpose printer driver and causing the general-purpose printer driver to execute a print instruction conforming to the print control data and serving as a FAX transmission instruction to a printer having a FAX transmission function.

2. The non-transitory computer-readable storage medium storing the printing control program according to claim **1**, wherein the printing control program is a Print Support Application.

3. The non-transitory computer-readable storage medium storing the printing control program according to claim **1**, the printing control program further causing the computer to execute destination specifying processing of receiving call operation for a telephone directory from a user via the setting image, displaying the telephone directory on the setting image in response to the calling operation, and causes the user to specify the destination.

4. The non-transitory computer-readable storage medium storing the printing control program according to claim wherein the print control data includes data indicating attribute information indicating an attribute of the printer set by the general-purpose printer driver.

5. The non-transitory computer-readable storage medium storing the printing control program according to claim **1**, wherein the instruction processing is processing of receiving one print data from the general-purpose printer driver and, when destinations of N parts are acquired as the FAX transmission destination, generating N print jobs respectively corresponding to the destinations of the N parts and transmitting the generated N print jobs to the general-purpose printer driver.

6. The non-transitory computer-readable storage medium storing the printing control program according to claim **1**, wherein the acquisition processing is processing of acquiring only one destination at a time as the FAX transmission destination.

7. A FAX control device comprising:

a general-purpose printer driver;

a display processing unit configured to display a setting image in response to a request from the general-purpose printer driver;

an acquisition processing unit configured to acquire, via the setting image, a FAX transmission destination to be a destination of a FAX; and

an instruction processing unit configured to pass print control data including the FAX transmission destination to the general-purpose printer driver and cause the general-purpose printer driver to execute a print instruction conforming to the print control data and serving as a FAX transmission instruction to a printer having a FAX transmission function.

8. A FAX control method comprising:

display processing of displaying a setting image in response to a request from a general-purpose printer driver;

acquisition processing of acquiring, via the setting image, a FAX transmission destination to be a destination of FAX; and

instruction processing of passing print control data including the FAX transmission destination to the general-purpose printer driver and causing the general-purpose printer driver to execute a print instruction conforming to the print control data and serving as a FAX transmission instruction to a printer having a FAX transmission function.

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