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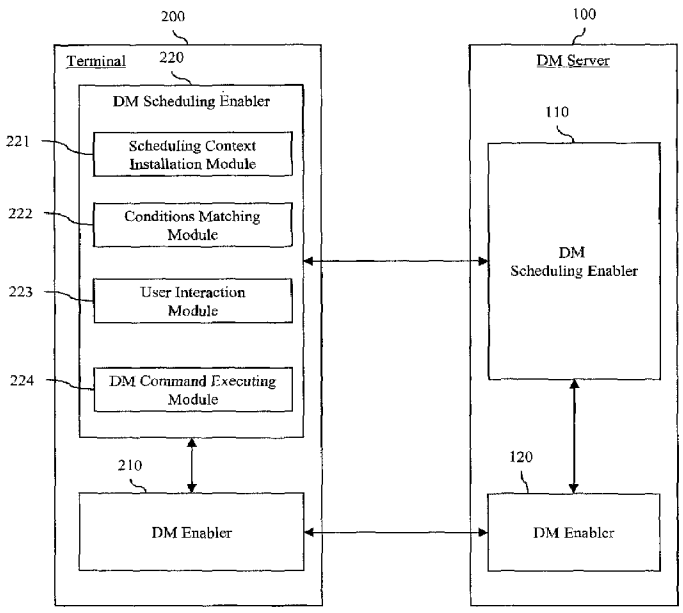
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD FOR INTERACTING WITH USER AND TERMINAL THEREOF



(57) Abstract: The present specification related to a method for interacting with a user and terminal thereof. The present specification provides a terminal comprising a first module adapted to receive a scheduling context including scheduled device management from a server and to install the received scheduling context, and a second module adapted to provide one or more of notification to a user about the scheduled device management, and an option allowing the user to modify the scheduled device management before performing the scheduled device management.

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Description

METHOD FOR INTERACTING WITH USER AND TERMINAL THEREOF

Disclosure of Invention

Technical Solution

[1] The present specification relates to a method for interacting with a user and terminal thereof.

[2] In general, a DM technique is a technique that resources of a client (terminal) are shown in the form of a DM object existing on a DM tree to a DM server so that the DM server can access it, thereby allowing the DM server to easily manage the terminal.

[3] In the DM technique, the DM server may instruct a DM target client to process a command for a DM. The DM target client can immediately perform the corresponding command and report the performing result to the DM server. In addition, the DM server can request the DM client to change, update or delete a particular function.

[4] However, the related art DM technique has shortcomings that a user cannot recognize the performing of the DM.

[5] One exemplary feature of the present invention is to provide a device management (DM) system capable of allowing a user to interact with performing of a DM and a method for interacting with a user in the system.

[6] To implement at least the above feature in whole or in parts, the present invention provides a terminal comprising a first module adapted to receive a scheduling context including scheduled device management from a server and to install the received scheduling context; and a second module adapted to provide one or more of notification to a user about the scheduled device management, and an option allowing the user to modify the scheduled device management before performing the scheduled device management.

[7] The modification may be at least one of deferring, rescheduling, and canceling the scheduled device management. The first module can achieve the installation by generating the UI node in a DM tree of a terminal according to the user interaction information of the scheduling context. In this case, the UI node can include one or more of a first node specifying whether to provide to a user a message about performing of the device management; and a second node specifying whether to allow a user to modify the device management.

[8] To implement at least the above feature in whole or in parts, the present invention also provides a server comprising a device management (DM) scheduling enabler for

generating a scheduling context including scheduled device management and user interaction information, and requesting installation of the generated scheduling context in a terminal, wherein the user interaction information includes one of a first element specifying whether to provide to a user a message about performing of the device management, and a second element specifying whether to allow the user to modify the scheduled device management.

[9] To implement at least the above feature in whole or in parts, the present invention also provides a method for performing a scheduled device management, the method comprises: detecting an arrival on schedule for performing a device management; providing at least one of a notification to a user, and an option allowing the user to change the schedule; performing the device management.

[10] Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objects and advantages of the invention may be realized and attained as particularly pointed out in the appended claims.

[11] The invention will be described in detail with reference to the following drawings in which like reference numerals refer to like elements wherein:

[12] FIG. 1 is a view showing the structure of a device management (DM) system according to an exemplary embodiment of the present invention;

[13] FIG. 2 is a view showing a scheduling context in the form of a DM tree;

[14] FIG. 3 is a flow chart showing a process of installing the scheduling context by a DM server in FIG. 1; and

[15] FIG. 4 is a flow chart showing a schedule componenting method.

[16] A device management (DM) system and a method for interacting with a user in the system according to the exemplary embodiment of the present invention will now be described with reference to the accompanying drawings.

[17] FIG. 1 is a view showing the structure of a device management (DM) system according to an exemplary embodiment of the present invention, and FIG. 2 is a view showing a scheduling context in the form of a DM tree.

[18] As shown in FIG. 1, the DM system according to the present invention includes a DM server 100 and a terminal 200.

[19] DM sever 100

[20] The DM server 100 includes a DM scheduling enabler 110 and a DM enabler 120.

[21] The DM scheduling enabler 110 can create a scheduling context and request the terminal 200 to install the created scheduling context so as to be performed therein.

[22] In detail, the DM scheduling enabler 110 may create a scheduling context including general information and a schedule component. The general information may include

an identifier of the scheduling context, the name of the scheduling context, a valid period of the scheduling context, and a server for owning the scheduling context, and a permission given to a user.

[23] The schedule component may include scheduled device management and user interaction information. The scheduled device management may include a DM command and a condition for executing the DM command. The user interaction information may include one of a first element specifying whether to provide to a user a message about executing of the device management, and a second element specifying whether to allow the user to modify the scheduled device management. Here, the second element comprises one or more of a defer element specifying whether to allow a user to defer the device management, and a reschedule element specifying whether to allow the user to re-schedule the device management. In this case, the user interaction information may further include an element specifying whether to allow the user to confirm or cancel performing of the device management.

[24] The DM scheduling enabler 110 may establish a session according to an OMA DM specification together with the terminal 200 and request the terminal 200 to install the generated scheduling context through the established session.

[25] The DM enabler 120 performs a non-scheduled DM in cooperation with the DM enabler of the terminal.

[26]

[27] Terminal 200

[28] The terminal 200 may include a DM scheduling enabling unit 210 and a DM enabler 220.

[29] The DM scheduling enabler 210 may include a scheduling context installation module 211, a conditions matching module 212 for checking whether a condition of executing a DM command is matched or not, a user interaction module 213, and a DM command executing module 214.

[30] The scheduling context installation module 211 receives a request for installing a scheduling context from the DM server 100 and processes it. Namely, when the scheduling context installation module 211 receives the request from the server 100, it installs the scheduling context in the form of a DM tree within the terminal 200. In this case, the DM tree may include a general part and one or more schedule components.

[31] The DM tree, the form of installation of the scheduling context, will be described as follows. The DM tree can have the structure as shown in FIG. 2.

[32] In detail, as shown in FIG. 2, the general part includes an 'Id' node indicating an identifier of the installed scheduling context, a 'Name' node indicating a name of the scheduling context, a 'Valid' node indicating a valid period of the scheduling context, a 'Server' node indicating an owner of the scheduling context, and a 'UserControl' node

specifying a permission given to a user.

[33] The schedule component may include a 'Task' node specifying a DM command (or, a message which includes at least one or more DM commands), a 'Cond' node specifying a condition for executing the DM command, and a UI' node specifying a user interaction.

[34] The 'UI' node may include a Msg node specifying whether to provide to a user a message about executing of the scheduled device management, and a Modify node specifying whether to allow the user to modify the scheduled device management. The 'Msg' node may include a Minimum duration time node specifying a minimum time that the message is to be provided to the user, and a maximum duration time node specifying a maximum time that the message is to be provided to the user. And, the Modify node comprises one or more of a Defer node specifying whether to allow the user to defer the scheduled device management, a Reschedule node specifying whether to allow the user to re-schedule the scheduled device management and a Cancel node specifying whether to allow the user to cancel the scheduled device management. The 'UI' node may further include a 'Deadline' node specifying a deadline deferred or re-scheduled by the user when deferring or rescheduling can be possible.

[35] The scheduling context installation module 211 can interact with the user, before the scheduling context is installed. The interaction may include a provision of a notification about the installation of the scheduling context to the user. In addition, the interaction may include a provision of an option allowing the user to confirm or cancel the installation of the scheduling context. Also, the interaction may include a provision of an option allowing the user to view, change suspend or terminate the scheduled device management.

[36] The conditions matching module 212 monitors whether the condition is matched or not, and when the condition is matched, the conditions matching module 212 requests user interaction to the user interaction module 213 or requests the DM command executing module 214 to execute the DM command corresponding to the conditions.

[37] The user interaction module 213 performs the user interaction when the conditions matching module 212 determines that the condition is matched.

[38] The user interaction module 213 can provide a message to the user about the scheduled device management, i.e. the DM command and the condition.

[39] Also, the user interaction module 213 can provide an option and receive a response corresponding to the option from the user. In detail, the user interaction module 213 may provide an option allowing the user to view and change the scheduled device management according to the 'Modify' node. Namely, the user interaction module 213 may provide one or more of an option allowing the user to defer the scheduled device management according to the 'Defer' node in the DM tree, and an option allowing the

user to reschedule the scheduled device management, according to the 'Reschedule' node of the DM tree (refer to Table 1 shown below).

[40] Also, the user interaction module 213 may provide an option allowing the user to confirm or cancel executing of the scheduled device management.

[41] In addition, the user interaction module 213 may provide an option allowing the user to stop or start operation of the scheduling context or suspend or resume the operation of the scheduling context as in table 2 shown below.

[42]

Table 1

Type of user interaction	Description
Message	Providing a message about scheduling context or DM command
Defer	Deferring of scheduled DM command
Reschedule	Re-scheduling DM

Table 2

Type of user interaction	Description
Stop and start	Stopping or starting operation of scheduling context
Suspend and resume	Suspending or resuming operation of scheduling context

[43] As afore-mentioned, if the user changes the scheduled device management, the user interaction module 213 may allow the DM scheduling enabler 110 of the server 100 to recognize the change.

[44] The DM command executing module 214 cooperates with the DM enabler 110 to perform the DM command, when the conditions matching module 212 determines that the condition is matched, and the user interaction is completed.

[45] The DM enabler 220 performs the DM command in cooperation with the DM command executing module 214. In detail, the DM enabler 220 receives the DM command from the DM command executing module 214 and executes it, and then, returns a result to the DM command executing module 214.

[46] In the construction of the DM system according to the present invention, the DM server 100 includes the DM scheduling enabler 110 and the DM enabler 120, and the

terminal 200 includes the DM scheduling enabler 210 that includes the scheduling context installation module 211, the conditions matching module 212, the user interaction module 213 and the DM command executing module 214, and the DM enabler 220. However, the DM server 100 and the terminal 200 may include a processor (not shown), a network interface (not shown) and a storage unit (not shown).

[47] The operation of the DM system constructed as described above will now be explained in detail with reference to FIGs. 3 and 4. In FIGs. 3 and 4, some elements are omitted for the sake of brevity, but the operation on the drawing is definitely performed by all the elements of the DM server 100 and the terminal 200.

[48] FIG. 3 is a flow chart showing a process of installing the scheduling context by the DM server 100 in FIG. 1.

[49] The installing process will be described as follows.

[50] 1) First, the DM server 100 (specifically, the DM scheduling enabler 110) creates the scheduling context including the general information and the schedule component. In this case, as mentioned above, the schedule component may include the DM command, the conditions for executing the DM command, and the user interaction information, etc.

[51] 2) Next, the DM server 100 connects a session to the DM scheduling enabler 210 of the terminal 200 and transfers an installation request of the generated scheduling context by using a DM protocol.

[52] 3) Then, the DM scheduling enabler 210 (specifically, the scheduling context installation module 211) of the terminal 200 selectively makes the user confirm the installation of the scheduling context.

[53] 4) When the user interaction is completed, the DM scheduling enabler 210 (specifically, the scheduling context installation module 211) of the terminal 200 installs the scheduling context in the form of the DM tree within the terminal 200.

[54] 5) When the installing is completed, the DM scheduling enabler 210 of the terminal reports a result of installation of the scheduling context to the DM server 100.

[55] FIG. 4 is a flow chart showing the DM scheduling method according to the exemplary embodiment of the present invention.

[56] Each process will be described with reference to FIG. 4 as follows.

[57] 1) First, the DM scheduling enabler 210 (specifically, the conditions matching module 212) checks the 'Cond' node of the DM tree to monitor whether a condition for executing a DM command is matched.

[58] 2) When the condition is checked to be matched according to the monitoring, the DM scheduling enabler 210 (specifically, the user interaction module 213) selectively performs user interaction. Herein, the user interaction can be performed according to the 'UI' node of the DM tree as mentioned above.

[59] In detail, the user interaction module 213 may provide to the user a message about information on the scheduling context or the information on the DM command according to the 'Notify' node.

[60] Also, the user interaction module 213 may provide one or more of an option allowing the user to modify the scheduled device management. In detail, the user interaction module 213 may allow the user to defer the schedule according to the 'Defer' node, or allow the user to reschedule the schedule according to the 'Reschedule' node.

[61] In addition, the user interaction module 213 may provide an option allowing the user to stop or start the operation of the scheduling context or suspend or resume the operation of the scheduling context. Also, the user interaction module 213 may provide an option allowing the user to confirm or cancel executing of the DM command. Also, the user interaction module 213 may provide an option allowing the user to view or change the schedule.

[62] 3) When the user interaction is successfully performed, the DM scheduling enabler 210 (specifically, the DM command executing module 214) performs the DM command in cooperation with the DM enabler 220.

[63] The method according to the present invention as described above can be implemented by software, hardware, or their combination. For example, the method according to the present invention can be implemented with codes or command languages in a software program that can be stored in a storage medium (e.g., an internal memory of a mobile terminal, a flash memory, a hard disk, or something else) and executed by a processor (e.g., an internal microprocessor of the mobile terminal).

[64] As so far described, the DM system and a method for interacting with a user in the system according to the present invention have the following advantages.

[65] That is, when the DM is performed, the user can interact therewith.

[66] In addition, the user can arbitrarily change performing of the DM.

[67] Also, the DM server can provide an improved DM by interacting with the user.

[68] The foregoing embodiments and advantages are merely exemplary and are not to be construed as limiting the present invention. The present teaching can be readily applied to other types of apparatuses. The description of the present invention is intended to be illustrative, and not to limit the scope of the claims. Many alternatives, modifications, and variations will be apparent to those skilled in the art. In the claims, means-plus-function clauses are intended to cover the structure described herein as performing the recited function and not only structural equivalents but also equivalent structures.

[69]

Claims

[1] A terminal comprising:
a first module adapted to receive a scheduling context including scheduled device management from a server and to install the received scheduling context; and
a second module adapted to provide one or more of a notification to a user about the scheduled device management, and an option allowing the user to modify the scheduled device management, before performing the scheduled device management.

[2] The terminal of claim 1, wherein the modification may be at least one of deferring, rescheduling, and canceling the scheduled device management.

[3] The terminal of claim 1, wherein the scheduling context further includes:
information related to interacting with the user.

[4] The terminal of claim 3, wherein the user interaction information comprises one or more of:
a first element specifying whether to provide to a user message about performing of the device management; and,
a second element specifying whether to allow a user to modify the scheduled device management.

[5] The terminal of claim 4, wherein the second element comprises one or more of:
a defer element specifying whether to allow a user to defer the scheduled device management;
a reschedule element specifying whether to allow the user to re-schedule the scheduled device management; and
a cancel element specifying whether to allow the user to cancel the scheduled device management.

[6] The terminal of claim 3, wherein the first module achieves the installation by generating a UI node in a device management tree of the terminal according to the user interaction information of the scheduling context.

[7] The terminal of claim 6, wherein the UI node comprises one or more of:
a first node specifying whether to provide to a user message about performing of the device management; and
a second node specifying whether to allow a user to modify the scheduled device management.

[8] The terminal of claim 5, wherein the second node comprises one or more of:
a defer node specifying whether to allow a user to defer the device management;
a reschedule node specifying whether to allow the user to re-schedule the device

management; and
a cancel node specifying whether to allow the user to cancel the device management.

[9] The terminal of claim 7, wherein the first node comprises at least one or more of:
a minimum duration time node for specifying a minimum time that the message is to be provided to the user, and
a maximum duration time node for specifying a maximum time that the message is to be provided to the user.

[10] The terminal of claim 8, wherein the UI node further comprises:
a deadline node for specifying a deadline deferred or rescheduled by the user.

[11] The terminal of claim 1, wherein the first module installs an user control node in the DM tree, the node specifies a permission of the user.

[12] The terminal of claim 1, wherein the first module provides one or more of a notification to the user about the installation of the scheduling context and an option of allowing the user to confirm or cancel the installation of the scheduling context.

[13] The terminal of claim 1, wherein the first module provides an option allowing the user to view, change, suspend or terminate the scheduling context.

[14] The terminal of claim 1, wherein the second module further provides one or more of an option allowing the user to stop or start the operation of the scheduling context, and an option allowing the user to suspend or resume the operation of the scheduling context.

[15] A server comprising:
a device management (DM) scheduling enabler for generating a scheduling context including scheduled device management and user interaction information, and requesting installation of the generated scheduling context in a terminal,
wherein the user interaction information includes one of a first element specifying whether to provide to a user a message about performing of the device management, and a second element specifying whether to allow the user to modify the scheduled device management.

[16] The server of claim 15, wherein the modification may be at least one of deferring, rescheduling, and canceling the scheduled device management.

[17] The server of claim 15, wherein the scheduling context comprises an user control element for specifying a permission of the user with respect to the scheduling context.

[18] The server of claim 15, wherein the user control element specifies a permission of the user regarding as to whether to stop or start an operation of the scheduling

context, or suspend or resume the operation of the scheduling context.

[19] A device management (DM) method of a terminal comprising:
receiving a scheduling context including information for a scheduled device management from a server;
installing the received scheduling context; and
providing at least one or more of a message to a user, and an option allowing the user to modify the scheduled device management, before performing the scheduled device management.

[20] The method of claim 19, wherein the modification may be at least one of deferring, rescheduling, and canceling the scheduled device management.

[21] The method of claim 19, wherein the scheduling context further includes user interaction information.

[22] The method of claim 21, wherein the user interaction information comprises one or more of:
a first element specifying whether to provide to a user message about performing of the device management; and,
a second element specifying whether to allow a user to modify the scheduled device management.

[23] The method of claim 21, wherein, in the installing step, a UI node is generated in a device management tree of a terminal according to the user interaction information of the scheduling context.

[24] The method of claim 19, wherein the message is related to the scheduled device management or the scheduling context.

[25] The method of claim 19, further comprising:
interacting with the user for installing of the scheduling context, before the scheduling context is installed.

[26] The method of claim 25, wherein, in the interacting step, an option allowing the user to confirm or cancel installing of the scheduling context is provided.

[27] The method of claim 25, wherein, in the interacting step, an option allowing the user to view, change, suspend or terminate the schedule is provided.

[28] A method for performing a scheduled device management, the method comprises:
detecting an arrival on schedule for performing a device management;
providing at least one of a notification to a user, and an option allowing the user to change the schedule; and
performing the device management.

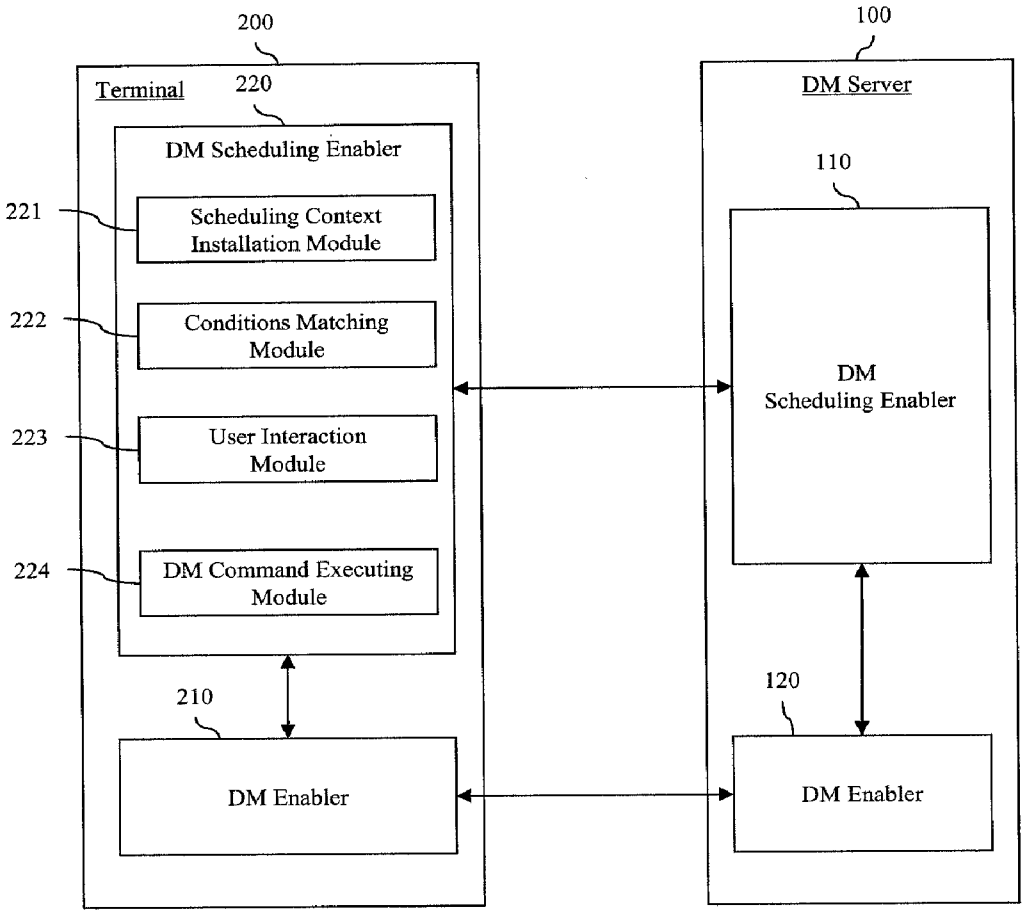
[29] The method of claim 28, wherein the modification may be at least one of deferring, rescheduling, and canceling the scheduled device management.

[30] The method of claim 28, further comprising:
receiving a scheduling context including information for the scheduled device management from a server ; and
installing the received scheduling context.

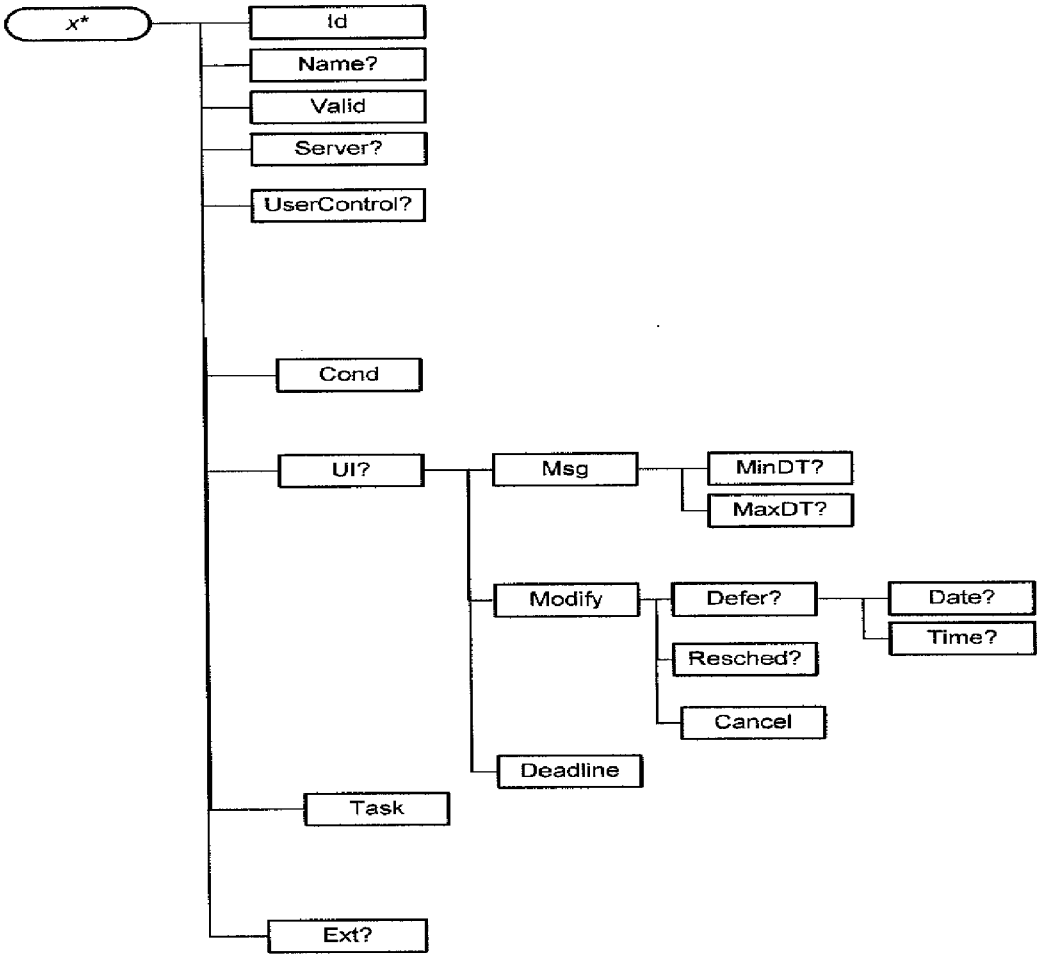
[31] The method of claim 30, wherein the scheduling context further includes user interaction information.

[32] The method of claim 34, wherein the user interaction information comprises at least one or more of
a first element specifying whether to provide to a user a message about performing of the device management; and
a second element specifying whether to allow the user to modify the scheduled device management.

[Fig. 1]


200
Terminal
220
DM Scheduling Enabler
221
Scheduling Context Installation Module
222
Conditions Matching Module
223
User Interaction Module
224
DM Command Executing Module
210
DM Enabler
100
DM Server
110
DM Scheduling Enabler
120
DM Enabler

[Fig. 2]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Server?
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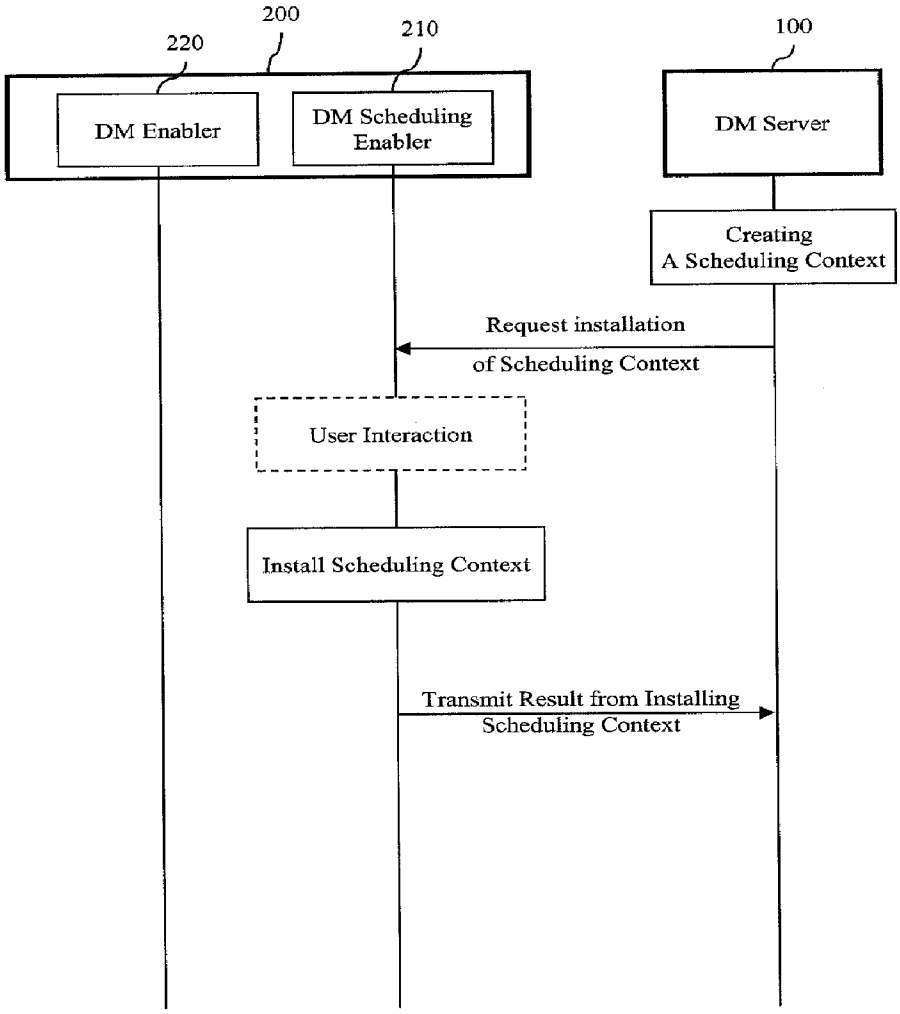
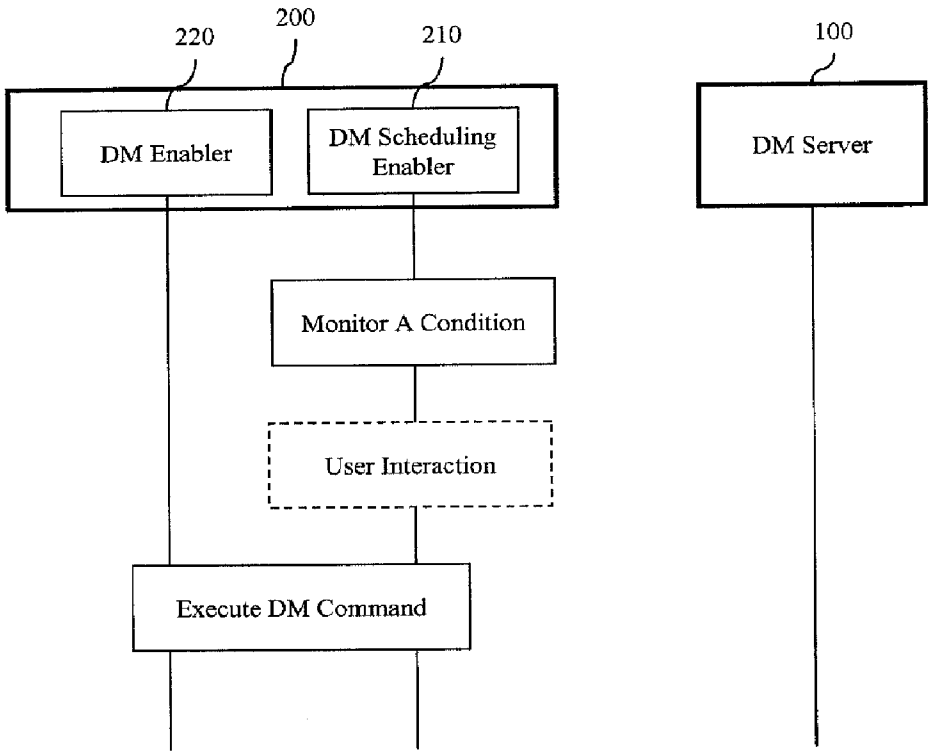
Cancel
Deadline
Task
Ext?

[Fig. 3]


200
220
210
100
DM Enabler
DM Scheduling Enabler
DM Server
Creating A Scheduling Context
Request installation of Scheduling Context
User Interaction
Install Scheduling Context
Transmit Result from Installing Scheduling Context

[Fig. 4]


200
220
210
100
DM Enabler
DM Scheduling Enabler
DM Server
Monitor A Condition
User Interaction
Execute DM Command

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2007/000376

A. CLASSIFICATION OF SUBJECT MATTER

G06F 15/16(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC8 : the entire class

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility Models since 1975
Japanese Utility Models and application for Utility Models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS(KIPO internal) : "device management", "server"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 11-39165 A (MATSUSHITA ELECTRIC IND. CO., LTD.) 12 February 1999 See abstract; claims 1, 9, 10; figure 1.	1 - 32
A	US 2004 - 0043788 A1 (GUARAV MITTAL) 04 March 2004 See abstract; figure 1A; claims 1, 8, 15.	1 - 32
A	JP 2005 - 065281 A (SAMSUNG ELECTRONICS CO., LTD.) 10 March 2005 See abstract; claim 1.	1 - 32
A	JP 2003 - 196412 A (MATSUSHITA ELECTRIC IND. CO., LTD.) 11 July 2003 See abstract; claim 1.	1 - 32
A	US 2004 - 0172469 A1 (TORU TAKAHASHI et al.) 02 September 2004 See abstract; figure 3; claims 1, 6.	1 - 32

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 APRIL 2007 (18.04.2007)	**18 APRIL 2007 (18.04.2007)**

Name and mailing address of the ISA/KR	Authorized officer
Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea	LEE, Young Su
Facsimile No. 82-42-472-7140	Telephone No. 82-42-481-8176

Form PCT/ISA/210 (second sheet) (April 2007)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
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