IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

VARATEC, LLC,	§	
	§	
Plaintiff,	§	
	§	
vs.	§	
	§	**CASE NO. _____**
ADVANCED TECHNOLOGY VIDEO, INC.,	§	
	§	
	§	**JURY TRIAL DEMANDED**
Defendants	§	

ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT

This is an action for patent infringement by Varatec, LLC, against Advanced Technology Video, Inc.

I. PARTIES AND JURISDICTION

1. Plaintiff Varatec, LLC ("Varatec") is a Texas limited liability corporation with a principal place of business in Rockwall, Texas.

2. Defendant Advanced Technology Video, Inc. ("ATV") is a for-profit corporation formed under the laws of Texas. ATV voluntarily terminated its existence with the Texas Secretary of State on December 28, 2010. However, upon information and belief, ATV continues to do business in Texas despite having terminated its existence and not having registered in any way to do business in Texas. By way of example, ATV's website has numerous press releases, dated as late as March 27, 2014, that are from its headquarters in "Coppell, TX".

3. This action arises under a federal statute, 35 U.S.C. § 271. Accordingly, this Court has federal question jurisdiction under 28 U.S.C. § 1331.

II. COUNT ONE: INFRINGEMENT OF U.S. PATENT NO. 7,792,256

4. Varatec repeats and re-alleges each and every allegation in this petition as though fully stated herein.

5. On September 7, 2010, United States Patent No. 7,792,256 (the "'256 Patent") was issued for an invention in surveillance systems. Varatec was the owner of the '256 Patent throughout the period of Defendant ATV's infringing acts and is the current owner of all rights and interests to the '256 Patent. A true and correct copy of the '256 Patent is attached as **Exhibit "A."**

6. To the extent applicable, Varatec has at all times complied with 35 U.S.C. § 287.

7. Defendant ATV has been and is now directly infringing the '256 Patent in the State of Texas, in this Judicial District, and elsewhere in the United States by, among other things, making, using, offering to sell, selling, and/or importing methods, systems, and/or software that embody one or more claims of the '256 Patent, including but not limited to, in connection with its surveillance systems that allow the user to remotely monitor, control, and manage remote premises using facility management devices and/or camera devices.

8. As a result of ATV's infringement of the '256 Patent, Varatec has suffered monetary damages in an amount not yet determined.

9. Varatec will be substantially and irreparably harmed by ATV's infringing activities unless those activities are enjoined by this Court. Varatec has no adequate remedy at law. As a result of ATV's infringement, Varatec is entitled to damages and permanent injunctive

relief, restraining and enjoining ATV and all those in privity with or acting in concert with ATV from infringing the ‘256 Patent.

10. ATV became aware if the ‘256 Patent, at the latest, in April 2014 when it was provided a copy of this complaint.

11. Varatec has complied with the statutory requirements of placing a notice of the ‘256 Patent on all surveillance systems it manufactures and sells and has given ATV written notice of the infringement prior to trial.

III. DEMAND FOR JURY TRIAL

12. Varatec hereby demands that all issues be determined by jury.

IV. PRAYER FOR RELIEF

13. WHEREFORE, Varatec prays for relief against ATV as follows:

(a) A judgment that ATV has directly infringed the ‘256 Patent;

(b) An order for preliminary and permanent injunctive relief prohibiting ATV, its officers, agents, servants, employees, successors, assigns, or all other persons or entities in active concert, participation, or privity with any of the foregoing, from any further acts of infringement of the ‘256 Patent;

(c) A judgment and order requiring ATV to pay Varatec damages under 35 U.S.C. § 284, together with pre-judgment and post-judgment interest;

(d) A judgment and order requiring ATV to pay Varatec the costs of this action; and

(e) Such other and further relief as the Court deems just and equitable.

Dated: April 10, 2014

Respectfully Submitted,

/s/ W. Craig Stokley
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Texas State Bar No. 24051392
JOHN T. PALTER
Texas State Bar No. 15441500
NATHANIAL L. MARTINEZ
Texas State Bar No. 24074661

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Attorneys for Plaintiff Varatec, LLC

CERTIFICATE OF SERVICE

I, W. Craig Stokley, hereby certify that on April 10, 2014, I electronically filed the foregoing document via the CM/ECF electronic filing system and served all counsel of record pursuant to Local Rule 5.1(d) and FED. R. CIV. P. 5(b)(2)(E).

/s/ W. Craig Stokley
_____
W. Craig Stokley

EXHIBIT A

US007792256B1

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

(10) **Patent No.: US 7,792,256 B1**
(45) **Date of Patent: Sep. 7, 2010**

(54) **SYSTEM AND METHOD FOR REMOTELY MONITORING, CONTROLLING, AND MANAGING DEVICES AT ONE OR MORE PREMISES**

(76) Inventors: **Charles E. Arledge**, 1802 Mystic St., Rockwall, TX (US) 75032; **Avinash C. Saxena**, 609 Snead Dr., Plano, TX (US) 75025; **Sriram M. Krishnan**, 1416 McKenzie, Allen, TX (US) 75013

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1414 days.

(21) Appl. No.: **11/089,744**

(22) Filed: **Mar. 25, 2005**

(51) **Int. Cl.**
H04M 11/00 (2006.01)

(52) **U.S. Cl.** **379/102.01**; 379/106.01; 348/143

(58) **Field of Classification Search** 379/102.01, 379/102.02, 106.01; 348/150
See application file for complete search history.

(56) **References Cited**

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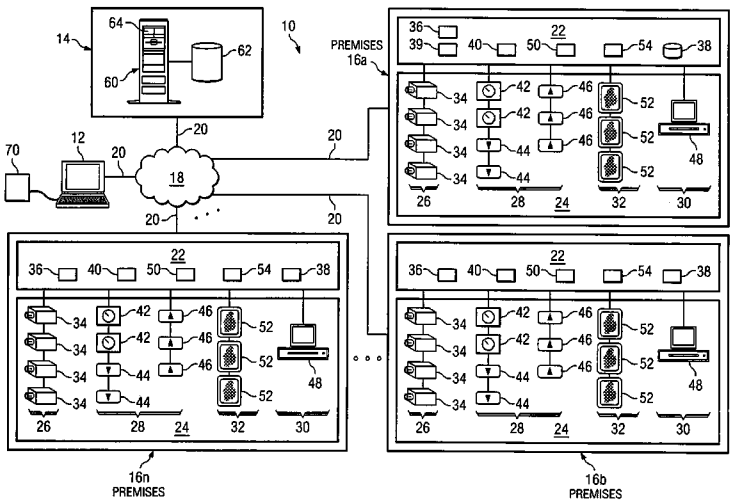
Primary Examiner—Stella L Woo
(74) *Attorney, Agent, or Firm*—Baker Botts L.L.P.

(57) **ABSTRACT**

In certain embodiments, a system for remotely monitoring, controlling, and managing one or more remote premises includes a server system operable to communicate with one or more remote client systems, the client systems being remote from the one or more premises. The system further includes a database system associated with the server system and operable to store configuration information for a number of devices located at a premises, the devices including one or more camera devices and one or more facility management devices. The server system is operable to: (1) receive from the one or more premises device data for the one or more facility management devices located at the premises; (2) initiate storage of at least a portion of the received device data in the database system; and (3) communicate, in response to a request received from a particular client system, stored device data responsive to the request to the particular client system.

41 Claims, 20 Drawing Sheets



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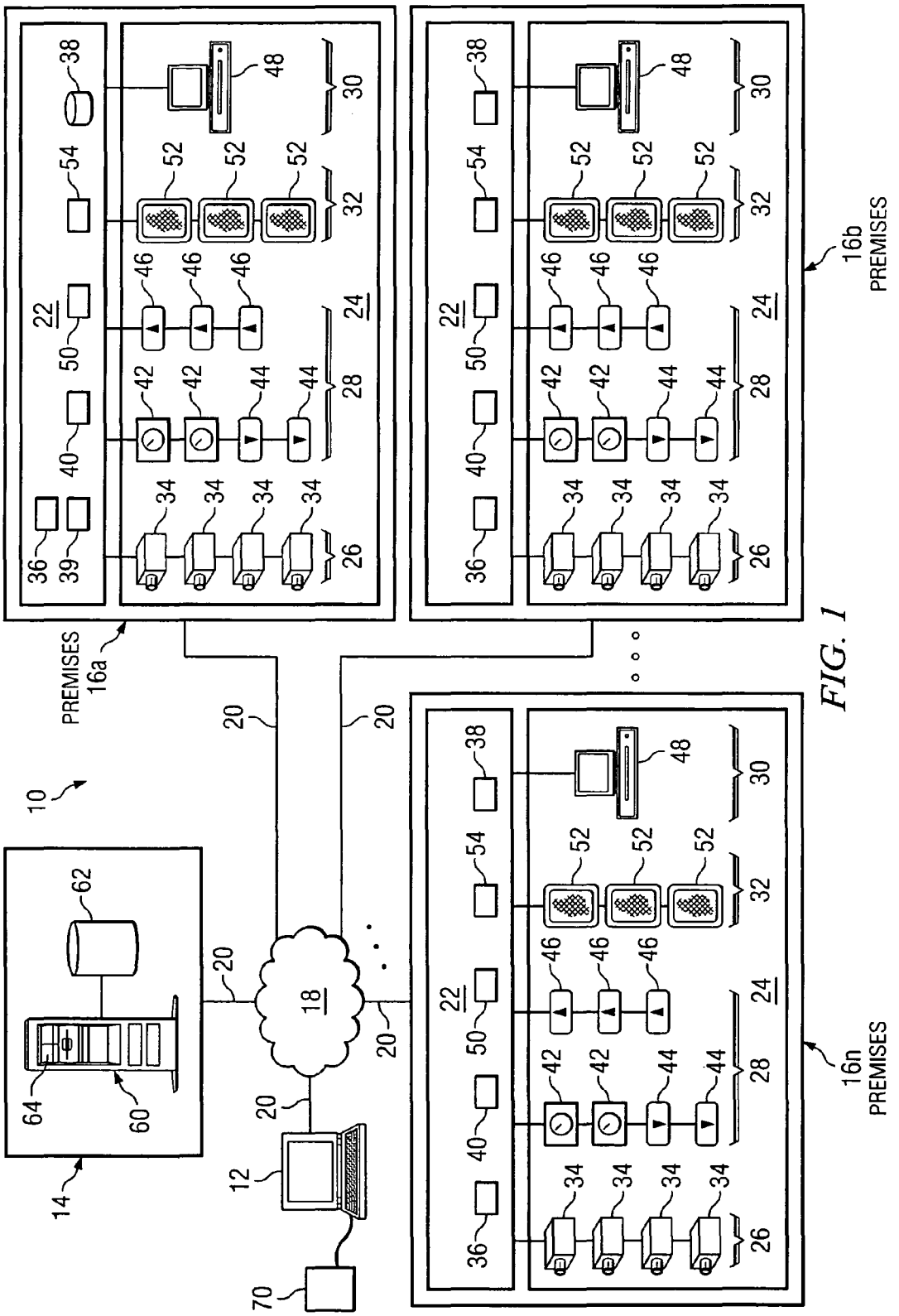

10
PREMISES 16a
PREMISES 16b
PREMISES 16n
12
14
18
20
22
24
26
28
30
32
34
36
38
39
40
42
44
46
48
50
52
54
60
62
64
70

FIG. 1

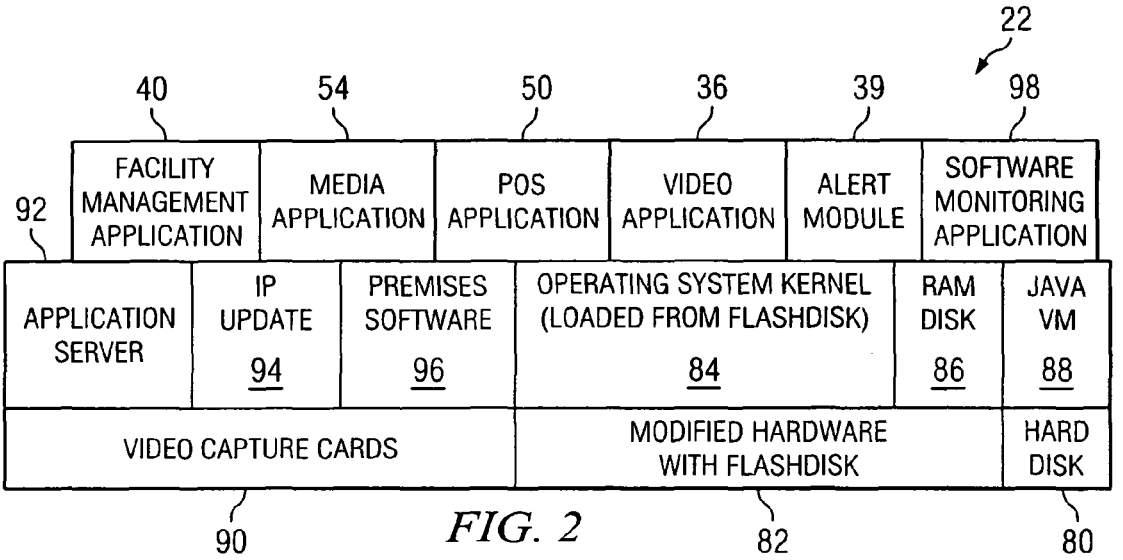

22
40
54
50
36
39
98
92
FACILITY MANAGEMENT APPLICATION
MEDIA APPLICATION
POS APPLICATION
VIDEO APPLICATION
ALERT MODULE
SOFTWARE MONITORING APPLICATION
APPLICATION SERVER
IP UPDATE
94
PREMISES SOFTWARE
96
OPERATING SYSTEM KERNEL (LOADED FROM FLASHDISK)
84
RAM DISK
86
JAVA VM
88
VIDEO CAPTURE CARDS
MODIFIED HARDWARE WITH FLASHDISK
HARD DISK
90
82
80

FIG. 2

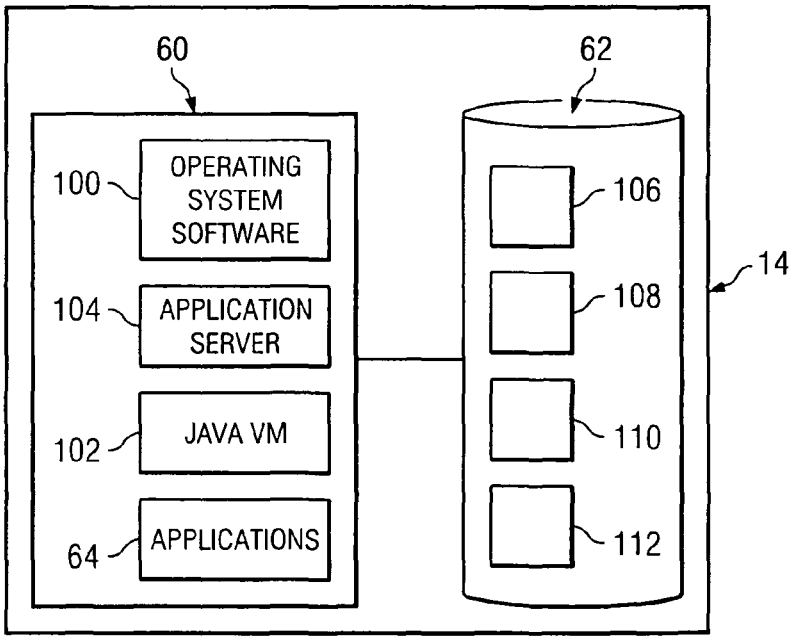

60
62
100
OPERATING SYSTEM SOFTWARE
104
APPLICATION SERVER
102
JAVA VM
64
APPLICATIONS
106
108
110
112
14

FIG. 3

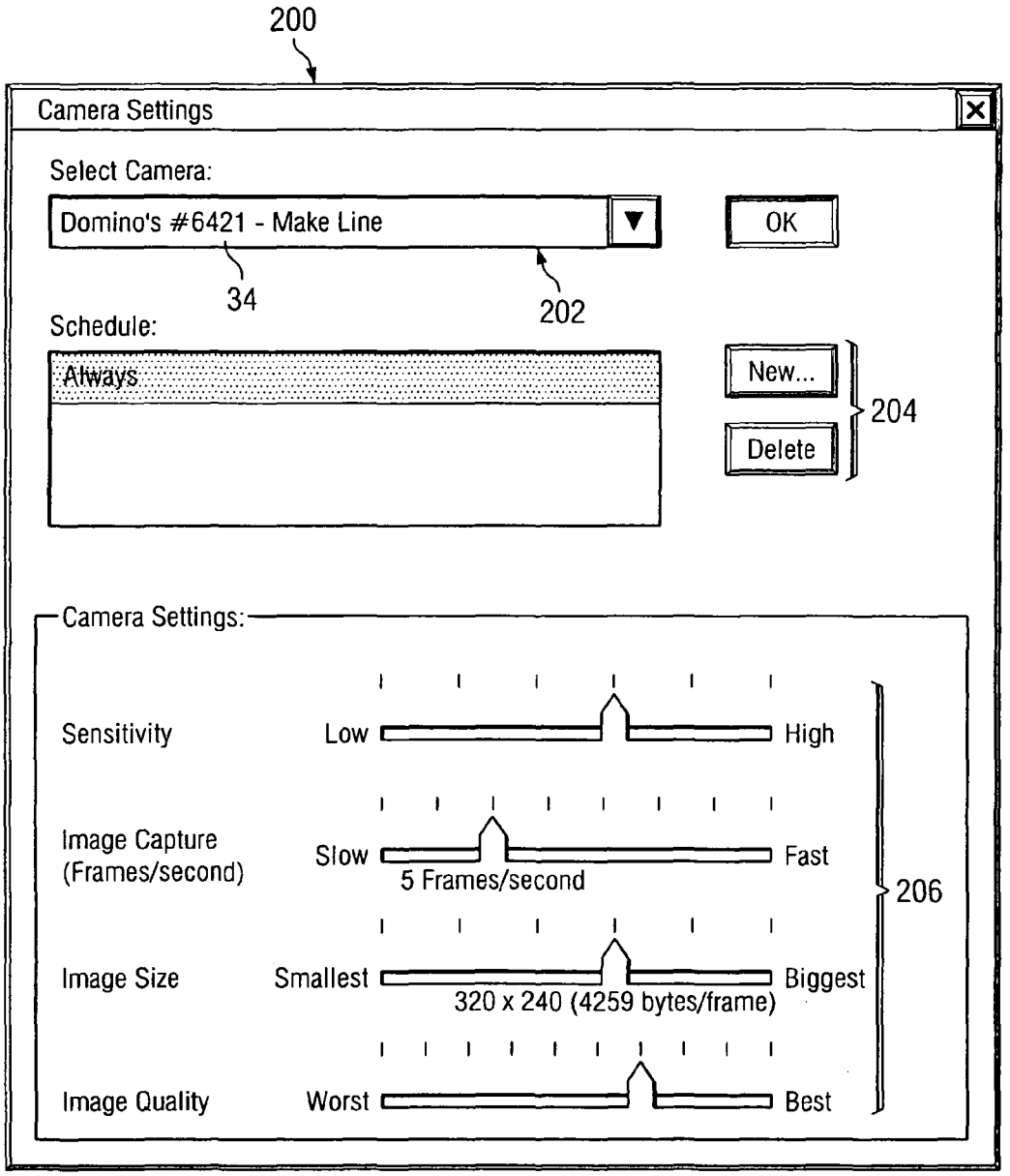

200
Camera Settings
Select Camera:
Domino's #6421 - Make Line
OK
34
202
Schedule:
Always
New...
Delete
204
Camera Settings:
Sensitivity
Low
High
Image Capture
(Frames/second)
Slow
Fast
5 Frames/second
206
Image Size
Smallest
Biggest
320 x 240 (4259 bytes/frame)
Image Quality
Worst
Best

FIG. 4

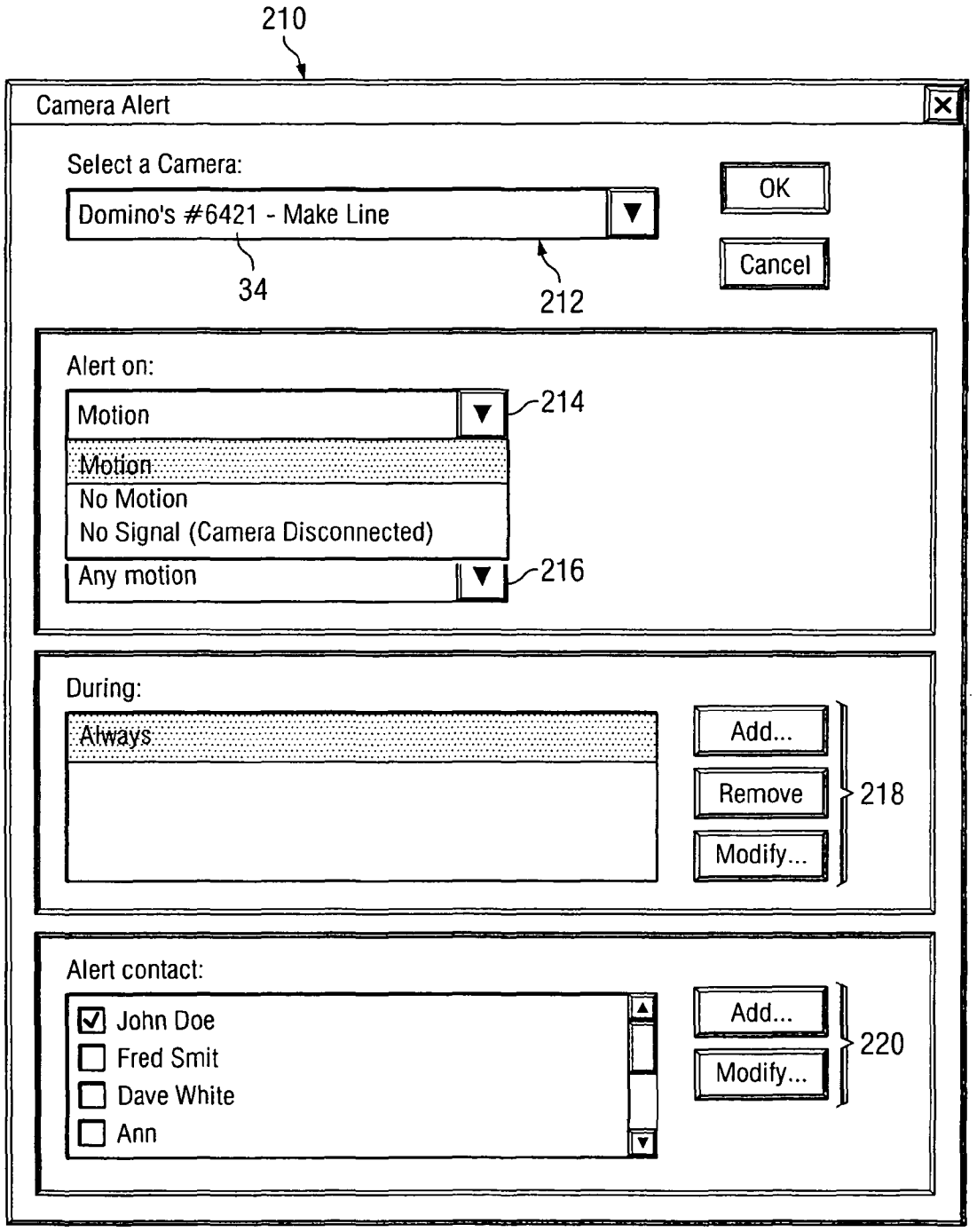

210
Camera Alert
Select a Camera:
Domino's #6421 - Make Line
OK
Cancel
34
212
Alert on:
Motion
214
Motion
No Motion
No Signal (Camera Disconnected)
Any motion
216
During:
Always
Add...
Remove
Modify...
218
Alert contact:
John Doe
Fred Smit
Dave White
Ann
Add...
Modify...
220

FIG. 5

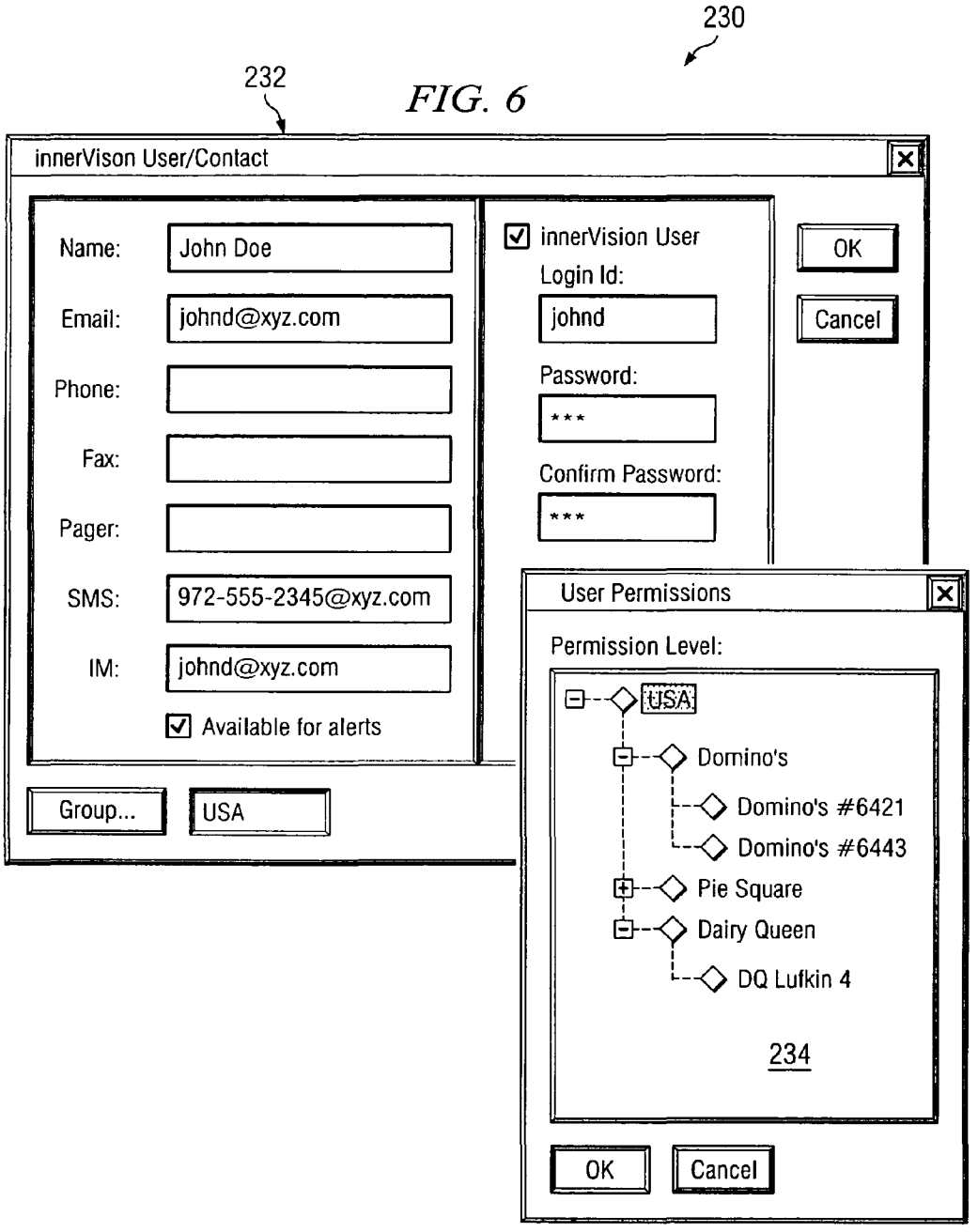

230
232
innerVison User/Contact
Name:
John Doe
Email:
johnd@xyz.com
Phone:
Fax:
Pager:
SMS:
972-555-2345@xyz.com
IM:
johnd@xyz.com
Available for alerts
innerVision User
Login Id:
johnd
Password:
***
Confirm Password:
***
OK
Cancel
Group...
USA
User Permissions
Permission Level:
USA
Domino's
Domino's #6421
Domino's #6443
Pie Square
Dairy Queen
DQ Lufkin 4
234
OK
Cancel

FIG. 6

FIG. 7

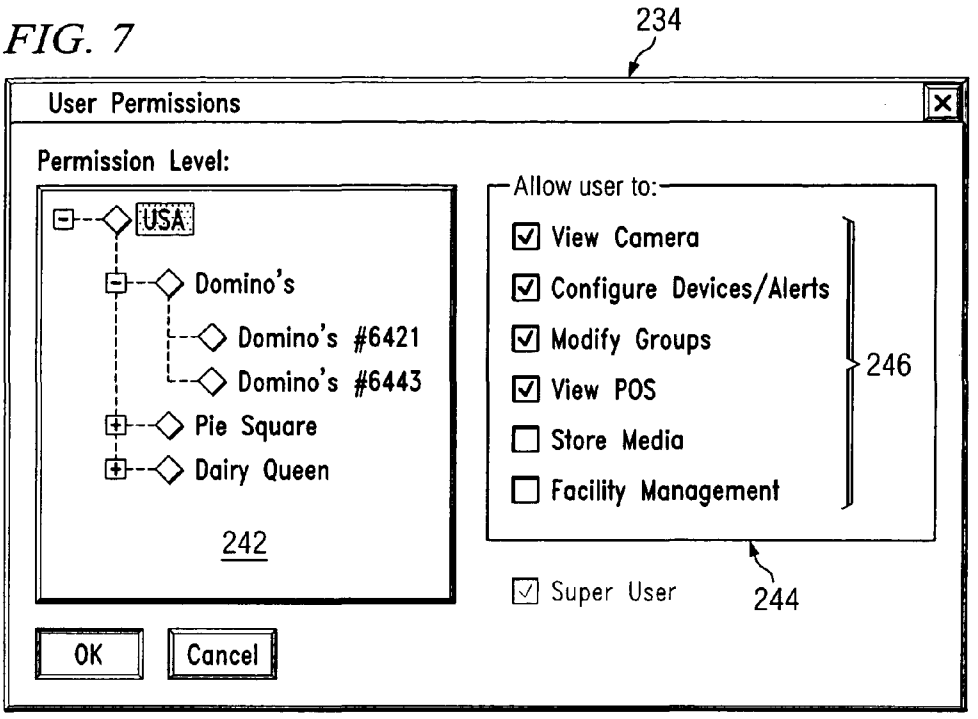
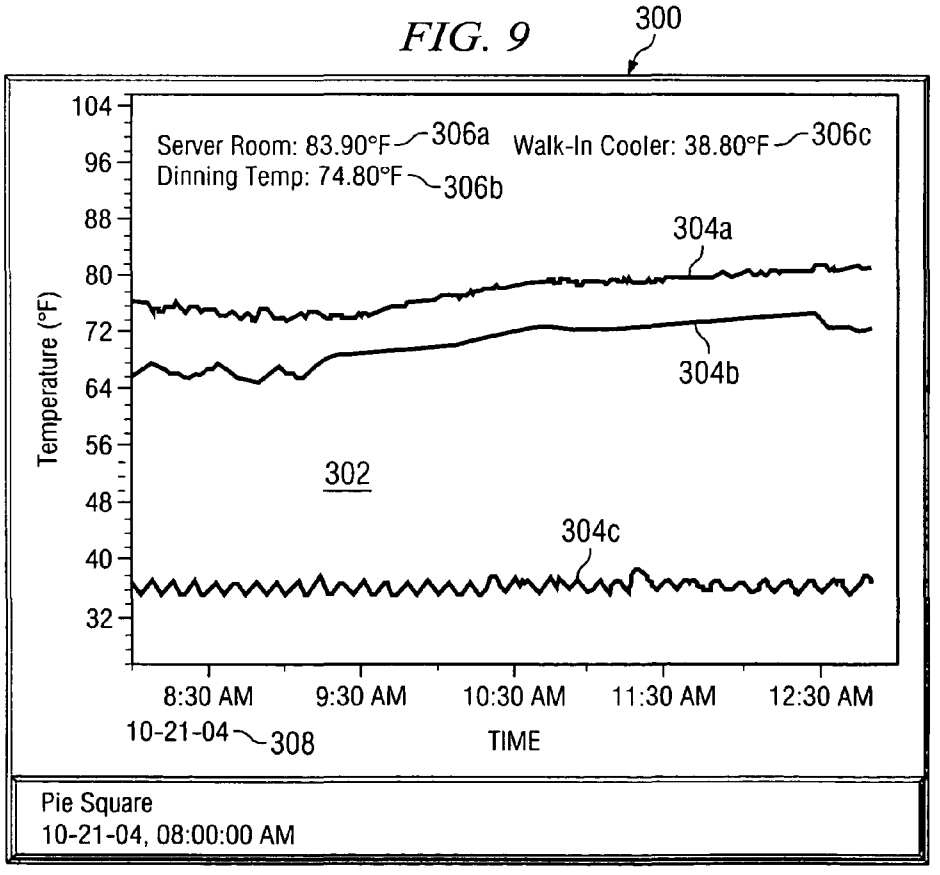

234
User Permissions
Permission Level:
USA
Domino's
Domino's #6421
Domino's #6443
Pie Square
Dairy Queen
242
Allow user to:
View Camera
Configure Devices/Alerts
Modify Groups
View POS
Store Media
Facility Management
246
Super User
244
OK
Cancel

FIG. 9


300
104
96
88
80
72
64
56
48
40
32
Temperature (°F)
Server Room: 83.90°F
306a
Walk-In Cooler: 38.80°F
306c
Dinning Temp: 74.80°F
306b
304a
304b
302
304c
8:30 AM
9:30 AM
10:30 AM
11:30 AM
12:30 AM
10-21-04
308
TIME
Pie Square
10-21-04, 08:00:00 AM

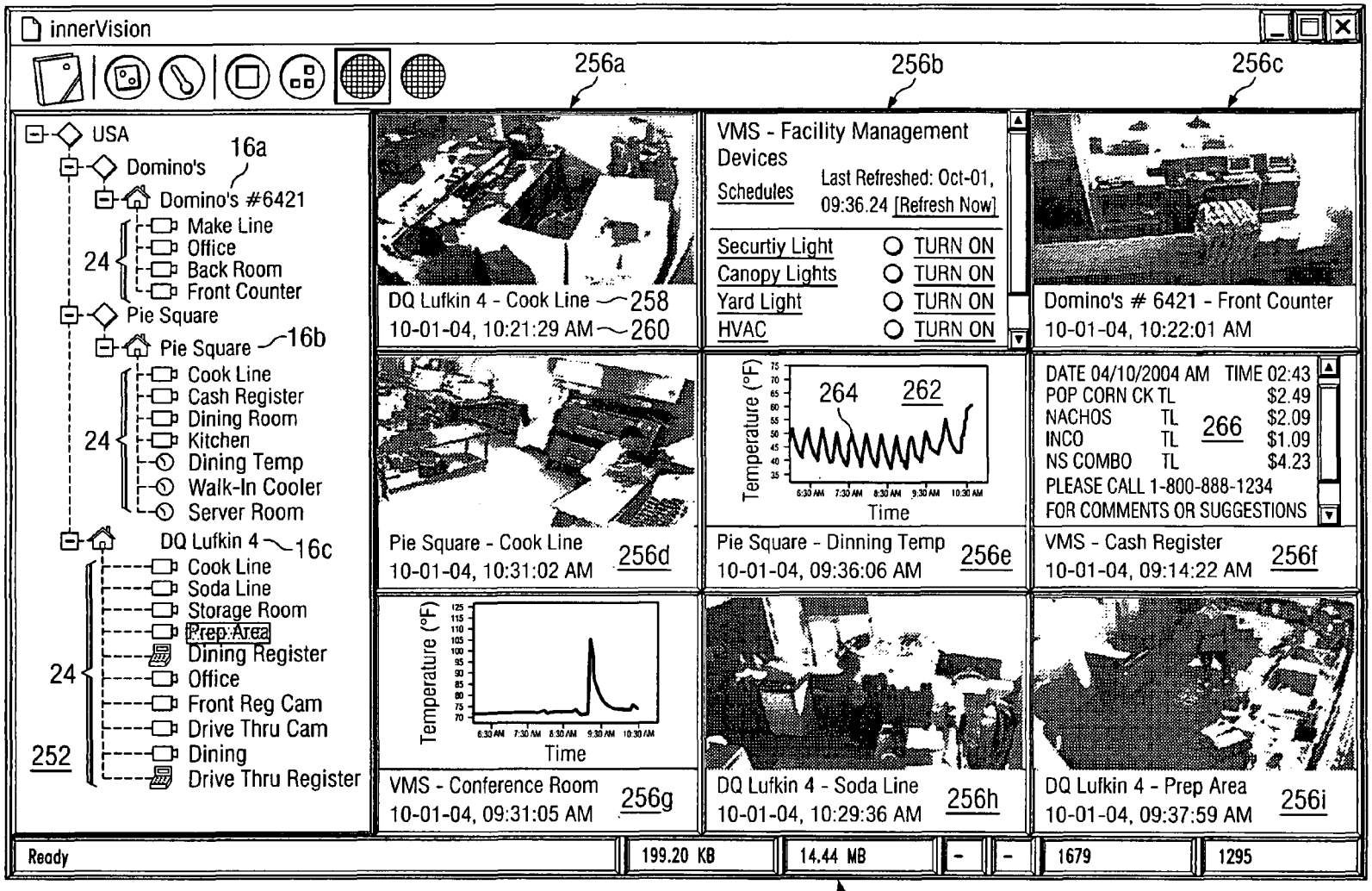

innerVision
256a
256b
256c
USA
Domino's
16a
Domino's #6421
Make Line
Office
Back Room
Front Counter
24
Pie Square
Pie Square
16b
Cook Line
Cash Register
Dining Room
Kitchen
Dining Temp
Walk-In Cooler
Server Room
24
DQ Lufkin 4
16c
Cook Line
Soda Line
Storage Room
Prep Area
Dining Register
Office
Front Reg Cam
Drive Thru Cam
Dining
Drive Thru Register
24
252
DQ Lufkin 4 - Cook Line
258
10-01-04, 10:21:29 AM
260
VMS - Facility Management Devices
Schedules
Last Refreshed: Oct-01, 09:36.24 [Refresh Now]
Securtiy Light TURN ON
Canopy Lights TURN ON
Yard Light TURN ON
HVAC TURN ON
Domino's # 6421 - Front Counter
10-01-04, 10:22:01 AM
Pie Square - Cook Line
10-01-04, 10:31:02 AM
256d
Temperature (°F)
264
262
Time
Pie Square - Dinning Temp
10-01-04, 09:36:06 AM
256e
DATE 04/10/2004 AM TIME 02:43
POP CORN CK TL $2.49
NACHOS TL $2.09
INCO TL $1.09
NS COMBO TL $4.23
266
PLEASE CALL 1-800-888-1234
FOR COMMENTS OR SUGGESTIONS
VMS - Cash Register
10-01-04, 09:14:22 AM
256f
Temperature (°F)
Time
VMS - Conference Room
10-01-04, 09:31:05 AM
256g
DQ Lufkin 4 - Soda Line
10-01-04, 10:29:36 AM
256h
DQ Lufkin 4 - Prep Area
10-01-04, 09:37:59 AM
256i
Ready
199.20 KB
14.44 MB
1679
1295
250

FIG. 8

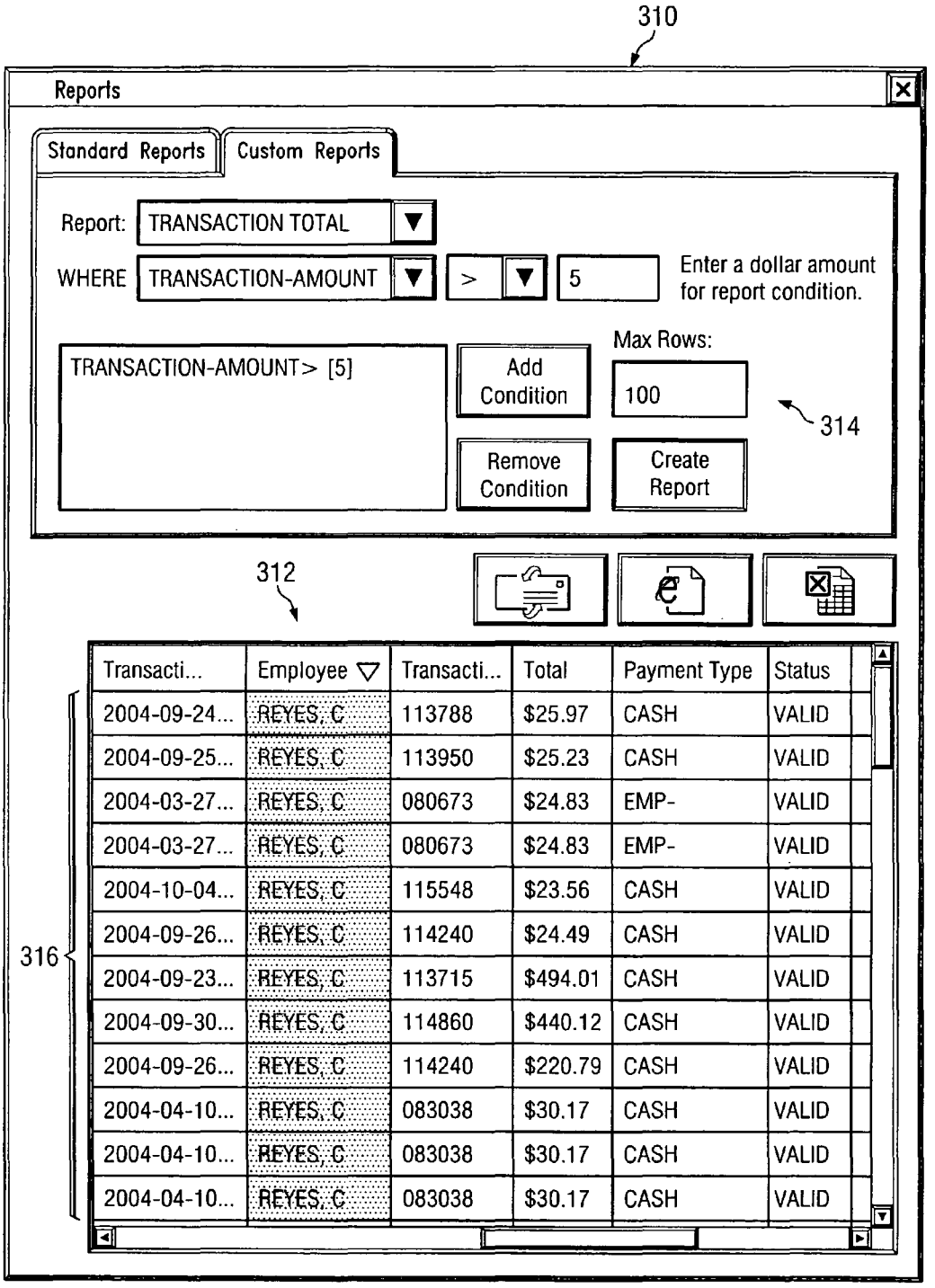

310
Reports
Standard Reports
Custom Reports
Report: TRANSACTION TOTAL
WHERE TRANSACTION-AMOUNT
>
5
Enter a dollar amount for report condition.
TRANSACTION-AMOUNT> [5]
Add Condition
Remove Condition
Max Rows:
100
Create Report
314
312
316
Transacti...
Employee
Transacti...
Total
Payment Type
Status
2004-09-24... REYES, C 113788 $25.97 CASH VALID
2004-09-25... REYES, C 113950 $25.23 CASH VALID
2004-03-27... REYES, C 080673 $24.83 EMP- VALID
2004-03-27... REYES, C 080673 $24.83 EMP- VALID
2004-10-04... REYES, C 115548 $23.56 CASH VALID
2004-09-26... REYES, C 114240 $24.49 CASH VALID
2004-09-23... REYES, C 113715 $494.01 CASH VALID
2004-09-30... REYES, C 114860 $440.12 CASH VALID
2004-09-26... REYES, C 114240 $220.79 CASH VALID
2004-04-10... REYES, C 083038 $30.17 CASH VALID
2004-04-10... REYES, C 083038 $30.17 CASH VALID
2004-04-10... REYES, C 083038 $30.17 CASH VALID

FIG. 10

FIG. 11

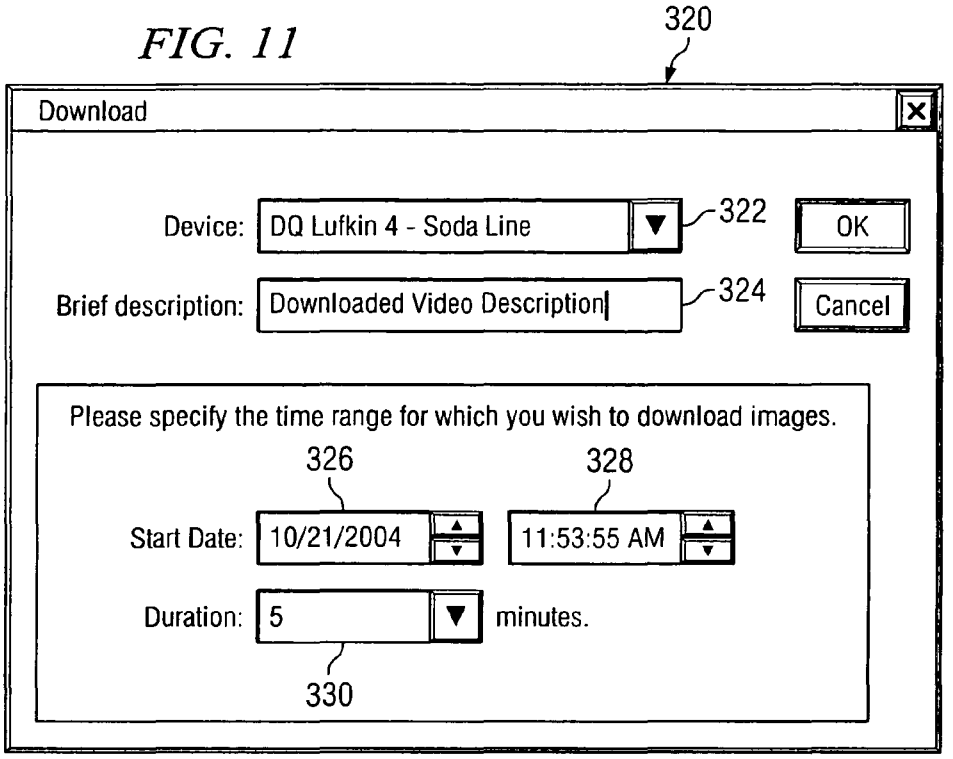
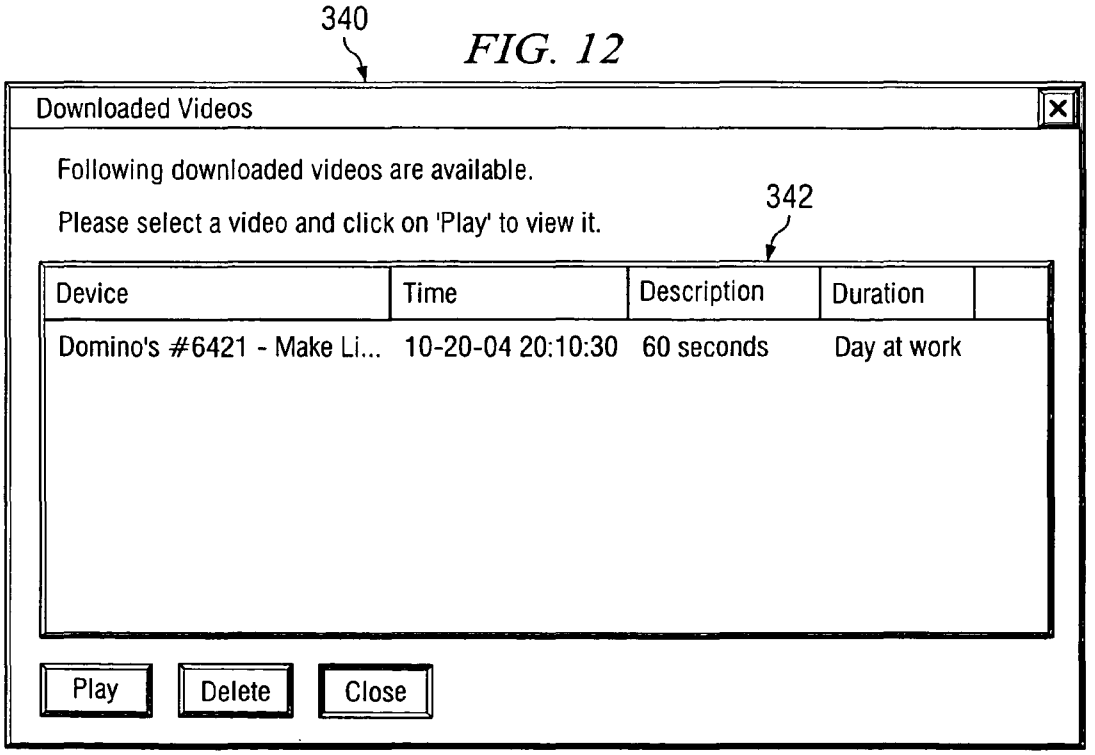

320
Download
Device:
DQ Lufkin 4 - Soda Line
322
OK
Brief description:
Downloaded Video Description
324
Cancel
Please specify the time range for which you wish to download images.
326
328
Start Date:
10/21/2004
11:53:55 AM
Duration:
5
minutes.
330

FIG. 12


340
Downloaded Videos
Following downloaded videos are available.
Please select a video and click on 'Play' to view it.
342
Device
Time
Description
Duration
Domino's #6421 - Make Li...
10-20-04 20:10:30
60 seconds
Day at work
Play
Delete
Close

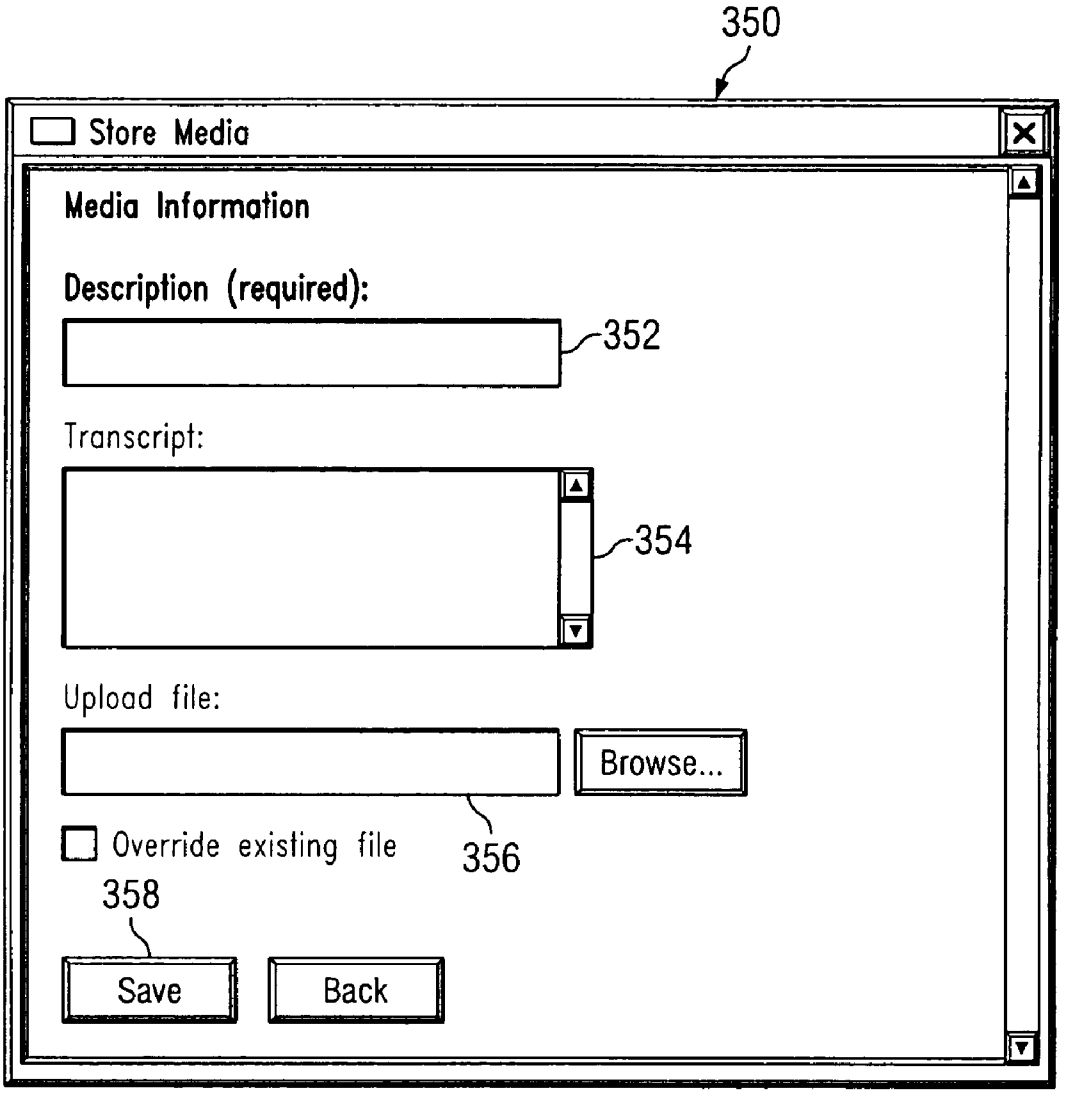

350
Store Media
Media Information
Description (required):
352
Transcript:
354
Upload file:
Browse...
Override existing file
356
358
Save
Back

FIG. 13

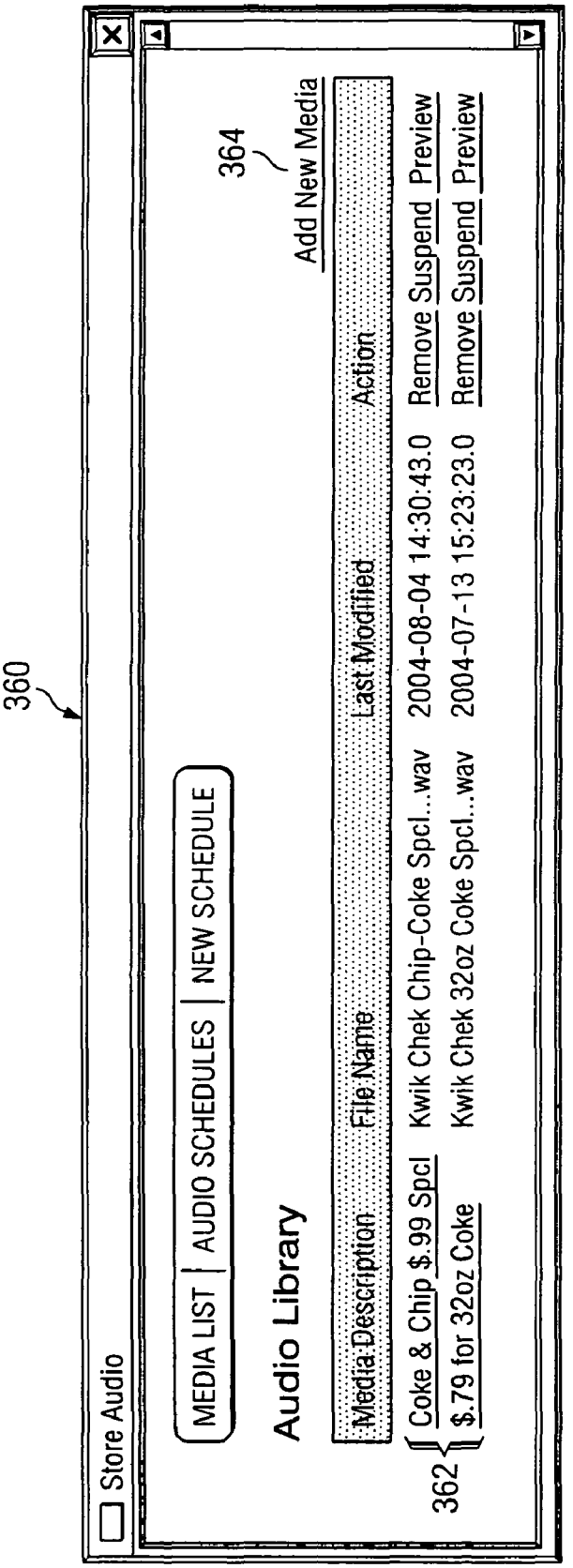

360
Store Audio
MEDIA LIST | AUDIO SCHEDULES | NEW SCHEDULE
Audio Library
364
Add New Media
Media Description
File Name
Last Modified
Action
362
Coke & Chip $.99 Spcl
Kwik Chek Chip-Coke Spcl...wav
2004-08-04 14:30:43.0
Remove Suspend Preview
$.79 for 32oz Coke
Kwik Chek 32oz Coke Spcl...wav
2004-07-13 15:23:23.0
Remove Suspend Preview

FIG. 14

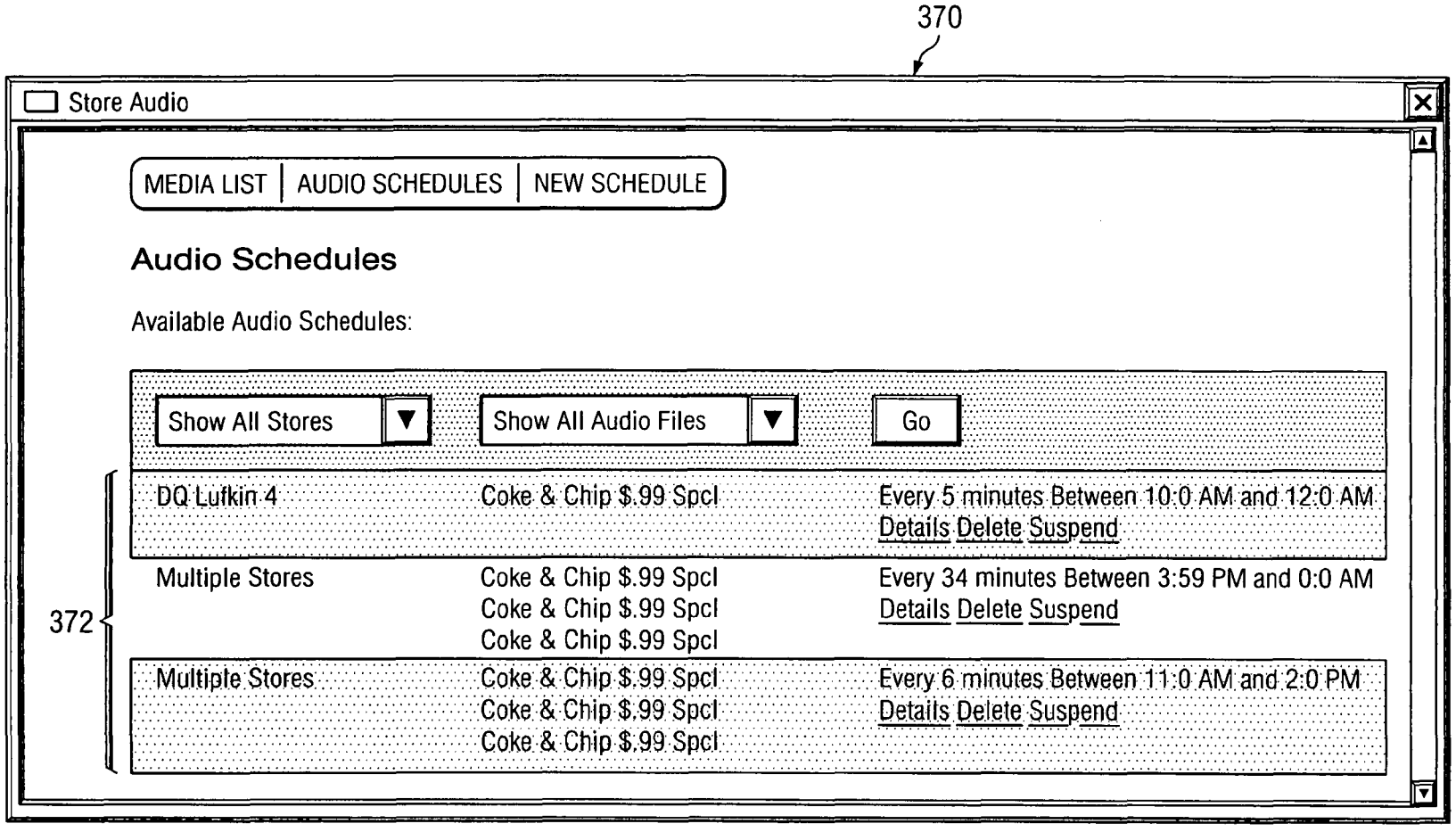

370
Store Audio
MEDIA LIST | AUDIO SCHEDULES | NEW SCHEDULE
Audio Schedules
Available Audio Schedules:
Show All Stores
Show All Audio Files
Go
DQ Lufkin 4
Coke & Chip $.99 Spcl
Every 5 minutes Between 10:0 AM and 12:0 AM
Details Delete Suspend
Multiple Stores
Coke & Chip $.99 Spcl
Coke & Chip $.99 Spcl
Coke & Chip $.99 Spcl
Every 34 minutes Between 3:59 PM and 0:0 AM
Details Delete Suspend
372
Multiple Stores
Coke & Chip $.99 Spcl
Coke & Chip $.99 Spcl
Coke & Chip $.99 Spcl
Every 6 minutes Between 11:0 AM and 2:0 PM
Details Delete Suspend

FIG. 15

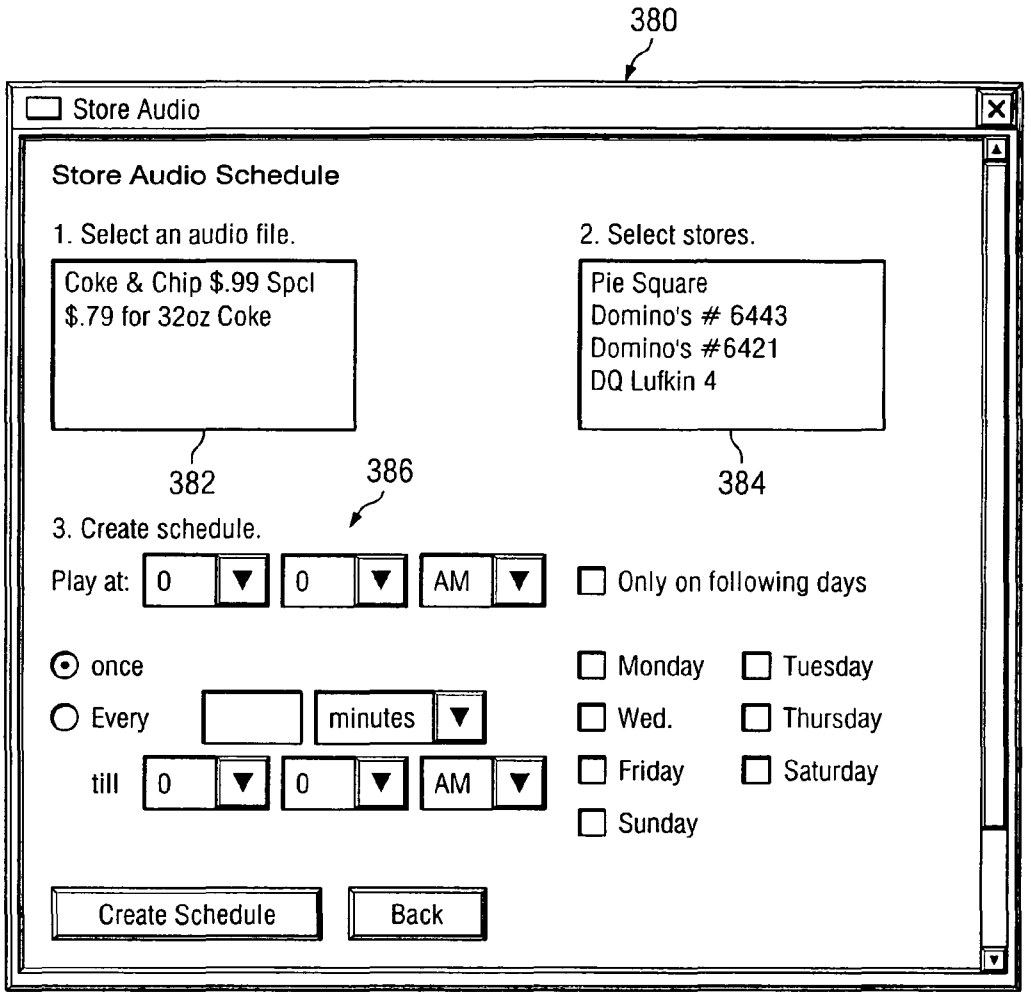

380
Store Audio
Store Audio Schedule
1. Select an audio file.
Coke & Chip $.99 Spcl
$.79 for 32oz Coke
2. Select stores.
Pie Square
Domino's # 6443
Domino's #6421
DQ Lufkin 4
382
386
384
3. Create schedule.
Play at: 0 0 AM
Only on following days
once
Every
minutes
till 0 0 AM
Monday
Tuesday
Wed.
Thursday
Friday
Saturday
Sunday
Create Schedule
Back

FIG. 16

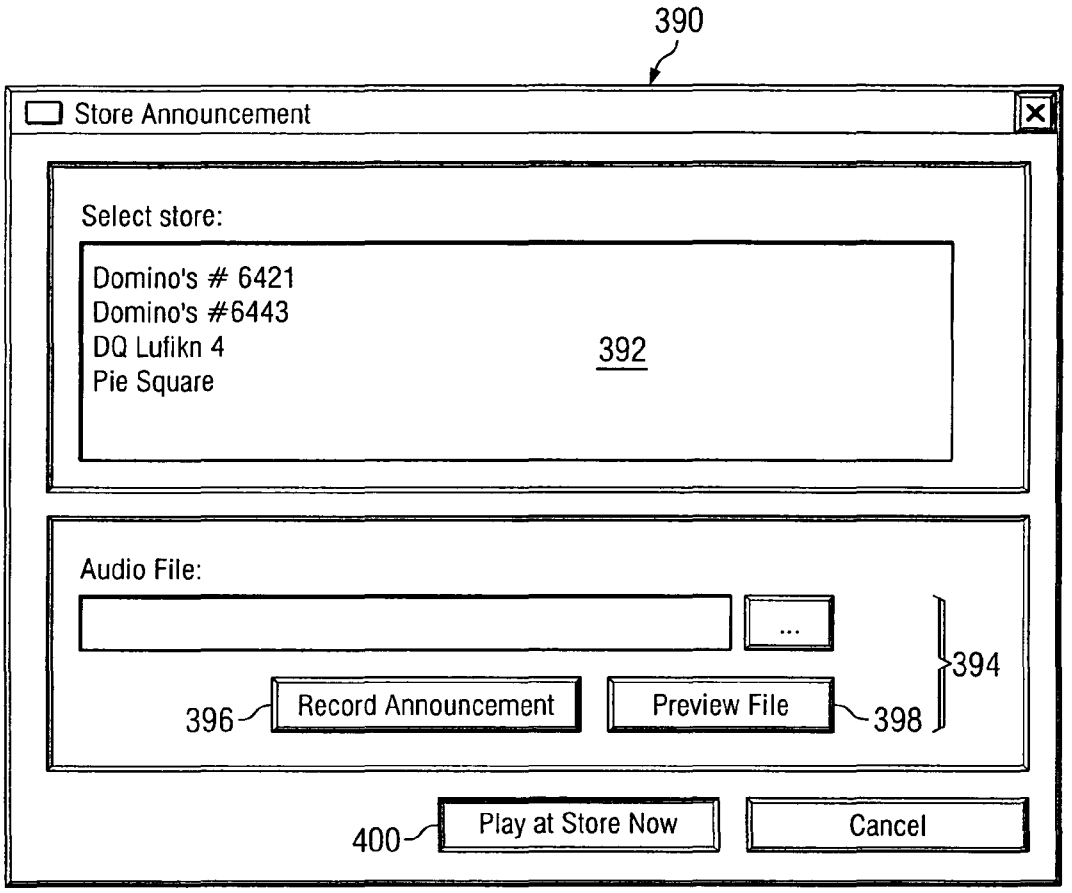
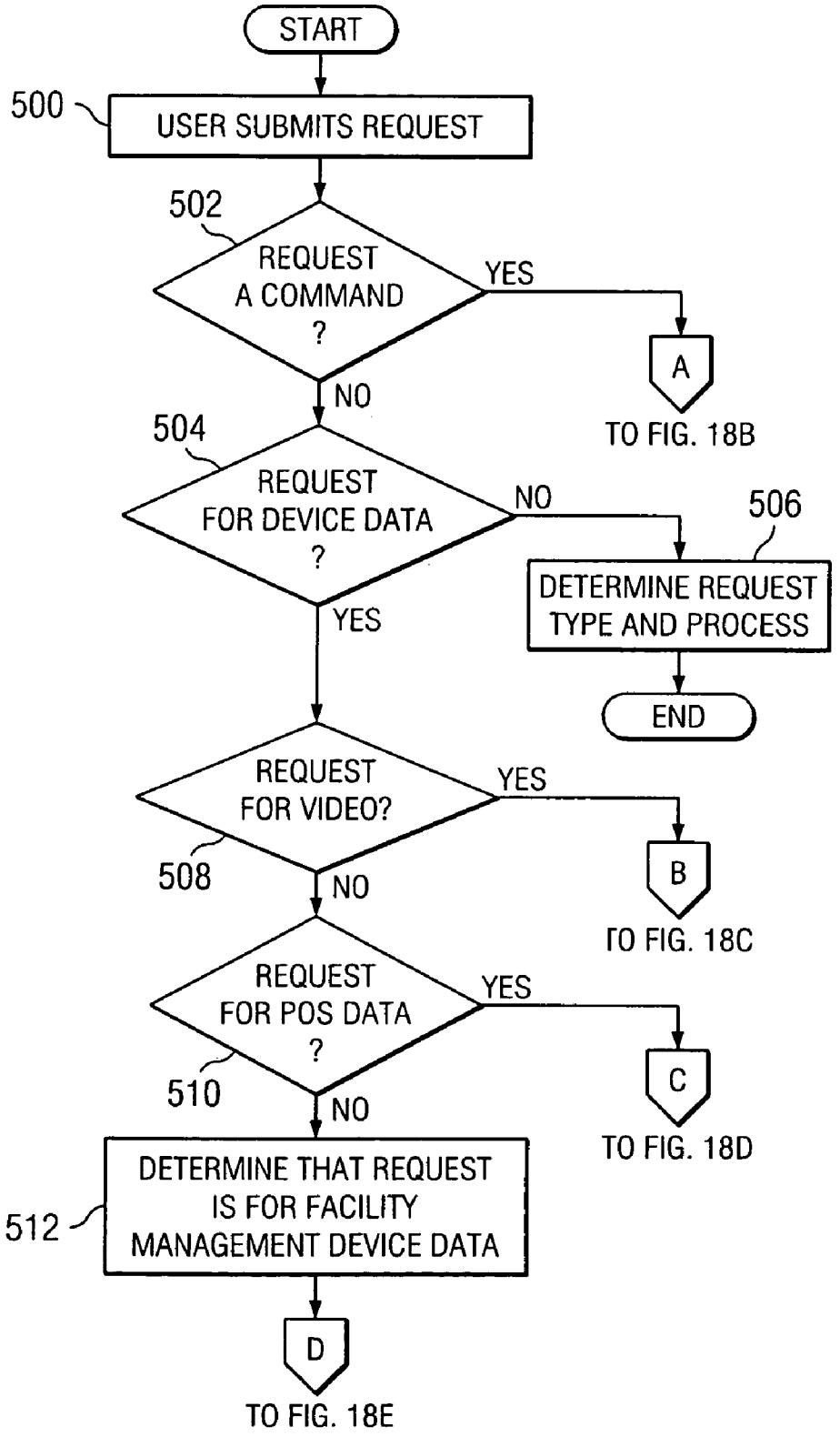

390
Store Announcement
Select store:
Domino's # 6421
Domino's #6443
DQ Lufikn 4
Pie Square
392
Audio File:
...
394
396
Record Announcement
Preview File
398
400
Play at Store Now
Cancel

FIG. 17

FIG. 18A


START
500
USER SUBMITS REQUEST
502
REQUEST A COMMAND ?
YES
A
TO FIG. 18B
NO
504
REQUEST FOR DEVICE DATA ?
NO
506
DETERMINE REQUEST TYPE AND PROCESS
END
YES
REQUEST FOR VIDEO?
YES
B
TO FIG. 18C
508
NO
REQUEST FOR POS DATA ?
YES
C
TO FIG. 18D
510
NO
512
DETERMINE THAT REQUEST IS FOR FACILITY MANAGEMENT DEVICE DATA
D
TO FIG. 18E

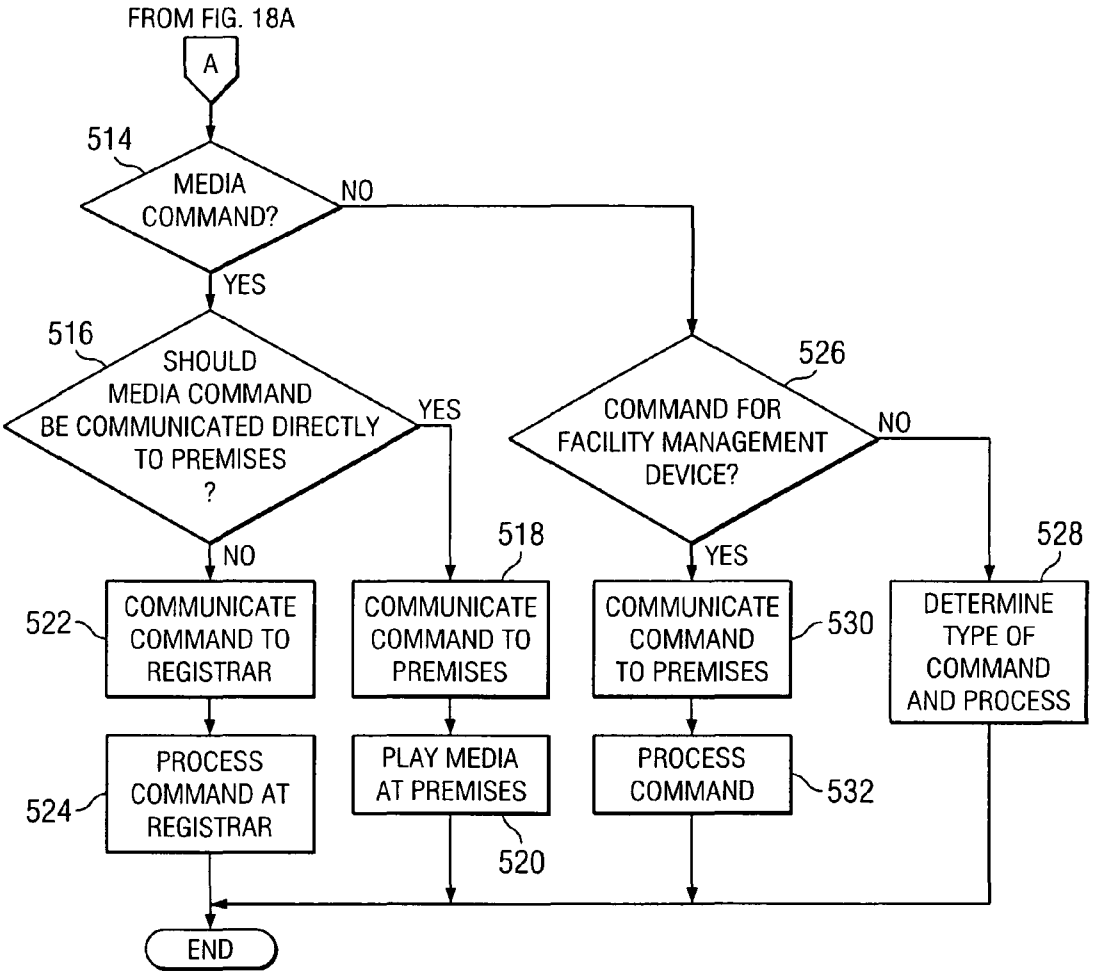

FROM FIG. 18A
A
514
MEDIA COMMAND?
NO
YES
516
SHOULD MEDIA COMMAND BE COMMUNICATED DIRECTLY TO PREMISES ?
YES
NO
526
COMMAND FOR FACILITY MANAGEMENT DEVICE?
NO
YES
518
528
522
COMMUNICATE COMMAND TO REGISTRAR
COMMUNICATE COMMAND TO PREMISES
COMMUNICATE COMMAND TO PREMISES
530
DETERMINE TYPE OF COMMAND AND PROCESS
524
PROCESS COMMAND AT REGISTRAR
PLAY MEDIA AT PREMISES
520
PROCESS COMMAND
532
END

FIG. 18B

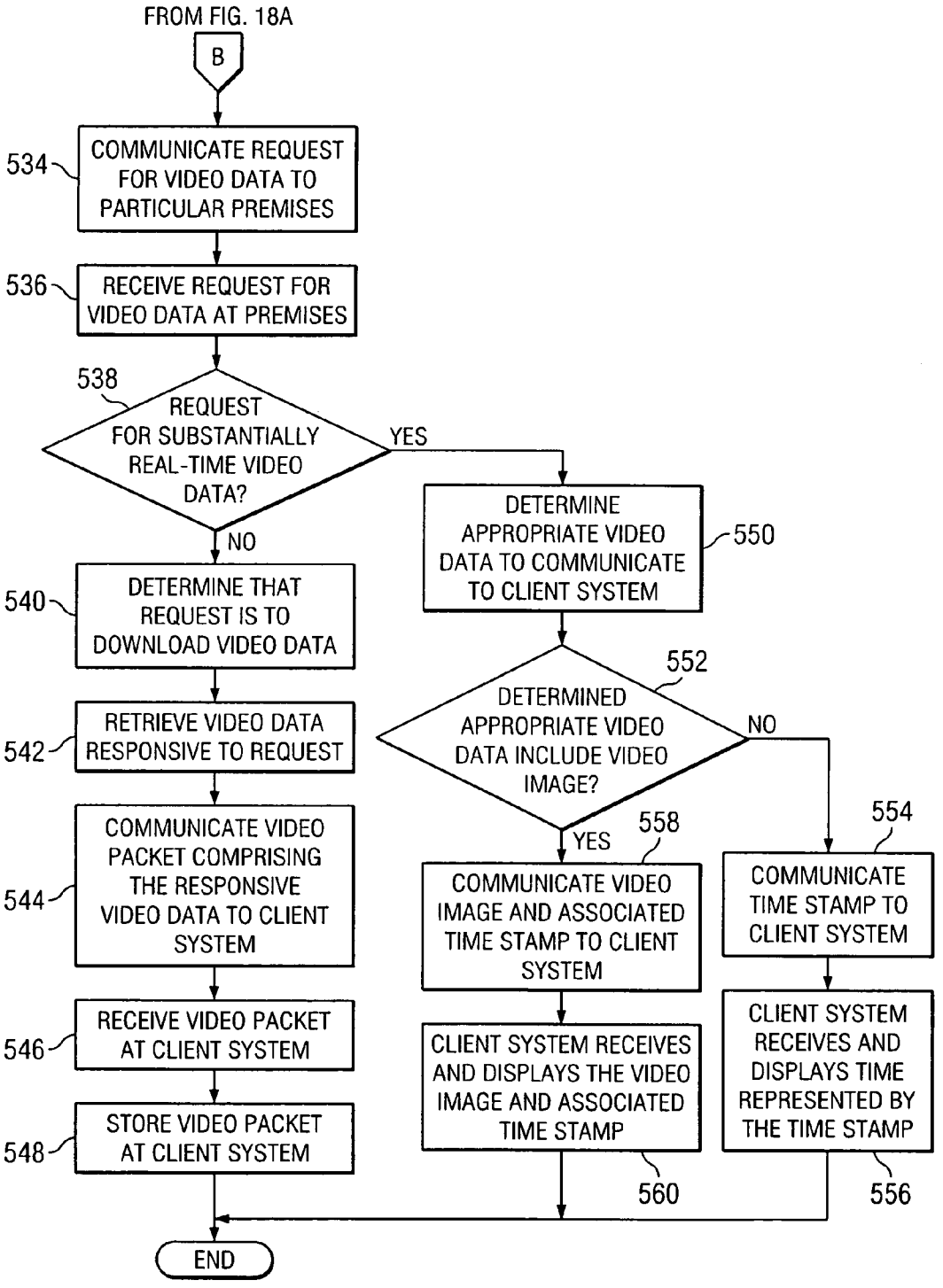

FROM FIG. 18A
B
534
COMMUNICATE REQUEST FOR VIDEO DATA TO PARTICULAR PREMISES
536
RECEIVE REQUEST FOR VIDEO DATA AT PREMISES
538
REQUEST FOR SUBSTANTIALLY REAL-TIME VIDEO DATA?
YES
NO
540
DETERMINE THAT REQUEST IS TO DOWNLOAD VIDEO DATA
542
RETRIEVE VIDEO DATA RESPONSIVE TO REQUEST
544
COMMUNICATE VIDEO PACKET COMPRISING THE RESPONSIVE VIDEO DATA TO CLIENT SYSTEM
546
RECEIVE VIDEO PACKET AT CLIENT SYSTEM
548
STORE VIDEO PACKET AT CLIENT SYSTEM
550
DETERMINE APPROPRIATE VIDEO DATA TO COMMUNICATE TO CLIENT SYSTEM
552
DETERMINED APPROPRIATE VIDEO DATA INCLUDE VIDEO IMAGE?
YES
NO
558
COMMUNICATE VIDEO IMAGE AND ASSOCIATED TIME STAMP TO CLIENT SYSTEM
560
CLIENT SYSTEM RECEIVES AND DISPLAYS THE VIDEO IMAGE AND ASSOCIATED TIME STAMP
554
COMMUNICATE TIME STAMP TO CLIENT SYSTEM
556
CLIENT SYSTEM RECEIVES AND DISPLAYS TIME REPRESENTED BY THE TIME STAMP
END

FIG. 18C

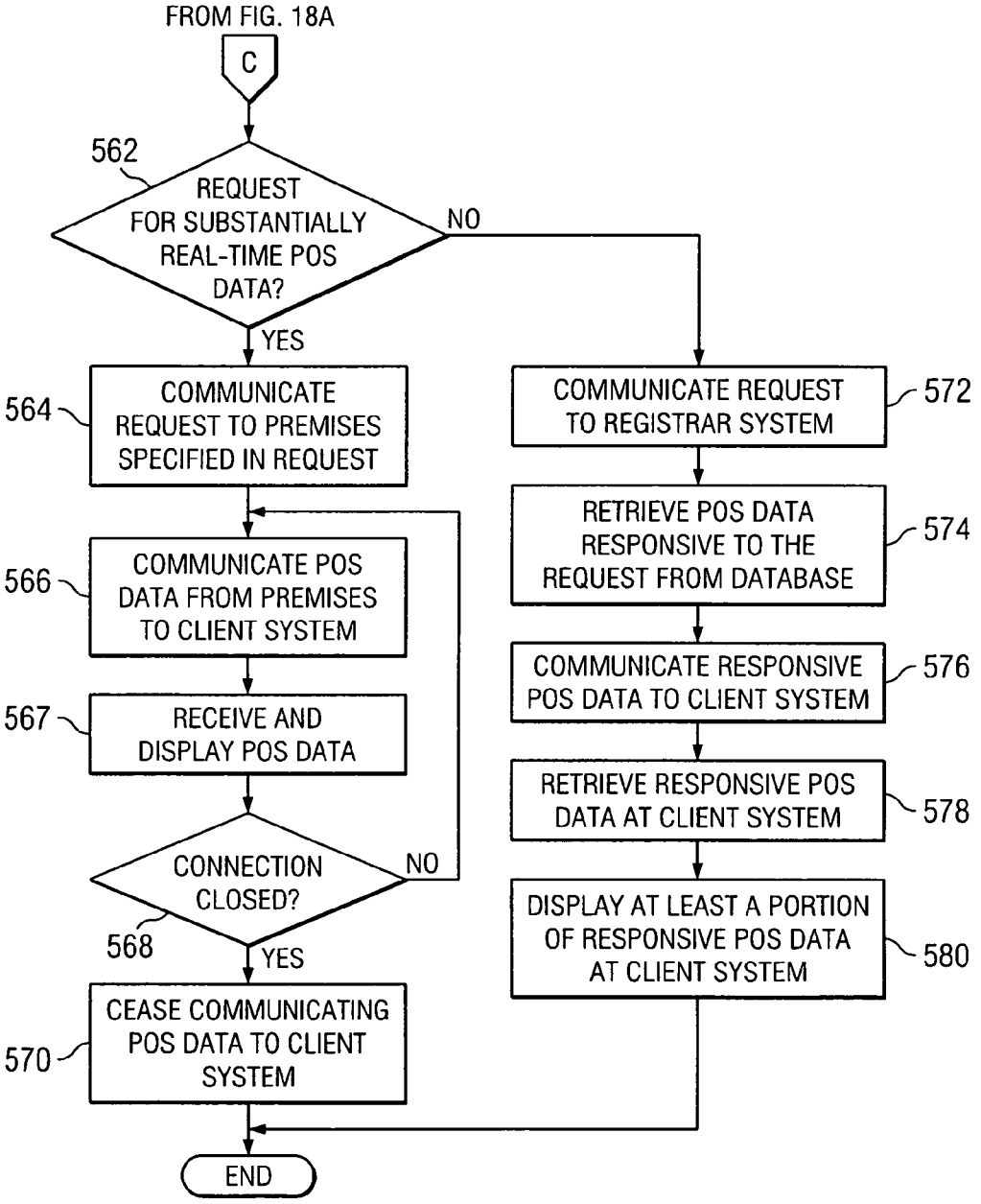

FROM FIG. 18A
C
562
REQUEST FOR SUBSTANTIALLY REAL-TIME POS DATA?
NO
YES
564
COMMUNICATE REQUEST TO PREMISES SPECIFIED IN REQUEST
566
COMMUNICATE POS DATA FROM PREMISES TO CLIENT SYSTEM
567
RECEIVE AND DISPLAY POS DATA
CONNECTION CLOSED?
NO
568
YES
570
CEASE COMMUNICATING POS DATA TO CLIENT SYSTEM
END
COMMUNICATE REQUEST TO REGISTRAR SYSTEM
572
RETRIEVE POS DATA RESPONSIVE TO THE REQUEST FROM DATABASE
574
COMMUNICATE RESPONSIVE POS DATA TO CLIENT SYSTEM
576
RETRIEVE RESPONSIVE POS DATA AT CLIENT SYSTEM
578
DISPLAY AT LEAST A PORTION OF RESPONSIVE POS DATA AT CLIENT SYSTEM
580

FIG. 18D

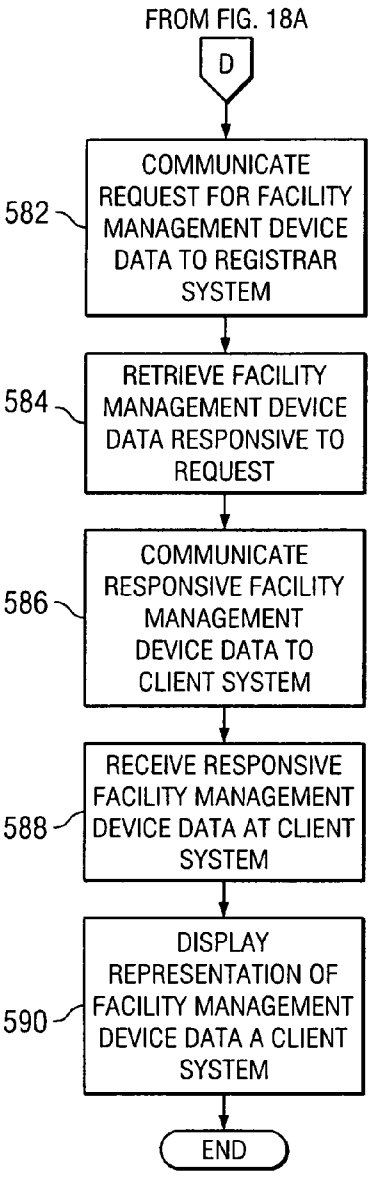


FIG. 18E

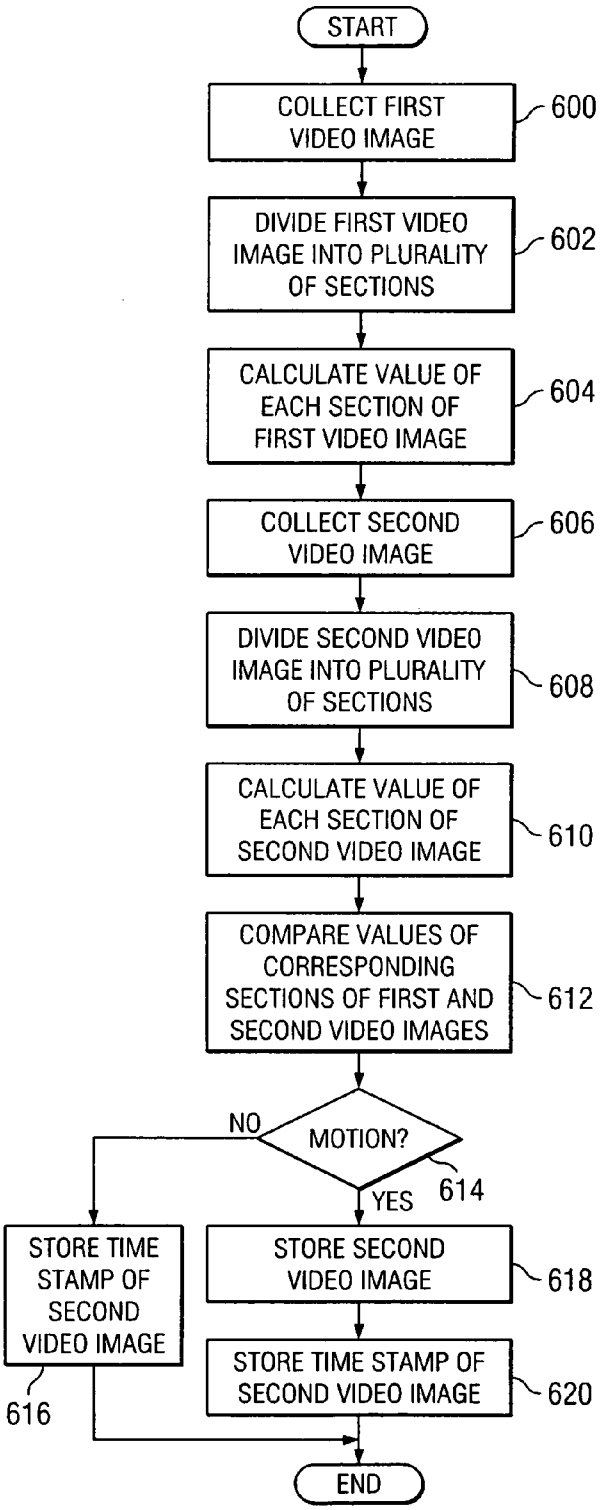


FIG. 19

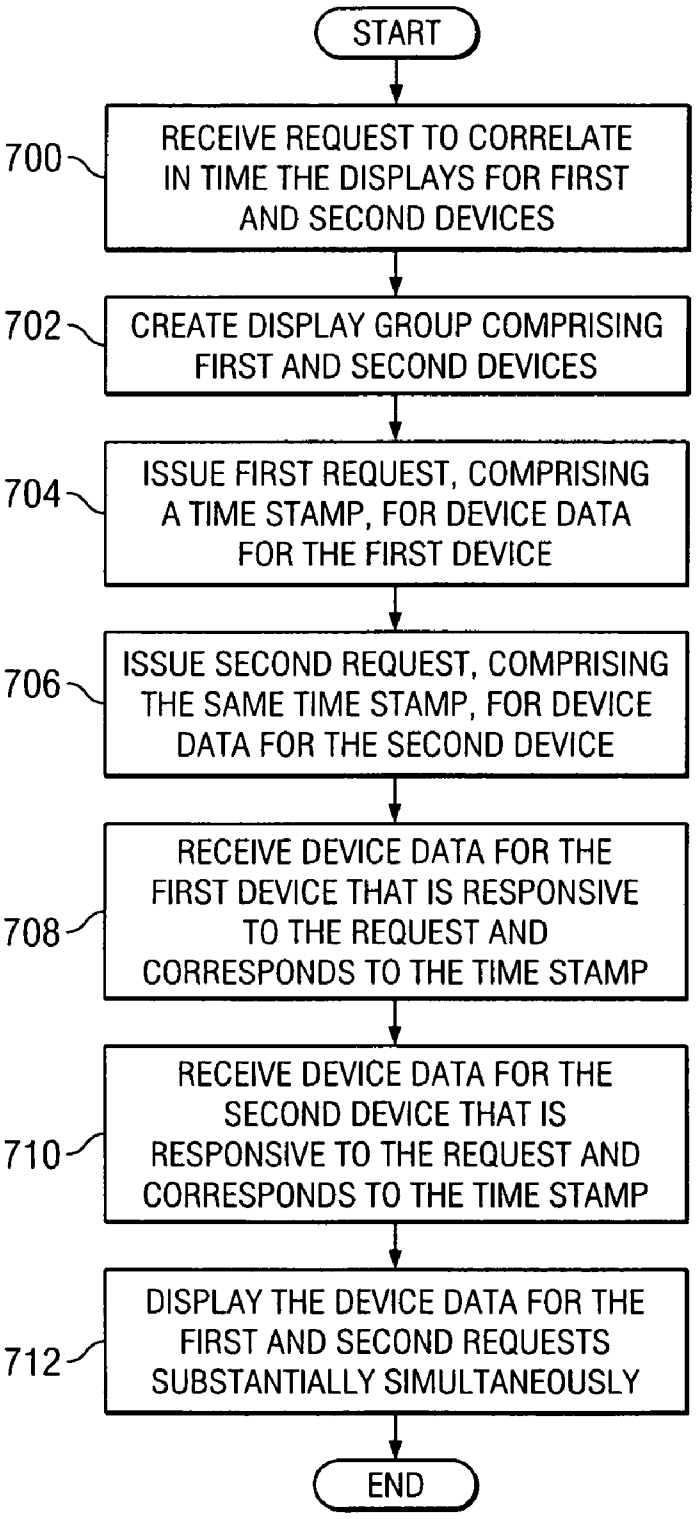

START
700
RECEIVE REQUEST TO CORRELATE IN TIME THE DISPLAYS FOR FIRST AND SECOND DEVICES
702
CREATE DISPLAY GROUP COMPRISING FIRST AND SECOND DEVICES
704
ISSUE FIRST REQUEST, COMPRISING A TIME STAMP, FOR DEVICE DATA FOR THE FIRST DEVICE
706
ISSUE SECOND REQUEST, COMPRISING THE SAME TIME STAMP, FOR DEVICE DATA FOR THE SECOND DEVICE
708
RECEIVE DEVICE DATA FOR THE FIRST DEVICE THAT IS RESPONSIVE TO THE REQUEST AND CORRESPONDS TO THE TIME STAMP
710
RECEIVE DEVICE DATA FOR THE SECOND DEVICE THAT IS RESPONSIVE TO THE REQUEST AND CORRESPONDS TO THE TIME STAMP
712
DISPLAY THE DEVICE DATA FOR THE FIRST AND SECOND REQUESTS SUBSTANTIALLY SIMULTANEOUSLY
END

FIG. 20

SYSTEM AND METHOD FOR REMOTELY MONITORING, CONTROLLING, AND MANAGING DEVICES AT ONE OR MORE PREMISES

TECHNICAL FIELD OF THE INVENTION

This invention relates generally to remote monitoring systems and more particularly to a system and method for remotely monitoring, controlling, and managing equipment at one or more premises.

BACKGROUND

It is often desirable to monitor a premises, such as a convenience store, a fast food restaurant or other suitable facility. For example, one or more video cameras may be installed throughout the premises to record activities occurring on the premises. These recordings may be used to monitor activities of employees and for other security-related purposes, for example. As another example, one or more sensors may be installed throughout a premises to detect the occurrence of certain events or to monitor certain conditions. These sensors may include temperature sensors to monitor the temperature at certain locations on the premises, in a refrigerated area for example. Other sensors may detect whether a door is open or closed, the presence of water on surfaces, the humidity in an area, or other suitable events or conditions. As another example, it is often desirable to monitor and record point-of-sale (POS) information, such as transactions processed using a cash register.

SUMMARY OF THE INVENTION

According to the present invention, disadvantages and problems associated with previous systems and methods for remotely monitoring, controlling, and managing a premises may be reduced or eliminated.

In certain embodiments of the present invention, a system for remotely monitoring, controlling, and managing one or more remote premises includes a server system operable to communicate with one or more remote client systems, the client systems being remote from the one or more premises. The system further includes a database system associated with the server system and operable to store configuration information for a number of devices located at a remote premises, the number of devices including one or more camera devices and one or more facility management devices. The server system is operable to: (1) receive from the one or more premises device data for the one or more facility management devices located at the remote premises; (2) initiate storage of at least a portion of the received device data in the database system; and (3) communicate, in response to a request received from a particular one of the one or more remote client systems, stored device data responsive to the request to the particular client system.

In certain embodiments of the present invention, a system for monitoring, controlling, and managing a premises includes a computer system located at the premises and operable to communicate with a remote client computer and a remote server system. The system further includes a number of devices located at the premises and comprising one or more camera devices and a number of facility management devices. The computer system is operable to: (1) poll one or more of the facility management devices at predetermined times to obtain device data associated with the facility management devices; (2) communicate at least a portion of the obtained device data to the remote server system; (3) collect video data corresponding to video images captured by the one or more camera devices; (4) store at least a portion of the collected video data in a memory associated with the computer system; and (5) in response to a request from the remote client system, communicate video data responsive to the request to the remote client system.

In certain embodiments, the present invention comprises software for monitoring, controlling, and managing one or more remote premises, each remote premises comprising a plurality of devices. The software, when executed, is operable to: (1) communicate to a remote server system requests for device data associated with one or more facility management devices located at a first one of the one or more remote premises, the remote server system being remote from the one or more premises; (2) receive device data responsive to the request; (3) display the device data in a first window associated with a client system that is remote from the one or more premises and from the server system; (4) communicate to a second one of the one or more remote premises requests for device data associated with one or more video devices located at the second remote premises, the device data comprising video data; (5) receive video data responsive to the request; and (6) display one or more video images of the video data in a second window associated with the client system.

Particular embodiments of the present invention may provide one or more technical advantages. In certain embodiments, the present invention combines the use of control systems and sensors with video applications; whereas, typical existing systems are either control systems or they are video monitoring systems. In certain embodiments, the present invention provides the ability to synchronize the view of various sensors, POS data, and/or video data. In certain embodiments, the present invention provides the ability to integrate audio files and broadcast them upon predetermined events, at predetermined times, or both. In certain embodiments, the present invention provides a system that operates actively, allowing a user or computer system to actively monitor or control a remote premises. Additionally or alternatively, in certain embodiments, the present invention provides a system that operates passively by receiving events and executing one or more corresponding actions (e.g., communicating an alert, delivering an audio message, turning on a light, or any other suitable action) in response to those events. In certain embodiments, the architecture of the present invention comprising a local client system, one or more computer systems located at a premises, and a high performance registrar system enables conservation of bandwidth in connections to remote premises and management of the large amounts of data acquired from the various devices.

Certain embodiments of the present invention may include some, all, or none of the above advantages. One or more other technical advantages may be readily apparent to those skilled in the art from the figures, descriptions, and claims included herein.

BRIEF DESCRIPTION OF THE DRAWINGS

To provide a more complete understanding of the present invention and the features and advantages thereof, reference is made to the following description taken in conjunction with the accompanying drawings, in which:

FIG. **1** illustrates an example system for remotely monitoring, controlling, and managing one or more premises and devices at the one or more premises;

FIG. **2** illustrates a software and hardware stack diagram of an example computer system located at a premises;

FIG. **3** illustrates an example registrar system, which may be used in certain embodiments of the system;

FIG. **4** illustrates an example display for configuring a video camera located at a premises;

FIG. **5** illustrates an example display for configuring camera alerts for a camera located at a premises;

FIG. **6** illustrates an example display for specifying certain user configuration information for a user of a client system;

FIG. **7** illustrates an example display for specifying permission levels for a user of a client system;

FIG. **8** illustrates an example display for monitoring, controlling, and managing one or more premises;

FIG. **9** illustrates an example detailed display of an example window showing temperature data;

FIG. **10** illustrates an example display of an example POS report;

FIG. **11** illustrates an example display for downloading video data from a premises;

FIG. **12** illustrates an example display for selecting one or more downloaded videos to be played or deleted;

FIG. **13** illustrates an example display for communicating one or more media files to the registrar system;

FIG. **14** illustrates an example display showing one or more media files in a user's media library;

FIG. **15** illustrates an example display showing one or more media schedules associated with a user;

FIG. **16** illustrates an example display for creating a new media schedule;

FIG. **17** illustrates an example display for recording a premises announcement;

FIGS. **18**A-**18**E illustrate an example method for processing requests communicated by a remote client system for device data associated with a device located at a premises;

FIG. **19** illustrates an example method for determining whether to store a video image collected from a video device at a premises; and

FIG. **20** illustrates an example method for correlating in time the displays at client system of device data for two or more devices.

DESCRIPTION OF EXAMPLE EMBODIMENTS

FIG. **1** illustrates an example system **10** for remotely monitoring, controlling, and managing one or more premises and devices at the one or more premises. In certain embodiments, system **10** includes one or more client systems **12**, a registrar system **14**, one or more premises **16**, and a network **18**. Other embodiments of system **10** may be used without departing from the scope of this description. In general, system **10** allows a user of client system **12** to remotely monitor, control, and manage one or more premises **16** and devices at premises **16** using registrar system **14**.

Network **18** may couple client system systems **12**, registrar system **14**, and premises **16**. Network **18** may include one or more computer buses, one or more local area networks (LANs), one or more metropolitan area networks (MANs), one or more wide area networks (WANs), at least a portion of a global computer network such as the Internet, or one or more other suitable wireline, optical, wireless, or other links. Each of client system **12**, registrar system **14**, and premises **16** may access network **18** via a suitable link **20**. Link **20** may include any suitable wireless, wireline, or other suitable communications link. Moreover, each of links **20** may vary in type or capabilities. Additionally, the present invention contemplates any suitable intervening servers between each client system **12**, registrar system **14**, and premises **16** and network **18**. For example, each of client system **12**, registrar system **14**, and premises **16** may access network **18** via an intervening server such as a server associated with an Internet Service Provider.

Each of client system **12**, registrar system **14**, and premises **16** are typically remote from each other. In certain embodiments, the term "remote" or "remotely" implies physical remoteness such that the components of system **10** are located at different sites. In certain other embodiments, the term "remote" or "remotely" is not meant to imply physical remoteness, but rather that client system **12**, registrar system **14**, and premises **16** typically communicate with one another using network **18**. In such embodiments, client system **12**, registrar system **14**, and premises **16** may or may not be physically remote from one another.

In certain embodiments, system **10** may be used to remotely monitor one or more premises **16**. Additionally or alternatively, in certain embodiments, system **10** may be used to remotely manage devices at one or more premises **16**. For example, system **10** may be used to remotely monitor and manage a number of separate premises **16** such as convenience stores or fast food restaurants.

Premises

Premises **16** may be a store, a retail facility, a restaurant, a warehouse, a manufacturing plant, an office building, or any other premises or facility suitable for monitoring, control, and management. As particular examples, premises **16** may be a convenience store, a department store, a grocery store, a fast food restaurant, or any other suitable premises. Although particular example premises **16** are primarily described, the present invention contemplates premises **16** comprising any suitable type of premises **16**, according to particular needs. Additionally, although a particular number of premises **16** are illustrated, system **10** may include any suitable number of premises **16**, according to particular needs. For example, a user of client system **12** may remotely monitor, control, and manage equipment at multiple premises **16** using system **10**. Premises **16** may be referred to singly as premises **16** and collectively as multiple premises **16**.

Users of client system **12** may include any suitable human or computer users. In the case of human users, such human users may include an owner of one or more premises **16**, an owner of a portion of system **10** (e.g., registrar system **14**), an employee, or any other suitable user according to particular needs. As a particular example, a user of client system **12** may own or otherwise be associated with a plurality of fast food restaurants and may use system **10** to monitor and manage each of the plurality of fast food restaurants and equipment at each of the plurality of fast food restaurants. Throughout this description, the terms "equipment" and "devices" may be used interchangeably to refer to what is being monitored, controlled, and managed at premises **16** using system **10**.

Each premises **16** may include one or more computer systems **22** and one or more devices **24** of varying types for monitoring premises **16**. Each computer system **22** may include any appropriate input devices, output devices, mass storage media, processors, memory, or other suitable categories for receiving, processing, storing, and/or communicating information. In certain embodiments, computer system **22** may include a computer, such as a personal computer, workstation, network computer, embedded computer, kiosk, wireless data port, datashow, wireless telephone, personal digital assistant (PDA), one or more processors within these devices, or any other suitable device. In particular embodiments, computer system **22** includes an embedded LINUX box. Additionally, each computer system **22** may include any suitable combination of hardware, software, or firmware.

Devices **24** located at or otherwise associated with premises **16** may include one or more video devices **26** (e.g., video cameras), one or more facility management devices **28**, one or more point-of-sale (POS) devices **30** (e.g., cash registers), one or more media devices **32**, and any other devices suitable for monitoring, controlling, or otherwise managing premises **16**, according to particular needs. Communication between computer system **22** and devices **26** at premises **16** may be wireline communication, wireless communication, or any other suitable type of communication. Each device **24** is operable to generate device data, which, depending on the type of device, may include video data, facility management data, POS data, or any other suitable type of data according to particular needs.

As described above, devices **24** at premises **16** may include video devices **26** such as video cameras **34**. Although video cameras **34** are primarily described, the present invention contemplates any suitable type of video devices **26** being used to capture video data, according to particular needs. Premises **16** may include one or more video cameras **34** located in or around premises **16**. The present invention contemplates premises **16** including any suitable number of video cameras **34** oriented in any suitable manner, according to particular needs. In a particular example in which premises **16** is a fast food restaurant, premises **16** may include one or more video cameras **34** located around the perimeter of the restaurant facility, one or more video cameras **34** located in the parking lot of the restaurant facility, and one or more video cameras **34** located inside the restaurant facility. For example, the one or more video cameras **34** located inside the restaurant facility may be oriented to capture one or more views of a cash register area, a front door or doors, a back door or doors, a kitchen, or any other suitable views inside or outside the restaurant facility. As another particular example in which premises **16** is a convenience store, premises **16** may include one or more video cameras **34** located around the perimeter of the store facility, one or more video cameras **34** located in the parking lot of the store facility, and one or more video cameras **34** located inside the store facility. For example, the one or more video cameras **34** located inside the store facility may be oriented to capture one or more views of a cash register area, a front door or doors, a back door or doors, a storage area, or any other suitable views inside or outside the store facility. Video cameras **34** may include any suitable types of video cameras, according to particular needs.

In certain embodiments, each video camera **34** is associated with a unique identifier that uniquely identifies the video camera and which will be referred to as "device ID." Throughout this description, reference is made to unique identifiers for various devices located at premises **16**, and these unique identifiers may be referred to as "device ID." It should be understood that such unique identifiers may comprise any suitable characters, numbers, or other identifiers, according to particular needs. Additionally, each unique identifier may be associated with a label (e.g., cash register camera one"). Additionally, each video camera **34** may capture video images substantially continuously or in any other suitable manner and frequency, according to particular needs.

In certain embodiments, computer system **22** includes a video application **36** operable to collect video data captured by video cameras **34** and to initiate storage of at least a portion of the captured video data. Video application **36** may include any suitable combination of hardware, software, or firmware, according to particular needs. Although described as a single video application, video application **36** may include any suitable number of applications operating alone or collectively to perform the operations of video application **36**. Video application **36** may collect and store video data in any suitable manner, according to particular needs. In certain embodiments, the video data comprises one or more video frames, and video application **36** collects and stores one or more video frames captured by video cameras **34**. In certain embodiments, a frame of video data includes a single video image. In such embodiments, a plurality of sequential video images may be displayed in sequence to show motion captured by video cameras **34**. Throughout the remainder of this description, video data will be described primarily as video images; however, the present invention is not intended to be so limited.

The video images may be captured and stored in any suitable format, such as JPEG format, GIF format, BMP format, MPEG format, or any other suitable format according to particular needs. Video application **36** may store collected video images in a storage device **38** associated with computer system **22**. Storage device **38** may include any suitable type of storage mechanism, including both memory and disk-based storage, according to particular needs. In a particular example, storage device **38** comprises a hard disk of computer system **24**, and one or more of the collected video images may be stored in the hard disk of computer system **22**. Each stored video image may be associated with a time stamp. The time stamp may indicate when the video image was captured by a video camera **34**, collected by video application **36**, stored by video application **36**, or any other suitable time, according to particular needs. The stored video images may be indexed according to the time stamp, which may allow for quick retrieval of images for delivery to a client, deletion, or for any other suitable purposes. The time stamp for a video image may be stored in such a manner that it can be associated with the video image. For example, each stored video image may be stored as an object or any other suitable data structure.

Video images may be stored for any suitable length of time. For example, the length of time video images are stored in storage device **38** may depend on the size of storage device **38**, the number of video images stored, or any other suitable factors. In certain embodiments, the length of time that video images are stored in storage device **38** may be configurable, by a user of client system **12** for example. Computer system **22** may include a job or other suitable application that periodically deletes one or more video images from storage device **38**. For example, the job may delete one or more video images from storage device **38** when storage device **38** reaches a certain percentage of its capacity. As another example, the video images may be deleted using a first-in, first-out technique in which, for example, the oldest captured video image is deleted first, leaving the system with substantially continuous images for a given period of time.

In certain embodiments, video application **36** stores collected video frames in a directory structure in storage device **38**. The directory structure may comprise any suitable format, according to particular needs. For example, the directory structure may include a root directory for each video camera **34** at premises **16**, which may be based on the device ID associated with each video camera **34**. In this example, under each root directory, video application **36** may create folders organized in a calendar-like structure. For example, a series of folders representing year, month, and day may be created. In this example, the directory structure may be created to any desired granularity in time. For example, the lowest level folder in the directory structure may be represent a minute such that video images collected within a particular minute are stored in the lowest level folder for that minute. At the lowest level of the directory structure, the collected video images may be stored in the desired format.

Video images may be stored in any suitable format, according to particular needs. In certain embodiments, each video image is stored as a video record that comprises the time stamp associated with the video image, the device ID of the video camera **34** that captured the video image, the video image itself (or a pointer to the video image, if the video image is stored in another location for example), and any other suitable information. Additionally, in certain embodiments, a video image may be compressed prior to, during, or after storing the video image. In certain embodiments, whether or not to perform the compression, the amount of compression performed, and the quality of the stored video image are configurable parameters. For example, a user associated with client system **12** may specify values for these configurable parameters, and/or default values may be applied.

Using video application **36**, a user of client system **12** may specify configurations for one or more of video cameras **34**. For example, a user associated with client system **12** may specify the configuration of cameras **34**, and/or default configurations may be applied. As discussed above, each video camera **34** may capture video images substantially continuously or in any other suitable manner and frequency, according to particular needs. These video images may be provided by the video cameras **34** to a video card associated with premises **16**. Video application **36** may be configured to collect video images in any suitable manner, according to particular needs.

In certain embodiments, a configuration made using video application **36** may specify the image size or image quality of the video images that are collected and stored by video application **36** for each video camera **34**. In certain embodiments, capturing and storing video images of a relatively large size or high quality may burden the storage capacity of computer system **22** or may be otherwise unnecessary. Thus, it may be desirable to specify the particular image size or quality for each video camera **34**. For example, video application **36** may be configured to capture video images of a first quality or size for a first video camera **34** and to capture video images of a second quality or size for a second video camera **34**. Capturing video images of a relatively high image size or quality may be important in certain areas of premises **16**. For example, if premises **16** is a gas station, it may be important for video images capture by a video camera **34** oriented toward the gas pumps to be of a relatively high image size or quality. This may allow for later zooming on the video image for investigative purposes (e.g., for identifying the license plate number of a vehicle that is driven away without someone paying for the gasoline).

In certain embodiments, a configuration made using video application **36** may specify the number of video images that should be collected and stored in a particular time interval. For example, video application **36** may be configured to capture a particular number of video images per second. Such a setting is typically referred to as "frames-per-second." In certain embodiments, capturing and storing an excessive number of video images in a particular time period may burden the storage capacity of computer system **22** or may be otherwise unnecessary. For example, at particular times of the day or at particular camera locations, each video image may be a substantial duplicate (if not identical) to the previous and/or subsequent stored video frame. When premises **16** is closed (e.g., if premises **16** is a store), for example, there will likely be very little motion captured by cameras **34** inside premises **16**. Thus, if a high number of video images are collected and stored by video application **36** at such times, storage device **38** may include a potentially large number of duplicate video images.

Using video application **36**, cameras **34** may be configured individually or collectively, according to particular needs. In certain embodiments, it may be desirable for each camera **34** to be individually configurable, which may, for example, allow cameras in a particular high motion area to capture more frames per second than cameras in areas of low motion. Additionally, an individual configuration capability may allow different video image capture quality to be set for individual cameras. Moreover, in certain embodiments, different configurations may be specified for different time periods. For example, it may be important to collect images of high quality and at a high frames-per-second from the video camera **34** recording activities around the cash register area during operating hours of a store. However, it may be less important to capture images of such high quality or at such a high frequency when the store is closed. In certain embodiments, the present invention provides this capability.

In certain embodiments, one technique to reduce the amount of memory used for storing video images or to more efficiently use storage device **38** for storing video images is to store video images when motion is detected by video application **36**, between subsequent video images for example. In certain embodiments, video application **36** is operable to detect motion and to capture and store video images when motion is detected by video application **36**. As described in more detail below, the collected video images may be played back in sequence to show motion, in response to a request from client system **12** for example. In such embodiments, the number of video images stored by video application **36** may depend on a number of factors. For example, the number of frames that are stored may depend on the frames-per-second configuration of video application **36**. The frames-per-second configuration may be a default setting or may be specified by a user such as a user associated with client system **12**. In embodiments in which video application **36** stores video images in response to the detection of motion, the number of frames that are stored may depend on the amount of motion in the area to which a video camera **34** is oriented.

Video application **36** may detect motion between video images in any suitable manner. For example, in certain embodiments, video application **36** may capture a first image and a second image, and perform a pixel-by-pixel comparison between the two images to determine whether motion has occurred between the two images. However, this pixel-by-pixel comparison technique may burden the processing capabilities of computer system **22** or may be otherwise inefficient.

As another example, in certain other embodiments, video application **36** may capture a first video image and a second video image. Video application **36** may divide each video image into a number of sections. For example, video application **36** may divide each video image into two hundred fifty-six quadrangular sections of substantially equal area, each including a particular number of pixels. Video application **36** may compare the sections of the first video image to corresponding sections of the second video image to determine whether motions has occurred between the two images. The comparison may be performed in any suitable manner, according to particular needs.

As just one particular example, video application **36** may calculate a value for each section of the first and second images. In certain embodiments, the value may be an average brightness for each section of the first and second video images. The average brightness may represent a combination

of all the colors in the section. For example, average brightness for a section may be calculated by summing the numeric value of each pixel in the section and then dividing the sum by the total number of pixels in the section. Video application **36** may compare the value (e.g., average brightness) of corresponding sections in the first and second video images to determine whether motion has occurred between the two images. For example, video application **36** may determine that motion has occurred based on a predefined delta value between the value of the (e.g., average brightness) corresponding sections in the first and second video images.

The comparison of corresponding sections of the first and second video images may be performed in a sequence. For example only, video application **36** may compare the value (e.g., average brightness) of the upper left section of the first video image to the value (e.g., average brightness) of the upper left section of the second video image, moving across the upper row until it compares the value (e.g., average brightness) of the upper right section of the first video image to the value (e.g., average brightness) of the upper right section of the second video image, then moving to the second row, and so on. In certain embodiments, when video application **36** is performing the section-to-section comparison, once the predefined delta is met or exceeded for corresponding sections of the first and second video image, video application **36** may determine that motion has occurred and cease to perform the comparison. The predefined delta may be specified in any suitable manner, by a user of system **10** or as a default value specified in video application **36** for example. In certain embodiments, each video camera **34** may be associated with its own predefined delta. For example, it may be desirable for video cameras **34** oriented to areas of typically high motion to be associated with a relatively high delta to slightly reduce the number of video images captured, while video cameras **34** oriented to areas of typically low motion may be associated with a relatively low delta to increase the number of video images captured.

This technique of dividing video images into sections and comparing corresponding sections in two video images to determine whether motion has occurred may reduce the processing burden on the one or more processors of computer system **22**. For example, calculating the average brightness of a section may be a more efficient calculation relative to performing a comparison operation. The technique of dividing each video image into a number of sections may reduce the number of comparisons for determining whether motion has occurred relative to a pixel-by-pixel approach. For example, instead of performing millions of comparisons in the pixel-by-pixel technique described above, only two hundred fifty-six comparisons or less may be performed to determine whether motion has occurred between two images.

Certain operations may be initiated in response to detection of motion. For example, video application **36** may determine to store a video image when motion is detected between that video image and the previous video image. In certain embodiments, it may be desirable for video application **36** to collect and store a video image at a predetermined interval, regardless of whether motion is detected between that video image and the previous video image. The predetermined interval may be any suitable length of time (e.g., every five minutes). This may help ensure that even slight motion that occurs slowly over time is captured and stored, if desired. For example, if a video camera **34** is oriented to the front of premises **16** and there are one or more windows at the front of the premises **14**, video camera **34** may need to capture and store sufficient video images to show the daybreak process, which is a relatively slow process. Video application **36** may test for the presence of motion at any suitable interval, according to particular needs. As just one example, video application **36** may test for motion approximately twelve times per second.

Second, in certain embodiments, one or more alerts may be triggered in response to monitoring video devices **26** at premises **16**. For example, such alerts may be triggered in response to the detection of motion, the detection of no motion, the detection of a signal to the video device **26**, the detection of no signal to the video device **26**, or any other suitable event. An action in response to an alert may include, for example, communicating a notification to a user such as a user of client system **12**, initiation of a particular operation, or any other suitable action, according to particular needs. The notification may be automatically communicated to the user via a telephone call, an email message, a page, a text message, or in any other suitable manner according to particular needs. An operation initiated by an alert may include automatically causing a particular device at premises **14** to operate in a particular way in response to the alert. In certain embodiments, this capability of system **10** may allow a premises **16** to be somewhat self-monitoring, without requiring a user of client system **12** or other user to take action to cause a desired or otherwise appropriate action in response to an alert. For example, in response to a particular alert, one or more lights in the premises **16** may be turned on automatically. The configuration of an alert may include when an alert should be initiated, what action, if any, is to be initiated or performed when the alert is triggered (e.g., communicating a notification to a user), or any other suitable information. As an example, the configuration of an alert may indicate that the alert should be triggered when a predefined amount of motion is detected or when a sensor device detects a certain condition.

Alerts may be detected and triggered in any suitable manner, according to particular needs. In certain embodiments, an alert module **39** associated with computer system **22** at premises **16** may maintain a directory of alerts configured for each video camera **34**. Alert module **39** may include any suitable combination of software, firmware, and hardware, according to particular needs. When motion is detected for a particular camera **34**, video application may communicate an alert file into the alert directory for the particular camera **34**. The alert file may include the time at which the motion was detected, the amount of motion that was detected, and any other suitable information. Computer system **22** may include a job that runs at predetermined times (e.g., automatically once per minute), searching for any alert files that satisfy a condition of an alert definition for a particular alert. If an alert file satisfies a condition of an alert definition, an alert notification may be communicated to registrar system **14**, which may further process the alert. The notification of the alert communicated to registrar system **14** may include a unique identifier for the alert (e.g., "alert ID") and an indication that the alert has been triggered. Registrar system **14** may perform further processing in response to receipt of an alert notification, as described below with reference to registrar system **14**.

In certain embodiments, video application **36** is operable to communicate one or more video images to client system **12**. For example, in response to a request initiated by client system **12**, video application **36** may communicate one or more video images to client system **12**. The request to view video initiated by client system **12** may include a request to view the video in substantially real-time (i.e., substantially as the video is captured and stored), in which case video application **36** may communicate the video images to client system **12** substantially at the same time as video application **36** stores the video images. In certain embodiments, video application **36**

communicates the entire video record for the video image to client system **12**. For example, as described above, the video record for a video image may include a time stamp for the video image, the device ID of the video camera **34** that captured the video image, the video image, or any other suitable information. Additionally, in certain embodiments, the video image may be compressed prior to being communicated to client system **12**. In embodiments in which video application **36** stores video images in response to the detection of motion, in the event that no motion is detected from one video image to the next, video application **36** may communicate a time stamp and the device ID without also transmitting an associated video image.

As another example, the request to view video initiated by client system **12** may include a request to view stored video images (i.e., after the video images have been stored by video application **36**), which may be referred to as a request to download video images. The request may include the request to download video data, a device ID for a particular camera, a start time, an end time, and any other suitable information. In response to a request to download video images, video application **36** may retrieve a set of video images (or video records) from the memory in accordance with the request and communicate the retrieved set of video images (or video records) to client system **12**.

As described above, devices **24** at premises **16** may include one or more facility management devices **28**. Facility management devices **28** may include sensors or any other devices suitable for use in monitoring, controlling and managing premises **16**. Facility management devices **28** may include any suitable types of devices, according to particular needs. For example, facility management devices **28** may include sensors operable to detect occurrence of one or more events, sensors to detect the presence of one or more conditions, sensors to monitor one or more conditions, and switches operable to initiate one or more actions or to detect a change in state. As particular examples, facility management devices **28** may include temperature sensors, on/off switches, door open/close switches, humidity sensors, barometer sensors, pressure difference sensors, water sensors, check-in/check-out sensors, input switches, output switches, chemical sensors, motion sensors, fluid level sensors, infrared sensors, radiation sensors, photovoltaic sensors, or any other suitable sensors, switches, or devices according to particular needs. Facility management devices **28** may be located in or around premises **16** at any suitable location. Additionally, facility management devices **28** may be coupled to computer system **22** in any suitable manner, according to particular needs. In certain embodiments, facility management devices **28** may include one or more devices that operate using one or more serial communication protocols such as RS-232, RS-422, RS-485, Ethernet, I^2C, Centronix, 1-Wire, CEBus, X10, LonWorks. While these devices are described as examples of facility management devices **28**, facility management devices **28** may include any suitable devices, according to particular needs.

Facility management devices **28** may be coupled to computer system **22** in any suitable manner, according to particular needs. In certain embodiments, one or more of facility management devices **28** may be coupled to one or more ports of computer system **22** and may use any suitable communication protocol. As just one non-limiting example, one or more facility management devices may be coupled to one or more serial ports of computer system **22** and may use a standard serial communication protocol. Additionally, one or more of the facility management devices may be coupled on a single connection, which is coupled to one or more of the ports, such as the serial ports, of computer system **22**. Any number of facility management devices **28** may be plugged into the one or more serial ports of computer system **22** and may include varying types of devices. In certain embodiments, facility management devices **28** include a laser etched identification number on the device that software associated with computer system **22** is operable to read. A part of this identification number may indicate a "device type code," which indicates a device type for the facility management device **28**. Moreover, each facility management device **28** may be assigned a unique identifier, referred to as a device ID.

Certain types of facility management devices, such as sensors and input switches, are operable to report status or state information, generally referred to as device data. Such facility management devices **28** may be operable to upload their corresponding data to computer system **22** in a suitable manner. In certain embodiments, a facility management application **40** on computer system **22** is operable to collect data from facility management devices **28**. Facility management application **40** may include any suitable combination of hardware, software, or firmware, according to particular needs. Although described as a single facility management application, facility management application **40** may include any suitable number of applications operating alone or collectively to perform the operations of facility management application **40**.

Facility management application **40** may collect and store data from facility management devices **28** in any suitable manner, according to particular needs. For example, facility management application **40** may be operable to poll one or more facility management devices **28** at one or more predetermined times. Facility management devices **28** may be polled based on the device type code of the devices (e.g., poll_all devices in family X) or in any other suitable manner. In certain embodiments, the facility management application includes a job such as a "cron job," which is operable to run locally at premises **16** and to poll certain facility management devices **28** for device data. A cron job is an automated process that operates at predefined times. The cron job may parse a communications link coupling any suitable number of facility management devices **28**. In certain embodiments, the cron job parses through the communication link searching for devices **28** of a particular type (e.g., having a specified device type code), and when it locates a device **28** of the particular type, it may record device data for the device **28**. The device data may include the status of the device or any other suitable information. The predefined times at which the cron job polls devices **28** may be any suitable times according to particular needs. As an example, the cron job may poll devices **28** by device type (e.g., device type code), and it may poll a particular type of device **28** once every minute.

Facility management application **28** may time stamp the recorded device data and communicate the device data to registrar system **14**. The device data may be communicated to registrar system **14** as a facility management data record, which may be a file comprising the device ID for the device **28** to which the device data corresponds, the time stamp of the device data, the device data itself, or any other suitable information.

A particular type of facility management device **28** that may be used at premises **16** is a temperature sensor **42**. In certain embodiments, premises **16** may include one or more temperature sensors **42** at one or more locations in or around premises **16**. In certain embodiments, temperature sensors **42** are coupled to computer system **22** using one or more ports, such as one or more serial ports, of computer system **22**.

Temperature sensors **42** may be associated with a device type code. For example, the device type code of temperature sensors **42** may be 15.

Another particular type of facility management device that may be used at premises **16** is an input switch **44**. Input switch **44** may include a device **28** operable to report a status. For example, a particular input switch **44** may indicate whether a door is open or closed. In certain embodiments, input switches **28** operate in a substantially similar manner as temperature sensors **42**. Like other facility management devices, in certain embodiments, input switches **44** may be associated with a device type code. For example, the device type code of input switches **44** may be 18.

In certain embodiments, input switches **44** may also include a latch state. For example, a first reading of an input switch **44** may be taken at a first time having a first state, and a second reading of the input switch **44** may be taken at a second time also having the same first state. Although the first and second readings of the input switch **44** both indicate the first state, it is possible that the state of the input switch **44** changed at least once between the first and second readings. The latch state may indicate that the state of the input switch **44** changed at least once between the first and the second readings. For example, an input switch may be used to determine whether a door is open or closed. The first reading may be taken at time zero and the second reading may be taken at time **1**, twenty seconds later for example. In the twenty second interval, the door may have been opened and closed, while the first and second readings may both indicate that the door is closed. The latch state indicates that the door was open or closed at least once in the twenty second interval. In certain embodiments, the latch state may be included in each data reading taken by the cron job. For example, the data reading taken by the cron job may indicate the current state of the input switch **44** (the state) and whether or not the state changed (the latch state).

Certain types of facility management devices **28**, such as output switches, may be operable to change state in response to a command to do so. For example, in response to a command received by computer system **22** from registrar system **14**, facility management application **40** may cause certain devices associated with premises **16** to operate in a particular manner. Facility management application **40**, which may include a command line utility, may be operable to turn a device on or off by affecting the state of an output switch **28** and/or an external electrical or electromechanical relay coupled to the device, using the unique identifier of the output switch associated with the device to direct the command to the appropriate output switch **46**. In certain embodiments, facility management application **40** receives a command to affect the state of an output switch **46** from registrar system **14**. Such commands may be issued based on a schedule stored at registrar system **14** or may be issued by registrar system **14** in response to a request from client system **12**. In certain embodiments, commands for affecting the state of output switches **28** may initially be established on registrar system **14**. Once established, those commands may be communicated to premises **16** and run and issued by system **22** at premises **16**.

Premises **16** may include one or more output switches **46** located in or around the premises. Generally, output switches **46** are devices whose state can be affected (e.g., the switch can be turned on or off). Output switches **46** may be coupled to one or more devices located through premises **16**. As an example, an output switch **46** may be used to turn one or more lights, one or more grills, or one or more televisions on or off. Like other facility management devices, in certain embodiments, each output switch **46** may be associated with a device type code.

In certain embodiments, devices **24** at premises **16** may include one or more point-of-sale (POS) devices **48** operable to record or otherwise process POS data associated with transactions performed at premises **16**. For example, POS devices **48** may include cash registers, change machines, vending machines, public pay phones, or other suitable POS devices. POS devices **48** may be used, for example, in embodiments in which premises **16** is a retail facility such as a convenience store or department store. Each POS device **30** may be associated with a unique identifier, referred to as a device ID. Facility management application **40** may be operable to collect POS data from POS devices **48**.

As an example, premises **16** may include one or more cash registers. Although cash registers are primarily described, it should be understood that any suitable types of POS devices **48** may be included in system **10** without departing from the scope of the present invention. Cash registers may be coupled to computer system **22** in any suitable manner. For example, each cash register may plug into a port, such as a serial port, of computer system **22**. Although a port is primarily described, any other suitable connection may be used for connective POS devices **48** to computer system **22**. Each cash register may process transactions, such as purchase transactions, and print a summary of the transaction on one or more receipts. The summary of the transaction is one example of POS data. Although transaction data is primarily described, the present invention contemplates any suitable type of POS data. In other words, POS data is not limited to sale transactions only, but may included any suitable data generated by a POS device **30**. For example, POS data may include summary reports run at a cash register or other POS device **30**, payroll reports run at POS device **30**, or any other suitable POS data. The transaction data may also be communicated via a link (e.g., the port connection) to computer system **22**. The transaction data may be communicated to computer system **22** in any suitable format, text format being just one example. Additionally, a cash register may print summaries of employees' shifts or other suitable data, which is also considered POS data for purposes of this description.

Computer system **22** may include a POS application **50** operable to process the POS data, such as the transaction data. POS application **50** is operable to receive the POS data communicated by the one or more cash registers or other suitable POS devices **48**. POS application **50** may parse the received POS data. POS application **50** can be configured to parse POS data received from any suitable POS device **30**. In the cash register example, each brand or model of cash register may output data in a different format or having different information, and POS application **50** may be configured to process that POS data.

POS data may include one or more delimiters. In a stream of POS data, a delimiter may indicate an end to one transaction and/or the beginning of a new transaction. For example, receipts typically include one or more lines of text at the top of the receipt that provide the name and address of the premises **16**. As another example, receipts typically include one or more lines of text at the end of the receipt that read "Thank you. Please come again." Such delimiters may be particular to the particular brand or model of cash register used by premises **16**, or may be otherwise configured for premises **16**. The present invention contemplates any suitable delimiter, according to particular needs. The delimiter may be used to separate transactions in a POS data stream received by POS application **50** from the one or more cash registers or other

POS devices **48**. In certain embodiments, POS application **50** reads the POS data stream line-by-line and buffers the POS data stream in memory. POS application **50** may determine that it has read a complete transaction when it recognizes a delimiter.

In certain embodiments, POS application **50** stores the POS data associated with each complete transaction in a data structure. The data structure may be organized in any suitable manner, according to particular needs. As just one example, computer system **22** may maintain a data structure, with POS devices as the root directory. Cash registers may be a directory under the POS devices directory, and each cash register (identified by its associated device ID) may be a directory under the cash registers directory. Each cash register directory may also include directories for one or more dates. The POS data associated with each transaction may be saved in an appropriate date directory under the directory for the cash register that generated the POS data. The POS data may be time stamped with the time at which the POS data was generated. In certain embodiments, the name of the POS file in which the POS data is stored in the data structure is the time stamp of the POS data. In certain embodiments, each line in the POS data is time stamped as a POS transaction, since the transaction in its entirety (e.g., a sale transaction of multiple goods to a single customer) may take several minutes. For example, a delimiter for time-stamping each line of a POS transaction may be a character return or other suitable delimiter. The POS file may include any suitable information, including for example, the POS data for the transaction, which may be stored in any suitable format.

In certain embodiments, computer system **22** is operable to communicate POS data to registrar system **14**. Computer system **22** may communicate POS data to registrar system in any suitable manner, according to particular needs. For example, computer system **22**, using POS application **50** for example, may communicate POS data to registrar system **14** as the POS data is generated. Such communication may occur after POS application **50** has parsed the POS data to determine individual transactions or at any other suitable time. This substantially real-time communication of POS data may not be optimal, however, because it may overburden the bandwidth of link **20** coupling computer system **22** to network **16**, and may also overburden the bandwidth of link **20** coupling registrar system **14** to network **16**. As another example, POS application **50** may upload POS data to registrar system **14** at various time intervals, which may reduce the burden on the bandwidths of links **20**. For example, POS application **50** may upload POS data to registrar system **14** at scheduled intervals, every minute for example. In certain embodiments, POS application **50** may include a job, such as a cron job, that periodically runs (e.g., every minute) to determine if any new POS data is stored at premises **16**. If so, POS application **50** may upload the new POS data to registrar system **14**. In certain embodiments, once POS data has been uploaded to registrar system **14** or after a suitable interval, the POS data may be deleted from the memory associated with computer system **22**. As discussed in greater detail below with respect to registrar system **14**, the POS data may be stored in a database, such as an ORACLE database, associated with registrar system **14** for later reporting, querying, or other suitable purposes. In certain embodiments, in response to a request from client system **12** to view POS data in substantially real time for example, POS application **50** is operable to communicate POS data to client system **12** in substantially real time. POS application **50** may be operable to communicate this substantially real-time POS data to client system **12** in addition to communicating the POS data to registrar system **14** for storage at registrar system **14**.

In certain embodiments, as described above with reference to video devices **26**, computer system **22** is operable to determine the occurrence of one or more alerts associated with facility management devices **28** or POS devices **30**. For example, alert module **39** or another suitable application associated with computer system **22** may determine the occurrence of one or more alerts. In certain embodiments, computer system **22** at premises **16** may be operable to communicate the occurrence of the alert to registrar system **14** or to communicate a notification to the appropriate client system **12**. Registrar system **14** may receive the alert and determine one or more appropriate actions to take in response to the alert. The notification of the alert received from premises **16** may include a unique identifier for the alert (e.g., "alert ID") and an indication that the alert has been triggered. As described below, registrar system **14** may perform further processing in response to receipt of an alert notification.

In certain embodiments, devices **24** at premises **16** may include one or more media devices **52** operable to play media at premises **16**. For example, media devices **52** may include a software media player, a stereo system, an intercom system, a television, or any other suitable media device. Although media in the form of audio is primarily described, the present invention contemplates media including audio, video, or any other suitable type of media, alone or in combination.

In certain embodiments, premises **16** may include the capability of playing one or more audio files, using one or more media devices **52** at premises **16** for example. As one example, premises **16** may include an audio system operable to play audio files to the entire premises **16**. Such an audio system may be used by premises **16** to play music and to make announcements throughout premises **16**. As another example, premises **16** may include one or more audio output devices local to particular devices throughout premises **16**. Such audio output devices may be located near an ATM machine, near an employee's work area (at the check-out counter for example), near a gas pump, or in any other suitable location according to particular needs.

System **10** may enable one or more audio files to be played over the audio system. Computer system **22** may be operable to receive commands or requests to play one or more audio files, over the audio system of premises **16**. In certain embodiments, such commands or requests may be communicated to computer system **22** from registrar system **14** for example. Computer system **22** may include a media application operable to play the audio file at premises **16**. Such audio files may be useful for playing marketing messages such as announcing specials, motivating employees, playing music, playing advertisements, and other suitable purposes.

Any suitable media files may be stored at premises **16**. In response to a command to play a particular media file received from registrar system **14**, a media application **54** may interrupt any currently playing media and play the media file specified in the command. The command to play the media file may include the media file or the media file may already be stored at premises **16**.

Although certain devices **24** have been described with respect to premises **16**, the present invention contemplates premises **16** including any suitable types of devices **24** being coupled to computer system **22** and being monitored, controlled, or otherwise managed using system **10**. The various applications associated with computer system **22** of premises **16** (e.g., video application **36**, facility management application **40**, and POS application **50**) may be referred to generally

as premises applications. Additionally, the various premises applications, to the extent that those applications incorporate software, may be written in any suitable programming language, such as JAVA, C++, or any other suitable programming language, according to particular needs.

Registrar System

As described briefly above, system **10** includes registrar system **14**. In certain embodiments, registrar system **14** is located remotely from client system **12** and premises **16**. Registrar system **14** is operable to facilitate remote monitoring, control, and management of one or more premises **16** and one or more devices at one or more premises **16** from one or more client systems **12**. In certain embodiments, an operator of registrar system **14** may provide access to system **10** or to certain features of system **10** for a fee, such as a one-time fee, a periodic subscription fee, or in any other suitable arrangement. Registrar system **14** may comprise a server system **60** and a database system **62**.

Server system **60** may include one or more electronic computing devices operable to receive, transmit, process, and store data associated with system **10**. For example, server system **60** may include a general purpose personal computer (PC), a Macintosh, a workstation, a UNIX-based computer, a server computer, wireless data port, datashow, wireless telephone, PDA, or any other suitable device. Server system **60** may be operable to communicate with client system **12** and computer system **22** of premises **16**, using network **18**. Server system **60** may run any suitable operating system. In certain embodiments, server system **60** includes ORACLE software, although the present invention is not intended to be so limited.

Registrar system **14** may include or be coupled to database system **62**. Although described as a database, database system **62** may include any memory or database module and may take the form of volatile or non-volatile memory including, without limitation, magnetic media, optical media, random access memory (RAM), read-only memory (ROM), removable media, or any other suitable local or memory component. In certain embodiments, database system **62** comprises one or more ORACLE databases.

Registrar system **14** may include one or more management applications **64** on server system **60** operable to facilitate remote monitoring, control, and management of premises **16** and one or more devices at premises **16** using client system **12**. Each management application **64** may include software, hardware, and firmware in any suitable combination. To the extent that the management applications incorporate software, each management application may be written in any suitable programming language, such as JAVA, C++, or any other suitable programming language, according to particular needs.

In certain embodiments, registrar system **14** is operable to maintain a master clock on which the various times, time stamps, and schedules employed by system **10** are based. For example, when a computer system **22** of a premises boots up or when a client system **12** logs in to registrar system **14** (as described below), the clocks of each of those systems may be synchronized with the master clock of registrar system **14**.

In certain embodiments, registrar system **14** is operable to store configuration information for the various components of system **10**, such as for computer system **22** at premises **16**, devices **24** at premises **16**, and client system **12**. For example, registrar system **14** may maintain accounts for users of client system **12** and for premises **16**. The configuration information may be organized according to its associated user and premises **16**. The configuration information may be specified by a user of client system **12**. Additionally or alternatively, registrar system **14** may assign default configuration settings. In certain embodiments, the configuration information may be stored as tables in database system **62**. For example, registrar system **14** may maintain one or more tables of configuration information for users of client system **12** and for one or more premises **16**. In certain embodiments, registrar system **14** may maintain, for each user or set of users, a hierarchy in database system **62**. The hierarchy may include all premises **16** associated with the user, organized by geographical location, for example. The lowest level of the hierarchy may include a folder for each of the individual premises **16** associated with the customer. The folder for a premises **16** may include, for example, each device **24** located at the premises **16** and a current IP address associated with premises **16**. This information may be updated and modified as desired or needed.

In certain embodiments, when a user of client system **12** logs in to registrar system **14**, registrar system **14** may communicate configuration information to client system **12**. Client system **12** may communicate modifications to the configuration information to registrar system **14**, and registrar system **14** is operable to receive the modifications and to update the configuration information as appropriate. For example, registrar system **14** may update the appropriate configuration tables in database system **62** with the modifications to the configuration information. If a user of client system **12** communicates a request to modify the configuration information for particular devices **24** at a premises **16** associated with the user, such request may include an identification of the particular devices **24**.

Registrar system **14** may lock the configuration information when a user of a client system **12** is attempting to enter modifications to the configuration information. This may help prevent multiple users of one or more client systems **12** from modifying the configuration information at the same time. In certain embodiments, each time a client system **12** attempts to modify its associated configuration information, registrar system **14** may communicate the latest version of the configuration information to the client system **12** so that the client system **12** will be modifying the current configuration information. This may be useful, for example, if multiple users of client systems **12** have access to the same configuration information. For example, although a first client system **12** is communicated the current configuration information when the first client system **12** logs in to registrar system **14**, that configuration information may be modified by a second client system **12** after the first client system **12** logged in to registrar system **14**. If the first client system **12** now attempts to change the configuration information, it would be beneficial for the first client system **12** to have the most recent configuration information prior to modifying such information. When registrar system **16** updates the configuration information for a particular device **24** at premises **16** (in response to a request from client system **12** or otherwise), registrar system **14** may communicate the updated configuration information to computer system **22** of premises **16**, if appropriate.

In certain embodiments, registrar system **14** is operable to support the monitoring, control, and management of video devices **34**. To support these operations, registrar system **14** may store certain configuration information in database system **62**. For example, registrar system **14** may store in database system **62** the configuration information of video cameras **34** and video applications **36** located at premises **16**. Such configuration information may include any suitable configuration information according to particular needs. In certain embodiments, this configuration information may include a frames-per-second setting for a particular video

camera, quality information for storing video images, sensitivity, video image size, or any other suitable information.

Registrar system **14** may store in database system **62** the configuration of one or more alerts associated with premises **16**. For example, registrar system **14** may store information for each alert identifying one or more users who should be notified that the alert has been triggered, the appropriate means for communicating notifications of alerts to the user (e.g., email, phone, pager, text message), and any other suitable information. In certain embodiments, an alert may also trigger certain events. For example, receipt of a particular alert may prompt registrar system **14** to issue one or more commands to the premises **16** that generated the alert. As a particular example, receipt of an alert indicating that a grill at premises **16** has exceeded a threshold temperature may prompt registrar system **14** to communicate a command to computer system **22** at premises **16**. The command may be directed to an output switch **46** associated with the grill and may direct computer system **22** to change the state of the output switch to "off" (thereby, turning off the grill).

In certain embodiments, registrar system **14** is operable to support the monitoring, control, and management of facility management devices **28** associated with premises **16**. For example, registrar system **14** may be operable to support the monitoring, control, and management of temperature sensors **42**, input switches **44**, output switches **46**, POS devices **48**, or any other suitable facility management devices **24**. Registrar system **14** may store in database system **62** the configuration information for facility management devices **24**. Registrar system **14** may receive device data for one or more of devices **24** (e.g., temperature data, input switch state, or other suitable information) from computer system **22** at premises **16**. Registrar system **14** may also store the device data in database system **62**. In certain embodiments, registrar system **14** stores the device data in one or more tables in database system **62**. Each entry in a table may include the device ID of the particular device **24** associated with the data, the time stamp associated with the data, the device data, and any other suitable information. Registrar system **14** may be further operable to communicate the device data for facility management devices **24** to one or more client systems **12**, at scheduled times, in response to a request from client system **12**, or in any other suitable manner.

In operation of an example embodiment, registrar system **14** may receive a request from client system **12** for device data for a particular facility management device **24**. The request may include a device ID, a start time, and an end time. As an example, the request may include a request for the temperature data of temperature sensor four from 3:30 p.m. to 4:15 p.m. Registrar system **14** may retrieve the device data responsive to the request in any suitable manner. For example, registrar system **14** may access the appropriate one or more tables in database system **62** and retrieve the appropriate device data. Registrar system **14** may return the device data responsive to the request to client system **12**.

In certain embodiments, registrar system **14** is operable to support the monitoring, control, and management of one or more temperature sensors located at premises **16**. For example, registrar system **14** may store in database system **62** the temperature data retrieved at premises **16** by computer system **22** and communicated to registrar system **14** by facility management application **40** at premises **16**. The temperature data may be stored in a table of database system **62**. For each data record in the table for temperature data, registrar system **14** may store the device ID for the temperature sensor from which the temperature data was taken, the time stamp of the temperature data, the temperature data, and any other suitable information. Registrar system **14** may communicate the temperature data to client system **12** in response to a request from client system **12**, at scheduled times, or in any other suitable manner.

In certain embodiments, registrar system **14** is operable to support the monitoring, control, and management of one or more input switches **44** located at premises **16**. Such operation may be substantially similar to the operation of registrar system **14** with respect to the temperature sensors, as described above.

In certain embodiments, registrar system **14** is operable to support the monitoring, control, and management of one or more output switches **46** located at premises **16**. For example, registrar system **14** may communicate commands to affect the state of one or more output switches **46** to computer system **22** at premises **16**. Such commands may include the device ID of an output switch **46** and the appropriate action to be taken (e.g., change the state of output switch **46**). As an example, the command may instruct computer system to affect the state of output switch eleven to turn off one or more lights associated with the output switch. Registrar system **14** may communicate such commands in response to a request from client system **12**. Additionally or alternatively, registrar system **14** may communicate such commands in response to one or more schedules stored at registrar system **14**.

In certain embodiments, registrar system **14** may store one or more schedule files in database system **62** or in any other suitable location. An advantage of storing schedule information at registrar system **14** may include that multiple premises **16** can be operated in accordance with that schedule and commands can be issued to each of the premises **16** at the same time, automatically by registrar system **14**. Furthermore, if a change in a schedule is needed or desired, the schedule can be modified in a single location (i.e., at registrar system **14**).

In certain embodiments, registrar system **14** includes one or more jobs, such as a cron job, that runs at one or more predetermined times to determine whether a schedule stored at registrar system **14** calls for a certain command or other action to be initiated by registrar system **14**. For example, registrar system **14** may include multiple such jobs each corresponding to one or more users and operable to review schedules for the one or more users. The cron job may, for example, determine that at 9:00 a.m. for a first user, registrar system **14** should communicate a command to a particular premises **16** to cause computer system **22** to turn on one or more lights. The command communicated to premises **16** may include an identification of the particular premises **16**, the command, and any other suitable information.

In certain embodiments, registrar system **14** is operable to support the monitoring, control, and management of POS devices **48** located at premises **16**. For example, registrar system **14** may support the monitoring, control, and management of one or more cash registers at premises **16**. In certain embodiments, registrar system stores the POS data communicated to registrar system **14** by computer system **22** at premises **16**. For example, registrar system may store the POS data in one or more tables in database system **62** or in any other suitable format.

In certain embodiments, registrar system **14** is operable to process the POS data received from premises **16**. For example, registrar system **14** may process the POS data received from premises **16** in order to store the POS data in one or more tables of database system **62** in an organized manner, which may be searchable or otherwise processed. Processing the POS data may include parsing the POS data received from premises **16** to determine what particular data

is included in the POS data, what information to store in database system **62**, what information, if any, to discard, and in which table to store the particular data included in the POS data. As described above with reference to the premises **16**, POS data for cash registers may include the data that is printed on a receipt for each transaction. Each transaction may be separated by one or more delimiters. In certain embodiments, the POS data file received by registrar system **14** from premises **16** is already divided into transactions, and may include an identification of premises **16**, an identification of the item that was purchased (if applicable), the time stamp assigned to the POS data, the dollar amount of a purchase, or any other suitable information. Typically, different types of POS devices (e.g., cash registers) may employ different formatting techniques, as described above. In certain embodiments, registrar system **14** may be programmed to process POS data associated with any suitable POS device **30**.

Registrar system **14** is operable to communicate POS data to client system **12**, in response to a request from client system **12** or on a scheduled basis for example. The request received from client system **12** may include the device ID of a POS device, a start time, an end time, a request for the POS data, and any other suitable information. Registrar system **14** may access the POS data responsive to the request in database system **62** and communicate the responsive data to client system **12**. The responsive data communicated to client system **12** may include the device ID of the POS device that generated the data (which would typically match the device ID included in the request), time stamp information, the responsive POS data, and any other suitable information.

Registrar system **14** may also receive a request from a client system **12** to view POS data in substantially real time. In certain embodiments, as described above with reference to premises **16**, POS data is only updated to registrar system **14** at predetermined intervals. Thus, in such embodiments, the delay associated with the predetermined time intervals may make it difficult or impossible for registrar system **14** to provide POS data to client system **12** in substantially real-time. To address this problem, in certain embodiments, when a client system **12** communicates a request to registrar system **14** to view POS data in substantially real time, registrar system may prompt computer system **22** at premises **16** to communicate the POS data directly to client system **12**, in substantially real time. For example, registrar system **14** may communicate a request to computer system **22** of premises **16** indicating that a particular client system **12** has requested to view POS data in substantially real time. Computer system **22** may then communicate the POS data line-by-line to the requesting client system **12** as the responsive POS data is generated. Client system **12** may include a suitable application for parsing the received POS data and displaying such POS data. Communicating POS data directly from premises **16** to client system **12** may allow POS data to be viewed by client system **12** in substantially real time, if desired. In certain embodiments, communication of POS data directly from premises **16** to client system **12** is performed in addition to communicating the POS data to registrar system **14** for processing and storage at registrar system **14**.

In certain embodiments, registrar system **14** is operable to support one or more media functions for facilitating the playback of media at premises **16**. For example, registrar system **14** may store one or more media files, in a media library on database system **62** for example. The media files may be organized in any suitable manner, according to particular needs. For example, the media files may be organized by one or more of premises **16**, user, media type, a combination of these, or in any other suitable manner. In certain embodiments, a copy of substantially all media files for premises **16** is stored at registrar system **14**. Registrar system **14** may also communicate a copy of each media file to the appropriate premises **16**.

As described above, registrar system **14** may maintain various schedules, stored in database system **62** for example. Certain of these schedules may specify particular times at which registrar system **14** should prompt computer system **22** at premises **14** to play certain media files. These schedules may be configured by a user of client system **12**, for example. A schedule could indicate that a particular media file should be played at one or more particular premises at one or more particular times (e.g., daily at 9:00 a.m., once every thirty minutes between 9:00 a.m. and 5:00 p.m., or at any other suitable times). Media files may also be played back at stores in response to particular events. Registrar system **14** stores the configuration of such events and may prompt computer system **22** at the appropriate premises **16** to play a media file in when certain events are triggered. As a particular example, an alert may be communicated to registrar system **14** by computer system **22** when a customer is using an ATM machine at premises **16**. The alert may trigger an event at registrar system **14**, and the configuration for the event may indicate that a particular media file should be played to the customer at the ATM (e.g., offering a one-time special on a particular item at premises **16**). Registrar system **14** may prompt computer system **22** to initiate playback of the appropriate media file.

In operation, registrar system **14** communicates a message to computer system **22** at a premises **16** when a schedule or event indicates that a particular media file should be played. Computer system **22** may then arrange for the media file to be played. Each media file may be associated with a unique identifier, and that identifier may be included in the request to play the file communicated by registrar system **14**. If the computer system **22** determines that it does not have the appropriate media file, computer system **22** may contact registrar system **14** and request the media file.

In certain embodiments, registrar system **14** is operable to process one or more alerts received from premises **16**. Such processing may include identifying the type of alert received and initiating an appropriate operation in response to the alert. As described above, computer system **22** at premises **16** may be operable to detect one or more alert conditions (e.g., alerts associated with video devices **26**) and communicate the occurrence of the alert to registrar system **14**. Registrar system **14** may receive the alert and determine one or more appropriate actions to take in response to the alert. The notification of the alert received from premises **16** may include a unique identifier for the alert (e.g., "alert ID") and an indication that the alert has been triggered. Registrar system **14** may perform further processing in response to receipt of an alert notification.

Additionally or alternatively, registrar system **14** may be operable to determine the occurrence of one or more types of alerts. For example, registrar system **14** may be operable to analyze device data communicated from premises **16** and determine whether one or more alert conditions are present. As particular examples, registrar system **14** may be operable to analyze sensor data, input switch data, output switch data, POS data, or any other suitable type of device data, according to particular needs. Such analysis may include determining whether certain threshold conditions have been met, whether a certain condition has existed for a particular time, or any other suitable type of analysis. As with premises **16**, alerts may be detected and triggered in any suitable manner according to particular needs.

A user of client system **12** may configure the types of alerts, what events should cause the detection of an alert, and the suitable action or actions to take in response to the detection of an alert. An action in response to an alert may include, for example, communicating a notification to a user such as a user of client system **12**, initiation of a particular operation, or any other suitable action, according to particular needs. The notification may be automatically communicated to the user via a telephone call, an email message, a page, a text message, or in any other suitable manner according to particular needs.

An operation initiated by an alert may include automatically causing a particular device at premises **14** to operate in a particular way in response to the alert. In certain embodiments, this capability of system **10** may allow a premises **16** to be somewhat self-monitoring, without requiring a user of client system **12** or other user to take action to cause a desired or otherwise appropriate action in response to an alert. For example, in response to a particular alert, registrar system **14** may issue a command to one or more output switches at premises **16** to cause one or more lights in the premises **16** to be turned on automatically. The configuration of an alert may include when an alert should be initiated, what action, if any, is to be initiated or performed when the alert is triggered (e.g., communicating a notification to a user), or any other suitable information. As an example, the configuration of an alert may indicate that the alert should be triggered when a predefined amount of motion is detected or when a sensor device detects a certain condition.

As just one particular example, the heating, ventilation, and air-conditioning (HVAC) system at a premises **16** may be controlled based on the monitoring of one or more temperatures at the premises **16**. For example, in response to determining that the temperature at a particular premises **16** has exceeded a threshold temperature for a predetermined time (i.e., by monitoring a temperature sensor at the premises **16**), registrar system **14** may communicate a command to premises **16** to cause the HVAC system at the premises **16** to adjust its temperature setting as desired. As another particular example, if registrar system **14** determines that a particular door has been open for a predetermined period of time (as specified in the configuration information for the premises **16**), registrar system **14** may cause a particular audio file to be played at the premises **16** (e.g., "Please close refrigerator door number five.").

In certain embodiments, registrar system **14** (or alert module **39** at premises **16**, if appropriate) may be operable to determine whether a notification has already been sent or whether a particular action has been initiated in response to a particular detected alert. For example, if registrar system **14** determines that a particular temperature sensor has detected a temperature that exceeds a threshold temperature for a predetermined period of time, it may communicate a notification to a user of the appropriate client system **12**. Although registrar system **14** may be operable to correct the problem automatically without human intervention (e.g., by communicating a command to adjust the temperature), the configuration information for the premises **16** may specify that the notification be sent to the user. Of course, it may take some time for the temperature to return to an acceptable level in response to the command from registrar system **14**, and registrar system **14** may continue to detect the alert condition until that acceptable temperature is reached. Rather than communicate a notification to the user of an appropriate client system **12** each time the alert condition is detected, registrar system **14** may determine that a notification has already been sent within the past 30 minutes and wait a predetermined period of time before communicating a follow-up alert.

Although a single registrar system **14** has been described, the present invention may include any suitable number of registrar systems **14**, local or remote from one another. In certain embodiments, each of a plurality of registrar systems **14** may cooperate to perform the functions described above. In certain embodiments, each of a plurality of registrar systems may be dedicated to certain client systems **12**, users of client systems **12**, and/or premises **16** or types of premises **16**. In certain embodiments, each of a plurality of registrar systems **14** may be dedicated to performing certain of the above-described or other functions. For example, a particular registrar system could be dedicated as a media center of system **10**.

Client System

As described above, system **10** includes one or more client systems **12**. Each client system **12** may include any appropriate input devices, output devices, mass storage media, processors, memory, or other suitable categories for receiving, processing, storing, and/or communicating information. In one embodiment, client system **12** may include one or more computers, such as a personal computer, laptop, workstation, network computer, kiosk, wireless data port, datashow, wireless telephone, personal digital assistant (PDA), one or more processors within these devices, or any other suitable device. It should be understood that system **10** may include any suitable number of client system **12**. In one embodiment, client systems **12** may be associated with one or more users. Throughout this description, references to the client system **12** and users of the client system **12** may be used interchangeably. Additionally, although human users are primarily described, the present invention contemplates any actions that may be performed by a human user of client system **12** being performed automatically by client system **12**. Client systems **12** may be referred to generally in the singular as client system **12** or in the plural as client systems **12**.

Client system **12** may include a client application **70** that is operable to facilitate monitoring, management, and control of one or more premises **16** and one or more devices at one or more premises **16**. For example, client application **70** may, in some cases, interact with the registrar system **14** to facilitate monitoring, management, and control of one or more premises **16** and one or more devices at premises **16**. As another example, client application **70** may, in other cases, interact directly with premises **16** to facilitate monitoring, management, and control of premises **16** and one or more devices at premises **16**. Client application **70** may be an interactive application, and a user of client system **12** may interact with the client application using a user interface (UI) provided by client application **70**. Any other type of interface could be used without departing from the scope of the invention.

Client application **70** may include any suitable combination of software, hardware, and firmware. To the extent that the client application comprises software, the client application may be written in any suitable language according to particular needs. For example, the client application may be written in C++, JAVA, or any other suitable language.

In operation of an example embodiment of system **10**, a user may start client application **70**, by double-clicking an icon representing client application **70** or by selecting client application **70** from a menu of available applications for example. Client application **70** may display a login screen to the user, requesting that the user submit appropriate authentication information (e.g., login ID, username, password, domain) to gain access to the functionality available in system **10** via client application **70**. Client application **70** may communicate the authentication information to registrar system **14**, which may validate the authentication information based

on user configuration information stored at registrar system **14** (e.g., in database system **62**). If registrar system **14** determines that the authentication information is invalid, registrar system **14** may return an error to client system **12**. If registrar system **14** determines that the authentication information is valid, registrar system **14** may communicate a message indicating that the login attempt was successful, and the display on client system **12** may be refreshed. In certain embodiments, upon determination of a valid login attempt, registrar system **14** may return the current configuration information for devices **24** at one or more premises **16** associated with the user of client system **12**. This configuration information may be organized by location and/or premises **16**, or in any other suitable manner.

In certain embodiments, once a client system **12** has successfully logged in to registrar system **14**, client application **70** may display a list of one or more premises **16** associated with the user of client system **12**, a list of one or more devices **24** at each of one or more premises **16** associated with the user of client system **12**, or any other suitable information. For example, such information may be displayed in an expandable/collapsible tree structure organized by premises **16** or in any other suitable manner.

A user of client system **12** may configure one or more devices **24** located at premises **16** using client application **70**. This may be described as "configuration mode." For example, a user may prompt client application **70** to communicate one or more modifications to the configuration information to registrar system **14**, and registrar system **14** may update the configuration information in database system **62**.

In certain embodiments, the user interface UI associated with client application **70** may be used to monitor, control, and manage one or more premises **16** and devices **24** at the one or more premises **24**. The UI may include one or more windows, each providing certain information to the user. Example displays are described below with reference to FIGS. **4** through **16**. In certain embodiments, client application **70** may employ drag-and-drop functionality for instantiating displays of certain information related to devices **24**.

Client application **70** is operable to support the display of video data associated with video devices **26** located at premises **16**. For example, client application **70** may be operable to support substantially real-time video monitoring of one or more premises **16**. In certain embodiments, client system **12** communicates directly with premises **16** to view substantially real-time video data. For example, client system **12** may communicate one or more requests for video data to computer system **22** at premises **16**. The request may be communicated in any suitable format and using any suitable protocol, according to particular needs. In certain embodiments, the request is communicated using the HTTP protocol.

The request may include one or more parameters. For example, the request may include a device ID of a camera **34** located at premises **16**, an identification of the last video image from the identified video camera **34** that was received by client system **12** (which may be identified by the time stamp information of the video image, for example), and any other suitable information. If client system **12** has not received any images for the identified video device **26** (during the current login session or at start-up, for example), the request may include a parameter indicating that client system **12** has not yet received any images for the identified device **26** (e.g., −1).

In certain embodiments, client system **12** may communicate a request for the video data of multiple video devices **26**. This request may be, for example, a single request that includes the unique identifier of each video device **26** desired, as well as any other suitable information. In certain embodiments, client system **12** communicates a new request for each video image. For example, to view video images in substantially real time, client system **12** may communicate requests for video images captured by one or more video devices **26** in rapid succession. The requests may be communicated at any suitable interval, according to particular needs. As just one example, client system **12** may communicate requests for video images every three seconds.

In response to a request for substantially real-time video data, client system **12** may receive from computer system **22** at premises **16** one or more video packets. Each video packet may include one or more of a time stamp of the video image (e.g., video frame) in the packet, the device ID of the video device **26** that captured the video image, the video image, and any other suitable information. Client system **12** is operable to process each received video packet. For example, client system **12** may parse each received video packet to determine the time stamp of the received video image and the device ID of the video device **26** that captured the image. Client system **12** is further operable to display the video image (e.g., in a window of client system **12**). In certain embodiments, client system **12** also displays the device ID of the video device **26** that captured the video image (e.g., bathroom, cash register, conference room, etc.), the time indicated by the time stamp of the video image, and any other suitable information.

In operation of an example embodiment of system **10**, client system **12** communicates to computer system **22** a first request for a first video image captured by a first video device **26**. In response, computer system **22** may communicate a video packet responsive to the request. Client system **12** may parse the received video packet and display the video image. In certain embodiments, client system **12** may also display the device ID of the device **26** that captured the video image, the time identified by the time stamp of the video image, and any other suitable data. Client system **12** may communicate a second request to computer system **22** for a new video image. The request may include the time stamp of the previous video image received from premises **16**. Computer system **22** may communicate a next video packet responsive to the request for the next video image.

In certain embodiments, as described above with reference to premises **16**, video application **36** at premises **16** may determine whether motion has occurred since the last video image received by client system **12** (as identified by the time stamp included in the request). If video application **36** determines that no motion has occurred since the time stamp included in the request, video application **36** may communicate a video packet that does not include a new video image, but which may include an indication that no motion has occurred since the previous image. The request packet communicated in such a case may also include time stamp information (e.g., for the time stamp of the video image to which the previous video was compared to determine whether motion had occurred) and the device ID. When no motion has occurred, client system **12** may display the previous video image again, possibly updating the time information in accordance with the time stamp included in the video packet. If video application **36** determines that motion has occurred since the time stamp included in the request, video application **36** may communicate a video packet that includes a new video image (e.g., the video image to which the previous video was compared to determine whether motion had occurred), time stamp information for the new video image, the device ID, and any other suitable information.

It should be understood that, in certain embodiments, client system **12** may be communicating requests for video data to

computer system **22** in rapid succession such that a second request is communicated before a response to a first request is received. As such, requests for video data and responses to requests for video data may be communicated between client system **12** and premises **16** substantially simultaneously. In certain embodiments, however, client system **12** may not issue a new request for video data until a responsive request packet has been received for the previous request for video data.

In certain embodiments, to preserve disk space for example, received video images included in received video packets are not stored on the hard drive when viewing video images in substantially real time. Instead, each video image may be deleted when a new video image is displayed. However, it should be understood that the present invention is not intended to be so limited. In certain embodiments, viewing video images in substantially real-time may sacrifice some degree of video quality. For example, detailed, fine motion may be degraded or lost. The quality of substantially real-time motion may depend, for example, on the quality of the connection (e.g., link **20**) between client system **12** and network **18**, and between computer system **22** and network **18**. The quality of substantially real-time motion may also depend on the quality of the video images that are communicated (e.g., the amount of compression used), which may affect the amount of time it takes to communicate such video images of links **20** and network **18**.

In certain embodiments, client system **12** supports downloading of video data from computer system **22** at premises **16**. As an example, a user of client system **12** may wish to view the video images capture from a first time (e.g., 12:00 p.m.) to a second time (e.g., 12:10 p.m.). Client system **12** may communicate a request to computer system **22** to view the video images from a first time to a second time. The request may include the device ID of a video device **26**, a first time, a second time, and any other suitable information. The request may be communicated in any suitable format and using any suitable protocol, according to particular needs. In certain embodiments, the request may be communicated using HTTP protocol, although the present invention is not intended to be so limited.

As described above with reference to premises **16**, video images may be stored at premises **16**, on the hard drive of computer system **22** for example. Additionally, as described above with reference to premises **16**, computer system **22** may retrieve stored video images responsive to the request. For example, computer system **22** may retrieve the video images captured by the device **26** specified in the request, from the start time to the end time specified in the request. Computer system **22** may communicate one or more video packets comprising the responsive video images. In certain embodiments, each video image in the one or more video packets may be associated with a time stamp. Additionally, for times when no motion was determined by video application **36** to have occurred, the video packet may include a time stamp without an associated video image. This time stamp information may be used by client system **12** to determine when to display the images in the one or more video packets. The responsive video images may each be communicated in its own video packet or collectively as a single video packet. In this way, a user of client system **12** may be able to download substantially all available images for a particular time frame.

In certain embodiments, client system **12** stores the received video images. For example client system **12** may store received video images in a single folder. Client system **12** may mark the folder with a time stamp and may also name the folder (e.g., "Downloaded Video, Front Camera, 4:00). Client system **12** may play the responsive video frames in order and at the appropriate times (e.g., based on the time stamp associated with each video image).

In certain embodiments, downloading video data to client system **12** in the manner described above may improve the playback of video images captured by video equipment at premises **16** when viewed from remote client system **12**. For example, any latency in the various connections between client system **12** and computer system **22** will likely be irrelevant because the images are being played from the hard drive of client system **12**, which may improve the fluidity of movement when playing back the video images. In this manner, the above-described technique may provide remote, on-demand, retrieved, substantially full-motion video. Additionally, the downloaded video images are saved on the hard drive of computer system **12** and may remain stored until a user associated with client system **12** deletes them. This may be useful, for example, if the video provides evidence of a certain event, such as a crime or negligent activity/inactivity. The downloaded videos may also be recorded from the hard drive onto a suitable recordable medium such as a CD-ROM.

In certain embodiments, client application **70** may be integrated with an email application, so that downloaded video data may be mailed electronically. For example, if a user of client application **70** downloads a video that show a particular event such as a crime, the downloaded video may be emailed to one or more appropriate email addresses (e.g., of law enforcement or a private security company). In certain embodiments, a user may right-click on an icon representing the downloaded video, a menu will be displayed, and the user may select to email the downloaded video associated with the icon. This may reduce or eliminate the need to first record the downloaded video to a recordable medium before forwarding the video to one or more particular persons. The email application may include any suitable email application such as Microsoft Outlook, Novell Groupwise, or any other suitable email application. Additionally, if appropriate or desired, a suitable compression algorithm or application may be used in conjunction with this email feature, to reduce the size of the file or files being transmitted by email for example.

Client application **70** may display video data, whether downloaded video or real-time video, in one or more windows on a display associated with client system **12**. A user of client application **70** may be able to perform various video control operations such as rewind, fast-forward, pause, and so on, on the video data being displayed in a window.

In certain embodiments, client application **70** is operable to support the retrieval and display of POS data. For example, client system **12** may be operable to initiate retrieval of transaction data generated by one or more cash registers at premises **16**.

Client application **70** may be operable to support both substantially real-time display of POS data and display of stored POS data. In certain embodiments, to support the display of substantially real-time data, client application **70** may communicate one or more requests to computer system **22** at premises **16** for the retrieval of POS data associated with a particular POS device **30**. The request may include the device ID of the POS device **30** from which client system **12** is requesting to display the associated POS data. In particular embodiments, client system **12** communicates a single request to computer system **22** to view substantially real-time POS data for a particular POS device **30**. A connection for supporting the transmission of the POS data from computer system **22** to client system **12** may remain open until client system **12** closes the particular POS device **30**, indicating a

desire to stop receiving POS data for the POS device **30**. This may reduce the number of requests being communicated between client system **12** and computer system **22**.

Client application **70** may also be operable to support the display of stored POS data. In certain embodiments, client system **12** communicates requests for stored POS data to registrar system **14**. For example, client system **12** may communicate to registrar system **14** a request for POS data for a particular time period. Client system **12** may receive the responsive POS data, and client application **70** may parse and display the received POS data in any suitable manner.

Client application **70** may be operable to generate one or more reports based on the POS data stored at registrar system **14**. For example, in certain embodiments, a user of client application **70** can search the POS data stored at registrar system **14** based on one or more parameters. These parameters may include any suitable parameters, depending on the configuration of the system and the format in which POS data is stored at registrar system **14**. As just one example, a user of client system **12** may search for all transactions in the past two days involving a particular type of product.

Client system **12** may include the ability, when parsing received POS data, to identify certain types of transactions. For example, certain transactions may be predefined as high-risk, fraudulent, or otherwise notable. As a particular example, transactions exceeding a predefined dollar amount may be identified. As another example, a transaction involving a single purchase of a high number of products of the same type may be identified (e.g., ten cases of beer). As another example, a "void" or "no-sale" transaction may be identified. Client application **70** may highlight or otherwise mark those identified transactions when displaying the responsive POS data. This may allow a user of client system **12** to easily identify those transactions when reviewing the display of the POS data.

In certain embodiments, client application **70** is operable to support retrieval and display of facility management device data associated with facility management devices **28** located at premises **16**. Although the support of certain example facility management devices **28** is described below, client system **12** may support the retrieval and display of any suitable facility management data for any suitable facility management device **28** in a substantially similar manner.

Client application **70** may support the retrieval and display of temperature data for one or more temperature devices **42** located at premises **16**. Client application **70** may communicate a request to registrar system **14** for temperature data relating to a temperature device, and registrar system **14** may return the responsive temperature data to client system **12**. Client application **70** may display the responsive temperature data in any suitable manner, according to particular needs. As one non-limiting example, temperature data for a particular temperature device **42** may be displayed in a line graph, the x-axis representing time, the y-axis representing temperature. In certain embodiments, temperature data for multiple temperature devices **42** may be displayed on a single graph.

Client application **70** may also support the retrieval and display of input switch data of one or more input switches **44** located at premises **16**. Client application **70** may communicate a request to registrar system **14** for input switch data relating to an input switch **44**, and registrar system **14** may return the responsive input switch data to client system **12**. Input switch data may be displayed in any suitable manner, according to particular needs. As one non-limiting example, input switch data for a particular input switch **44** may be displayed as a band on a graph, with the x-axis representing time. The band may represent the state of the input switch **44** and may extend from the y-axis perpendicular to the y-axis. The band may be color-coded such that a first color indicates a first state of the switch (e.g., green indicates a closed state) and a second color indicates a second state of the switch (e.g., red indicates an open state). The band may also indicate a latch state, if appropriate. For example, a diamond or other marker may be displayed on the band to indicate a latch state. In certain embodiments, input switch data for multiple input switches **42** may be displayed on a single graph. Additionally, input switch data may be displayed on a single graph with temperature or other data.

Client application **70** may be operable to support the monitoring and control of one or more output switches **46** located at premises **16**. For example, a user of client application **70** may be able to request the state of an output switch **46**. In certain embodiments, such requests are communicated to registrar system **14**. If registrar system **14** does not already have the responsive device data for the output switch **46** that is identified in the request, registrar system **14** may request the state of the output switch **46** (e.g., on or off) from computer system **22**, and may return the result to client system **12**. As another example, a user of client application **70** may be able to issue commands to affect the state of one or more output switches **46** or other suitable devices **24** located at premises **16**. Such a command may be communicated to registrar system **14**, which may then communicate the command to computer system **22**. As an example, a particular output switch **46** may control the state of one or more lights (e.g., on or off). The user may issue a command to turn the one or more lights associated with the output switch **46** on or off by issuing a command to registrar system **14** that identifies the appropriate output switch **46**. Additionally or alternatively, such commands may be communicated directly to computer system **22** at premises **16**.

As described above, client application **70** may display video data, device data of one or more facility management devices, POS data, and any other suitable data in one or more windows on a display of client system **12**. For example, the client application may display a plurality of tiled windows on a display of client system **12**, each comprising data for one or more devices located at premises **16**. One window may display video data for a particular video device, while another window may display data associated with one or more sensors, for example. In certain embodiments, client application **70** can simultaneously display device data for devices **24** at different premises **16**.

Client application **70** may be operable to correlate in time the display of information for one or more devices **24** located at one or more premises **16**. It may be desirable to correlate in time two or more of the displays such that the data displayed in one window matches in time the data displayed in another window. As an example, a user of client application **70** may review a particular event by correlating in time the display for an input switch **42** associated with a door and the displays of one or more cameras devices **34** depicting various angles of the appropriate scene. For example, if a particular input switch **42** indicates that a door has been left open that was supposed to be closed and some problem resulted from the open state of the door, the user of client application **70** can correlate in time the displays of one or more camera devices **34** and of one or more other devices **24**, allowing the user to determine what had happened at that location when the door was left open. In this manner, any of the displays associated with any of devices **24** located at premises **16** may be correlated in time and viewed simultaneously.

In certain embodiments, to facilitate this correlation-in-time functionality, client application **70** enables a user to

create one or more display groups. For example, a user may click on the display associated with a first device **24** and select to add the display for the first device **24** to a display group. A list of available display groups may be provided to the user, and the user may select one or more of those display groups. Client application **70** may maintain an object or other suitable data structure for each group, identifying which displays associated with which devices **24** should be correlated in time.

The correlation-in-time functionality may allow a user to select a particular time within a display for a particular device **24**, and the displays of all devices belonging to the display group of the particular time may be updated to the particular time. For example, if a user is simultaneously viewing temperature data in one window and video data in another window, if the user rewinds the video display, the temperature display will also back up in time. As another example, if the user is viewing three different scenes captured by three different camera devices **34** all selected to be in the same display group, the user can move around in the scene (e.g., rewind, fast forward, pause, slow down, spatially move, etc.) by controlling one display for one camera device **24**, and the displays of all three cameras **34** will move in the same manner, correlated in time. As another example, POS data for a POS device **30** may be displayed in one window and a video view of an area around the POS device **30** at premises **16** may be displayed in another window. A user may add the views of both of these devices **24** to a single display group and be able to see what is occurring at a particular time.

In certain embodiments, correlating in time the displays associated with devices **24** may be performed based on the time stamp information associated with the data for the various devices **24**. For example, when two or more device displays are correlated in time, a new request type may be used by client application **70**. When a user makes a request for device data associated with a particular device **24** in a display group, requests for device data for each of the devices **24** in the display group may be substantially simultaneously made, each specifying the same time stamp information. Suppose, for example, a display group includes a display for a particular video device **26** and a display for a particular POS device **30**. If the user rewinds the display for the video device **26** by one minute, a new request for video data may be made requesting video data with the appropriate time stamp. Substantially simultaneously, a new request for POS data may be made requesting POS data with the same time stamp. In certain embodiments, a user may also be able to correlate in time the display of device data for devices **24** at multiple premises **16**, which operates in a substantially similar manner.

Client system **12** may also support what may be referred to as reverse correlation in time. For example, suppose a customer calls the owner of premises **16** (who may also be a user of a client system **12**) and claims that yesterday he received an incorrect amount of change. The user of client application **12** may request the POS data for the appropriate cash register **48** and scroll through the data until the appropriate transaction is identified. Suppose that the user then would like to see the video data for a video device **30** capturing the area around the cash register **48** that processed the identified transaction. From the window displaying the POS data for cash register **48**, the user can select to correlate in time the video display for the appropriate video device **34** by adding the appropriate video device **26** to the display group of the POS data.

Correlation-in-time functionality may provide a valuable tool to users of client application **70**. For example, this functionality may allow users to recreate scenes by viewing device data for various video devices **26**, facility management devices **28**, POS devices **30**, and any other suitable devices **24**. This may allow users of client application **70** to determine many of the circumstances or activities that led up to a particular event. A user may be able to create any suitable number of groups simultaneously, each correlated to a different time if desired. Additionally, the displays that are correlated in time may be associated with a number of geographically disperse premises **16**, each operating in any time zone. Moreover, each display within a group may be associated with a different device or device type, and such displays may be correlated in time.

Client application **70** may also support the creation of reports for POS data. For example, using client application **70**, a user may communicate a query for POS data to registrar system **14**. The query may include any suitable parameters, according to particular needs. For example, the parameters may specify a dollar amount, an item type, a date/time range, or any other suitable parameters. As a particular example, a user may submit a query requesting all transactions involving the purchase of a particular item during yesterday's business hours.

Registrar system **14** may return the appropriate POS data responsive to the query, and client application **70** may display the responsive POS data in any suitable format. For example, client application may generate and display one or more spreadsheets that include the responsive POS data. In the displayed spreadsheet, each parameter included in the query (and any other suitable fields) may be associated with a column in the spreadsheet. A variety of operations such as sorting may be performed on the POS data displayed in the spreadsheet.

Client application **70** may allow a user to select a particular transaction in the spreadsheet, by dragging and dropping the line of transaction data in the spreadsheet corresponding to the transaction into a window for a cash register device **48**, and a request for the POS data corresponding to the particular transaction may be communicated to registrar system **14**. Registrar system **14** may communicate the responsive POS data, which may include a copy of the information included in the receipt generated for the selected transaction. Client application may then display a copy of the POS data included in the receipt for the selected transaction. Additionally, a user may request the video data corresponding to the transaction, and a request for the video data, including the appropriate device ID and time stamp information corresponding to the time of the transaction, will be communicated to computer system **22** at the appropriate premises **16**.

Client application **70** may be operable to support the media capabilities of system **10**, described above with reference to registrar system **14** and premises **16**. For example, a user of client application **70** may specify one or more media files to be played at one or more appropriate times. As one particular example, a user of client system **12** can communicate a media file to registrar system **10**. The media file could be recorded by the user of client system **12**. For example, if the user wants to broadcast a particular message, such as a marketing message, at premises **16**, the user may record the audio message at client system **12** and communicate the audio file to registrar system **14** with instructions specifying when to play the audio file at premises **16** (e.g., play this media file immediately or play it at one or more scheduled times). The media file could be any file accessible to client system **12**. In certain embodiments, the media file is communicated to registrar system **14**, which handles the received media file in the manner described above with reference to registrar system **14**.

A user of client application **70** may also create schedules specifying one or more times at which media files should be played. For example, the user may request that a particular media file be played at one or more particular times (e.g., every morning at 9:00 a.m., once every hour, once every thirty minutes from 9:00 a.m. to 5:00 p.m., etc.), along with an identification of which premises should play the media file. As another example, the user of client application **70** may request that a particular media file be played upon the occurrence of one or more events. The playback of a particular media file could be triggered by one or more of the sensors at premises **16**. For example, the presence of a customer at an ATM might trigger an audio broadcast welcoming the customer to a particular branch of the bank and informing the customer of a special offer that is good for that day only.

In certain embodiments, the configuration of some or all of the devices **24** and premises **16** supported by system **10** may be specified using client application **70** at client system **12**. For example, a user may specify schedules for one or more of devices using the client application **70**. The configuration may include the configurations for playback of media files, the configuration and scheduling of alerts for video, the configuration of a hierarchy of premises and devices associated with a user, the configuration of user information, and any other suitable configurations, according to particular needs.

Using client application **70**, a user can create any number of users who have access client application **70** and its associated functionality. Each user may be assigned one or more user permission levels. For example, a user may be granted permission to view particular devices **24** at one or more premises, to configure devices **24** at one or more premises, to modify user settings, to schedule and record media for playback, or any other suitable permissions according to particular needs. In certain embodiments, a user may be granted a permission level granting the user the rights to perform any suitable operations using client application **70** (e.g., a "super user").

Communications between the various components of system **10** may be according to any suitable protocol and in any suitable format, according to particular needs. As just one example, certain communications may be sent using HTTP protocol and the content of the communications may be in XML format. As another example, the format of the content of the communications may be in text format.

In certain embodiments, system **10** may include any suitable types of security capabilities to maintain the confidentiality of communications and data sent and stored throughout system **10**. For example, communications sent throughout computer system may be communicated in HTTP-S or another secure format. Additionally or alternatively, one or more headers may be added to communications to allow for authentication at each of the components of system **10**.

Although system **10** has been described primarily as allowing a user of client system **12** to monitor, control, and manage one or more premises **16** or one or more devices at premises **16** using registrar system **14**, in certain embodiments, the present invention contemplates allowing a client system **12** to connect directly to one or more premises **16**, in an offline or local mode for example, without requiring a connection to registrar system **14** by client system **12**. This feature may allow the user of client system **12** to remotely monitor, control, and manage the one or more premises **16** and devices at premises **16** directly without using registrar system **14**. This may be useful, for example, if registrar system **14** needs to be taken down for maintenance or is otherwise unavailable, although the present invention contemplates using this feature for any suitable purposes, according to particular needs. When connecting directly to premises **16**, it may be desirable for client system **12** to log on to registrar system **14** for authentication and to download configuration information. This log on may be performed as often as desired. Additionally, in certain embodiments, it may be desirable to limit the amount of time (e.g., one week) that a client system **12** can connect directly to premises **16** without first logging on to registrar system **14**. For example, if the operator of registrar system **14** is charging a fee for the use of system **10**, it may be desirable for that operator to be able to block access by a client system **12** to a premises **16**.

Particular embodiments of the present invention may provide one or more technical advantages. In certain embodiments, the present invention combines the use of control systems and sensors with video applications; whereas, typical existing systems are either control systems or they are video monitoring systems. In certain embodiments, the present invention provides the ability to synchronize the view of various sensors, POS data, and/or video data. In certain embodiments, the present invention provides the ability to integrate audio files and broadcast them upon predetermined events, at predetermined times, or both. In certain embodiments, the present invention provides a system **10** that operates actively, allowing a user or computer system to actively monitor or control a remote premises **16**. Additionally or alternatively, in certain embodiments, the present invention provides a system **10** that operates passively by receiving events and executing one or more corresponding actions (e.g., communicating an alert, delivering an audio message, turning on a light, or any other suitable action) in response to those events. In certain embodiments, the architecture of the present invention comprising a local client system **12**, one or more computer systems **22** located at a premises **16**, and a high performance registrar system **14** enables conservation of bandwidth in connections to remote premises **16** and management of the large amounts of data acquired from the various devices.

FIG. **2** illustrates a software and hardware stack diagram of an example computer system **22** located at premises **16**. Although computer system **22** is described as including particular components, the present invention contemplates computer system **22** comprising any suitable components according to particular needs.

Computer system **22** comprises a hard disk **80**, which may be any suitable size according to particular needs. In certain embodiments, computer system **22** may include a flashdisk **82** inserted in a hard disk slot of computer system **22**. Computer system **22** further includes operating system software **84**. In certain embodiments, operating system software **84** comprises LINUX operating system software, although the present invention contemplates operating system software **84** being any suitable software, according to particular needs. Operating system software **84** and its associated utilities may be installed on flashdisk **82**, which may help prevent the operating system from crashing or otherwise failing. In certain embodiments, computer system **22** creates a RAM disk **86** at run-time from which operating system software **84** may run. Computer system **22** may also include a JAVA Virtual Machine **88**, if appropriate (e.g., if one or more applications stored on computer system **22** are written in JAVA for example).

Computer system **22** may include one or more video capture cards **90**, each operable to collect video data captured by one or more video devices **26**. Each video capture card **90** may include any suitable number of video boards each operable to be connected to a video device **26** in any suitable

manner. Video application **36** may interact with one or more video capture cards **90** to access the video images captured by each video device **26**.

In certain embodiments, computer system **22** includes an application server **92** operable to handle communication and receipt of messages from client system **12**, registrar system **14**, or any other suitable component of system **10**. In certain embodiments, application server **92** comprises a web application server, such as a Tomcat server or any other suitable type of web application server. Although application server **92** is described as handling communication and receipt of messages for computer system **22**, the present invention contemplates computer system **22** communicating and receiving messages using any suitable tool and in any suitable manner.

In certain embodiments, computer system **22** includes an IP address update module **94**. For example, in certain embodiments, each time computer system boots up or establishes a new connection with network **18**, computer system **22** may be assigned a new IP address. IP address update module **94** may communicate the new IP address to registrar system **14**, which may update the IP address information for premises **16** stored in database system **62** of registrar system **14**.

Computer system **22** may include various types of premises software **96**. For example, as described above with reference to FIG. **1**, premises software **96** may include one or more video applications **36**, one or more facility management applications **40**, one or more POS applications **50**, one or more media applications **54**, one or more alert modules **39**, and any other suitable applications according to particular needs.

In certain embodiments, computer system **22** may include a software monitoring application **98** operable to monitor one or more applications (e.g., premises software **96**) running on computer system **22**. Software monitoring application **98** may be operable to determine whether an application being monitored by software application **98** encounters a problem. If such a problem is detected by software monitoring application **98**, software monitoring application **98** may initiate a restart of the application that encountered the problem, or otherwise resolve the problem. In certain embodiments, software monitoring application **98** may initiate communication of a notification to one or more appropriate recipients, indicating that such a restart or other resolution was performed. The notification may also include certain details related to the encountered problem.

FIG. **3** illustrates an example registrar system **14**, which may be used in certain embodiments of system **10**. Although registrar system **14** is described as including particular components, the present invention contemplates registrar system **14** comprising any suitable components operable to perform the appropriate functions described herein.

Registrar system **14** includes server system **60** and database system **62**, as described above with reference to FIG. **1**. Server system **60** may include any suitable operating system software **100**, such as WINDOWS 2003, according to particular needs. Server system **60** may also include a JAVA Virtual Machine **102**, if appropriate (e.g., if one or more applications stored on server system **60** are written in JAVA for example).

In certain embodiments, server system **60** includes an application server **104** operable to handle communication and receipt of messages from client system **12**, computer system **22** at premises **14**, or any other suitable component of system **10**. In certain embodiments, application server **104** comprises a web application server, such as a Tomcat server or any other suitable type of web application server. Although application server **104** is described as handling communication and receipt of messages for registrar system **14**, the present invention contemplates registrar system **14** communicating and receiving messages using any suitable tool and in any suitable manner.

Server system **60** may include one or more management applications **64** supporting the various functionalities described in the present disclosure. For example, management applications **64** may include applications supporting the parsing and storing of data received from premises **16** or from client system **12**. As another example, management applications **64** may include applications supporting the control of one or more devices at premises **16**, in response to commands received from client system **12** or based on one or more schedules stored at registrar system **14** for example.

Database system **62** may be operable to store any suitable information associated with the remote monitoring, control, and management of premises **14**. This information stored in database system **62** may be organized in any suitable manner, such as in one or more tables database system **62**.

In certain embodiments, database system **62** stores user configuration information **106** for one or more users of client system **12**. User configuration information **106** may include an identification of what user rights have been assigned to the users. These user rights may include one or more of: which of multiple premises **16** the user may view using client application **70**; which locations of particular premises **16** the user may access; an identification of which particular devices **24** a user can view; an identification of which particular devices **24** for which the user can modify the configuration; or any other suitable rights according to particular needs. As just one example, a user may be granted user rights to view and modify all video devices **26** in all Dallas locations of a particular fast food restaurant. In certain embodiments, a super user may be granted user rights to view and modify all devices **24** at all premises **16** in system **10** associated with that user. User configuration information **106** may also include user authentication information for users of client systems **12**. For example, each user may be associated with a user name, a password, a customer name, a domain name, or any other suitable information. User configuration information **106** may be organized in database system **62** in any suitable manner.

In certain embodiments, database system **62** stores premises configuration information **108** for each premises **16**. Premises configuration information **108** may be organized in database system **62** according to the premises **16** with which it is associated. Premises configuration information **108** for premises **16** may include configuration information for computer system **22** located at premises **16**, including the current IP address associated with premises **16**. Premises configuration information **108** may also include configuration information for each device **24** at each premises **16**. Storing premises configuration information **108** for each premises **16** at registrar system **14** may increase the robustness of system **10**. For example, the premises configuration information **108** for a particular premises **16** may be preserved in the event that devices **24** or computer system **22** at the particular premises **16** encounters a failure or other system crash. A new computer system **22** may be installed at the particular premises **16** and configured based on the premises configuration information **108** stored at registrar system **14** for the particular premises **16**.

Premises configuration information **108** for each premises **16** may also include the configuration information for the various schedules described in the present disclosure. The schedules may include, for example, schedules for communicating commands to certain premises **16** to cause certain

devices **24** to operate in a particular manner. For example, the schedules may specify when certain media files should be played at premises **16**. As another example, the schedules may specify when the state of a particular output switch **46** should be affected. Additionally, premises configuration information **108** may include the configuration of alerts, including what events may trigger alerts and what actions should be taken in response to identification of an alert.

Database system **62** may also store device data **110** reported by the various devices **24** at premises **16**, as described above with reference to FIG. **1**. Device data **110** may be organized according the premises **16** with which it is associated. Database system **62** may also store one or more media libraries **112** each storing one or more media files. Media libraries **112** may be organized according the premises **16** with which they are associated.

Table 1.1 below includes a list of example tables that may be used to organize some or all of the configuration data, device data, or other suitable data stored in database system **62**. The tables listed in Table 1.1 merely represent a non-limiting example. Certain of the tables listed may not be required and others not listed may be included and still fall within the spirit and scope of the present invention. Additionally, although an indication of whether the tables are partitioned or not is included in Table 1.1, each table listed in Table 1.1 may be either partitioned or not, according to particular needs.

TABLE 1.1

Table	Tablespace	Partitioned
ADDRESS	VMS_DATA1	No
ADVSCHEDULE	VMS_DATA1	No
ALERT	VMS_DATA1	No
ALERTADVSCHEDULE	VMS_DATA1	No
ALERTADVSCHEDULECONTACT	VMS_DATA1	No
ALERTATTRIBUTES	VMS_DATA1	No
ALERTCONTACT	VMS_DATA1	No
ALERTHISTORY	VMS_DATA1	No
ALERTSCHEDULE	VMS_DATA1	No
ALERTSCHEDULECONTACT	VMS_DATA1	No
ALERTSCHEDULEDEVICE	VMS_DATA1	No
ATTRIBUTE	VMS_DATA1	No
CONFIGLOCK	VMS_DATA1	No
CONTACT	VMS_DATA1	No
COUNTRY	VMS_DATA1	No
COUNTRYLANGUAGE	VMS_DATA1	No
COUNTRYTIMEZONE	VMS_DATA1	No
COUNTRYZONE	VMS_DATA1	No
CURRENCY	VMS_DATA1	No
CUSTOMER	VMS_DATA1	No
CUSTOMERADDRESS	VMS_DATA1	No
CUSTOMERCONTACT	VMS_DATA1	No
CUSTOMERNOTES	VMS_DATA1	No
DEVICE	VMS_DATA1	No
DEVICEADVSCHEDULE	VMS_DATA1	No
DEVICEATTRIBUTE	VMS_DATA1	No
DEVICEATTRIBUTESCHEDULE	VMS_DATA1	No
GROUPS	VMS_DATA1	No
HIERNODE	VMS_DATA1	No
LANGUAGE	VMS_DATA1	No
LASTRUN	VMS_DATA1	No
LOGIN_TRACE	VMS_DATA1	No
MEDIA	VMS_DATA1	No
MEDIASCHEDULE	VMS_DATA1	No
MEDIATRANSCRIPT	VMS_DATA1	No
NOTES	VMS_DATA1	No
OW_DATA	VMS_DATA1	No
POS_TEMPERATURE_ALERTS	VMS_DATA1	No
POS_TEMPERATURE_DTLS	VMS_DATA1	No
POS_TRANSACTION	VMS_DATA1	No
POS_TRANSACTION_BODY	VMS_DATA1	No
POS_TRANSACTION_DETAILS	VMS_DATA1	No
POS_TRANSACTION_ITEM	VMS_DATA1	No
STORE	VMS_DATA1	No
STOREADDRESS	VMS_DATA1	No
STORECONTACT	VMS_DATA1	No
STORENOTES	VMS_DATA1	No
STORESHIFTS	VMS_DATA1	No
STORETEST	VMS_DATA1	No
USERCONTACT	VMS_DATA1	No
USERRIGHTS	VMS_DATA1	No
USERS	VMS_DATA1	No
USERSTORE	VMS_DATA1	No
USERVISIBILITY	VMS_DATA1	No
ZONE	VMS_DATA1	No

Although certain components of registrar system **14** have been described, the present invention contemplates registrar system including any suitable components, according to particular needs. Additionally, although particular example components of server system **60** have been described, the present invention contemplates server system **60** comprising any components suitable for facilitating remote monitoring, control, and management of one or more premises **16** using one or more client systems **12**. Furthermore, although database system **62** has been described as storing particular information, database system **62** may store any suitable information according to particular needs.

FIGS. **4-17** illustrate example displays that may be generated by client application **70** at client system **12**. For example, client application **70** may display one or more of these displays during user interaction with client application **70**. It should be understood that the displays illustrated in FIGS. **4-17** merely provide example displays. Any suitable displays may be generated by client application **70** without departing from the spirit and scope of the present invention.

FIG. **4** illustrates an example display **200** for configuring a video camera **34** located at a premises **16**. Display **200** includes a camera-selection menu **202** for selecting a camera **34** to be configured. Display **200** also provides scheduling tools **204** for selecting, creating, and modifying schedules at which times the selected configuration will apply. Display also includes a plurality of configurable camera settings **204**. In example display **200**, configurable camera settings include sensitivity, image capture frequency (e.g., frames-per-second), image size, and image quality. The present invention contemplates any suitable configurable camera settings **204**, according to particular needs.

FIG. **5** illustrates an example display **210** for configuring camera alerts for a camera **34** located at a premises **16**. Display **210** includes a camera-selection menu **212** for selecting a camera **34** for which alerts are to be configured. Display **210** also includes selection menus **214** and **216** for selecting when an alert should be generated and what degree of motion should generate the alert, respectively. Display **210** includes a scheduling tool **218** for specifying when a particular alert should be active. Additionally, display **210** includes notification tools **220** for selecting one or more users or other individuals to be notified when an alert is generated.

FIG. **6** illustrates an example display **230** for specifying certain user configuration information for a user of client system **12**. Display **230** includes a user contact information panel **232** and a user permissions window **234**. User contact information panel **232** includes text boxes for modifying user contact information and other information associated with a

user. User permissions window **234** displays an expandable tree of premises **16** for which permissions for this user may be modified.

FIG. **7** illustrates an example display **240** for specifying permission levels for a user of client system **12**. Display **240** includes an expandable tree **242** of premises **16** for which permissions for this user may be modified. Area **244** includes a list of example permission levels **246** that may be selected or de-selected. In this example, permission levels **246** include rights to view cameras **34**, rights to configure devices **24** and alerts, rights to modify groups, rights to view POS data, rights to store media files, and rights to perform facility management operations. The present invention contemplates permission levels **246** including any suitable permission levels, according to particular needs. In operation, a user may select a level in expandable tree **242** (e.g., a particular premises **16** or a group of premises **16**), and then select the permission levels **246** to be applied to the user for the selected level.

FIG. **8** illustrates an example display **250** for monitoring, controlling, and managing one or more premises **16**. Display **250** comprises a window **252** displaying a expandable/collapsible tree structure **254**. Tree structure **254** may comprise a list of premises **16** available to the user of client application **70** and the devices **24** available at each of those premises **16**. In certain embodiments, tree structure **254** only includes those devices **24** that the user of client application **70** has permission to view, configure, or both. Each device **24** listed may be identified by a label (e.g., Make Line), which may or may not match the device ID or device ID of the device **24**, but may be associated with the device ID or device ID. Display **250** also comprises a number of tiled windows **256***a*-**256***i*. Although a particular number of windows **256** are illustrated, display **250** may include any suitable number windows **256**, according to particular needs. Each window **256** displays one or more devices **24** located at a premises **16**. In certain embodiments, a user may select a particular device **24** in tree structure **254**, and a window **256** will be opened that displays the device data for the selected device **24**. For example, the user may double-click on a device **24** in tree structure **254**, or the user may drag and drop a device **24** from tree structure **254** to a particular window **256**.

Window **256***a*, for example, illustrates the display of video data for a particular video camera **34** at a particular premises **16**. Window **256***a* may also include a premises and device label **254** for the premises **16** and camera **34** with which the video data displayed in window **256***a* is associated. Window **256***a* may also include data and time information **260**, which may be determined based on the time stamp information included in video packets received from computer system **22** at premises **16**.

Window **256***b*, as another example, illustrates the display of a facility management window. The facility management window may include a list of one or more facility management devices **24** at a particular premises **16**, and the substantially-current status of each of those devices **24**. For example, the facility management window displayed in window **256***b* includes a list of devices that includes security lights, canopy lights, yard lights, and the heating and air condition unit, along with a status indicator for each of those devices. The user may also control the status of these devices by clicking on the "turn on" or "turn off" text. As described above, in response to the user issuing such a command, the command may be communicated by client application **70** to registrar system **14**. The command may include a device ID, premises ID, and the command to be performed. Registrar system **14** may then communicate a command to computer system **22** at the appropriate premises **16** requesting that the computer system **22** perform an appropriate action in response to the command. In this example, the command may instruct computer system **22** to affect the state of an output switch **46** coupled to the security lights, to turn the security lights on or off for example. The user may also select the particular devices listed in facility management window to modify the configuration of those devices (assuming the user has the appropriate permissions). Additionally, the user may click on "Schedules" to configure one or more schedules for the devices listed in the facility management window.

Window **256***e*, as another example, includes an example display **262** showing temperature data. Display **262** includes a line graph that includes an x-axis representing time and a y-axis representing temperature. A line **264** corresponding to the temperature data for a particular temperature sensor at a particular premises **16** is displayed in the graph. A more detailed example display of temperature data is described below with reference to FIG. **9**.

Window **256***f*, as another example, includes an example display showing POS data **266** for a particular POS device **30** at a particular premises **16**. The user may scroll through the displayed POS data **266**, as desired.

As can be seen in example display **250**, a user can view device data from a plurality of devices **24** located at a plurality of premises **16** simultaneously. For example, window **256***c* includes video data from a particular camera device **34** at a first premises **16***a*, window **256***e* includes temperature data from a particular temperature sensor **42** at a second premises **16***b*, and window **256***h* includes video data from a particular camera device **34** at a third premises **16***c*.

Additionally, as described above with reference to FIG. **1**, a user can correlate in time the displays of device data for various devices **24** located at various premises **16**. For example, the user could create a display group that includes one or more of windows **256***a*-**256***i*, and the data displayed in each of the windows included in the display group would be correlated in time.

FIG. **9** illustrates an example detailed display **300** of an example window showing temperature data. Display **300** includes a line graph **302** that includes an x-axis representing time and a y-axis representing temperature data. A plurality of lines **304** are displayed in graph **302**, each corresponding to the temperature data for a particular temperature sensor **42**. Each line may be color coded to indicate the temperature sensor **42** with which it is associated. For example, device IDs **306***a*-**306***c* displayed at the top of graph **302** may be color-coded to match the color of the lines **304** to which they correspond. In operation of an example embodiment, when a user first requests temperature data, temperature data for a default time range (e.g., two hours) may be displayed in graph **302**. The user may then select a particular region in the graph, by creating a box around portion of graph **302** using a mouse for example, to view that portion of graph **302** in greater detail. A date **308** corresponding to the temperature data may also be displayed. A user can also drag and drop, from tree **254** shown in FIG. **8** for example, additional temperature sensors **42** into graph **302**, and the device data for the additional temperature sensors **42** will also be displayed in graph **302**, along with the device IDs for the additional temperature sensors. When viewing temperature data in substantially real time, the times displayed on the x-axis may advance and lines **304** may move, as appropriate.

FIG. **10** illustrates an example display **310** of an example POS report **312**. A user may specify any appropriate parameters in area **314** for generating report **312**. Report **312** includes POS data responsive to the parameters specified in area **314**. Additionally, a user may select a particular transac-

tion from the list of transactions **316** in report **312**. For example, when a user double-clicks or otherwise selects a particular transaction, a new window may be opened (in display **250** for example) that displays the details for the transaction. Such details may include POS data associated with the receipt for the transaction. POS report **312** may be viewed online, printed, or otherwise accessed by a user of client system **12**.

FIG. **11** illustrates an example display **320** for downloading video data from premises **16**. Display **320** includes a camera-selection menu **322** for selecting a camera **34** whose video data is to be downloaded. Display **320** also includes a text box **324** in which a user may type a description of the video to be downloaded. This description may be assigned as the file name for the video file that is communicated from premises **16** in response to the download request. Display **320** also includes boxes **326** and **328** for specifying the start date and start time, respectively, for the video data to be downloaded. Additionally, a selection menu **330** may be used to select the duration of the of the time interval for which video data should be downloaded. When the user selects "OK," a request is communicated to premises **16** for the specified video data.

FIG. **12** illustrates an example display **340** for selecting one or more downloaded videos to be played or deleted. Although referred to as downloaded video, downloaded video may comprise a collection of downloaded video images, which, when played in sequence, recreate a scene. The user may select a downloaded video (e.g., collection of video images) from the list displayed in window **342**, and then select the play button to view the selected downloaded video (e.g., collection of video images) or the delete button to delete the selected downloaded video. Additionally, although not shown, a user may right-click on a particular downloaded video (e.g., collection of video images), and a selection menu will be displayed. One option in the selection menu may be to send the selected downloaded video to one or more recipients via email. The user may select the email option and client application **70** may automatically interface with the user's email application installed on client system **12** to initiate sending of an email with the downloaded video as an attachment. As another option in the selection menu, the user may be able to save the downloaded video to a particular location (e.g., hard disk, CD-ROM, or any other suitable location or device).

FIG. **13** illustrates an example display **350** for communicating one or more media files to registrar system **14**. The user may enter a description of the media file in box **352**, a transcript of the media file (if appropriate) in box **354**, and enter or browse for the location of the selected media file in box **356**. In certain embodiments, when the user selects a "save" button **358**, the media file will be automatically communicated to registrar system **14**.

FIG. **14** illustrates an example display **360** showing one or more media files **362** in a user's media library. Various details relating to media files **362** may also be displayed. A user may select an "add new media" hyperlink **364** to add new media files **362** to the user's media library.

FIG. **15** illustrates an example display **370** showing one or more media schedules **372** associated with a user. Various details relating to media schedules **372** may also be displayed, including, for example, a description of the media and a brief summary of the schedule.

FIG. **16** illustrates an example display **380** for creating a new media schedule **372**. A user may select one or more audio files to be associated with the schedule **372** in box **382**, select one or more premises **16** to which schedule **372** will apply in box **384**, and select details relating to the schedule in area **386**.

FIG. **17** illustrates an example display **390** for recording a premises announcement. For example, a user may interact with display **390** to record a marketing announce for a premises **16**. The user may select in box **392** one or more premise **16** at which the announcement is to be displayed. The user may specify the announcement to be played using the tools in area **394**. Additionally, the user may select to record a new announcement using button **396**. The user may preview the file to be played by selecting preview file button **398**. To play the file at the selected premises **16** by selecting play at store now button **400**.

FIGS. **18**A-**18**E illustrate an example method for processing requests communicated by remote client system **12**. FIG. **18**A illustrates an example method for determining the type of request and what actions initially to perform based on that determination. At step **500**, a user of client system **12** submits a request, using client application **70** for example. The request may include a request for device data, such as video data, facility management data, POS data, or any other suitable type of data. Additionally or alternatively, the request may include a command. In certain embodiments, if the request is associated with a device **24** at premises **16**, then the request may include the device ID of the device **24** at premises **16** associated with the request.

At step **502**, client application **70** determines whether the request submitted by the user of client system **12** is a command. For example, the request may include a request to affect one or more facility management devices **28** or other equipment located at premises **16**. Such a request may include, for example, a request to affect the state of one or more output switches **46**. As another example, the request may include a request to play one or more media files at a premises **16** or to store one or more media files at premises **16** or at registrar system **14**. As another example, the request may include instructions to change one or more configurations of one or more facility management devices **28**, video devices **26**, media devices **32**, user configuration information **106**, premises configuration information **108**, one or more schedules, or any other suitable components or information of system **10**, as appropriate. Although these example commands have been described, the present invention contemplates a user of client system **12** being able to submit any suitable type of command, according to particular needs. In certain embodiments, the method may include determining whether the user who submitted the command has the appropriate authority to submit such a request. If at step **502** the request is determined to be a command, then the method proceeds to FIG. **18**B, described below. If at step **502** the request is determined not to be a command, then the method proceeds to step **504**.

At step **504**, client application **70** determines whether the request is a request for device data associated with a device **24** at a premises **16**. The request may include a request for device data, such as video data, facility management data, POS data, or any other suitable type of data. In certain embodiments, the request also includes the device ID of the device **24** at premises **16** associated with the device data requested. If at step **504**, the request is determined not to be for device data associated with a device **24** at premises **16**, then the method proceeds to step **506**. At step **506**, client application **70** determines the type of request submitted by the user, and processes the request appropriately. For example, the request may include a request to process the user's authentication information. If at step **504** the request is determined to be a request for device data, then the method proceeds to step **508**.

At step **508**, client application **70** determines whether the request submitted by the user of client system **12** is a request

for video data associated with a video device **26** located at one of premises **16**. If client application **70** determines at step **508** that the request is a request for video data, then the method proceeds to FIG. **18**C, described below. If client application determines at step **508** that the request is not for video data, then client application **70** determines at step **510** whether the request is a request for POS data associated with a POS device **30** located at one of premises **16**. If client application **70** determines at step **510** that the request is a request for POS data, then the method proceeds to FIG. **18**D, described below. If client application **70** determines at step **510** that the request is not a request for POS data, then in certain embodiments, client application **70** determines at step **512** that the request is a request for facility management device data associated with a facility management device **28** located at one of premises **16**.

In certain embodiments, the determinations made at steps **502** through **512** may be a single determination. For example, the request may include an identifier indicating the type of the request (i.e., whether it is a command; a request for video data, POS data, or facility management device data; or any other suitable type of request). In such embodiments, client application **70** may determine from the identifier the type of the request in a single determination, and proceed accordingly. Additionally or alternatively, requests of particular types or for particular types of device data may each comprise a different format, and client application **70** may be able to determine the type of the request based on the format of the request. In any event, the present invention contemplates client application **70** determining the type of the request in any suitable manner, according to particular needs. Although the determination of the type of request is described primarily as being performed by client application **70**, the present invention contemplates any suitable component of system **10** making this determination.

Returning to step **502** in FIG. **18**A, if client application **70** determines that the request is a command, then the method proceeds to FIG. **18**B. FIG. **18**B illustrates an example method for processing example commands submitted by a user of client system **12**. Although certain example commands are described with reference to FIG. **18**B, the present invention contemplates system **10** being capable of processing any suitable commands, according to particular needs.

At step **514**, client application **70** may determine whether the command is a media command, requesting that media be played at one or more premises **16** using a media device **32**. For example, the command may request that a certain audio or video file be played at one or more premises **16** at one or more times. The command may include the device ID of the media device **32** with which the user desires the media file to be played. In certain embodiments, the command may include the media file to be played.

If the command is determined at step **514** to be a media command, then at step **516**, client application **70** may determine whether the media command should be communicated to registrar system **14** or directly to one or more desired premises **16**. For example, in certain embodiments, requests to play immediately a recorded message may be communicated directly to one or more desired premises **16**. As another example, requests to play media at one or more scheduled times may be communicated to registrar system **14**.

If it is determined at step **516** that the media command should be communicated directly to one or more premises **16**, then at step **518**, client application **70** may communicate the media command to one or more specified premises **16**. At step **520**, the one or more specified premises **16** plays the media file using one or more media devices **32**, in accordance with the media command. If it is determined at step **516** that the media command should be communicated to registrar system **14**, then at step **522**, client application **70** may communicate the media command to registrar system **14**. At step **524**, registrar system **14** may process the media command in any suitable manner. For example, registrar system **14** may store the media file associated with the media command and any associated scheduling information.

Returning to step **514**, if it is determined at step **514** that the command is not a media command, then the method proceeds to step **526**. At step **526**, client application **70** may determine whether the command is a command for a facility management device **28** associated with a premises **16**. In certain embodiments, the command may include a command to affect the state of an output switch **46** at a premises **16**. As just one example, a particular output switch may control the state of one or more lights at premises **16**. In this example, the command may specify that the state of the output switch be changed to turn the light on, assuming the current state of the light is off.

If it is determined at step **526** that the command is not a command for a facility management device **28**, then at step **528**, client application may determine the type of the command and process the command appropriately. The command in this case may include any suitable type of command, according to particular needs.

If it is determined at step **526** that the command is a command for a facility management device **28**, then at step **530**, client application **70** may communicate the command to one or more premises **16**. Although the command for a facility management device **28** is described primarily as being communicated directly to the one or more premises **16**, the command may be communicated to registrar system **14**, which may then forward the command to the one or more premises **16** or otherwise process the command, without departing from the spirit and scope of the present invention. At step **532**, the one or more premises **16** to which the command was communicated may process the command. For example, assuming the command is for a single premises **16**, computer system **22** at the premises **16** may issue a command to a facility management device **28** specified in the command. The computer system **22** may communicate an updated device status for the affected facility management device **28** to registrar system **14**. Registrar system **14** may then update the device status of the facility management device **28** and, in certain embodiments, communicate the updated to client system **12**.

Returning to step **508** in FIG. **18**A, if client application **70** determines that the request is a request for video data, then the method proceeds to FIG. **18**C. FIG. **18**C illustrates an example method for processing a request for video data associated with a video device **26** located at one of premises **16**. At step **534**, client application **70** communicates the request to a particular premises **16** identified in the request. Client application **70** may determine the particular premises **16** that is the intended recipient of the request in any suitable manner. Additionally, client application **70** may communicate the request to premises **16** in the same format as it was submitted by the user or in a different format than it was submitted by the user, according to particular needs.

At step **536**, the particular premises **16** receives the request communicated by client application **70**. For example, computer system **22** at the particular premises **16** may receive the request. At step **538**, computer system **22** determines whether the request is a request for substantially real-time video data. If computer system **22** determines that the request is not for substantially real time video data, then at step **540**, computer

system **22** determines that the request is a request to download video data. As described above with reference to FIG. **1**, a request to download video data may include one or more parameters, including, for example, a device ID of a video device, a start time, an end time, and any other suitable information.

At step **542**, computer system **22** retrieves video data responsive to the request. For example, video application **36** may retrieve the video data responsive to the request. The responsive video data may be retrieved from the hard drive or other suitable memory associated with computer system **22**. Additionally, video application **36** may retrieve the responsive video data base, at least in part, on the device ID, start time, and end time included in the request. For example, video application **36** may access an appropriate data structure for the video device **26** associated with the device ID specified in the request. Based on the start time and end time, video application **36** may determine a first video image or time stamp responsive to the request, a last video image or time stamp responsive to the request, and any intervening video images or time stamps responsive to the request.

At step **544**, computer system **22** communicates a video packet to client system **12** that includes the responsive video images and time stamps. For example, the video packet may be a file that includes the responsive video images and time stamps. At step **546**, client system **12** receives the video packet that includes the responsive video images and time stamps. At step **548**, client system **12** stores the video packet. For example, client application **70** may store the received video packet in a memory associated with client system **12**.

Returning to step **538**, if computer system **22** determines that the request received from client system **12** is a request for substantially real-time video data, the method proceeds to step **550**. The request for substantially real-time video data may include a device ID of a particular video device **26**, an indicator of whether client system **12** has received a previous video image during the current login session for the particular video device **26**, an identification (e.g., a time stamp and/or other suitable information) of the last video image received by client system for that particular video device **26**, if appropriate, or any suitable other information according to particular needs. At step **550**, video application **36** determines the appropriate video data to communicate to client system **12** in response to the request. Video application **36** may determine the appropriate video data in any suitable manner.

In certain embodiments, video application **36** determines whether client system **12** has previously received video data for the particular video device **26** during the current login session, based on the indicator included in the request for example. If video application **36** determines that client system **12** has not previously received video data for the particular video device **26** during the current login session, video application **36** may determine that the appropriate video data is a next collected video image and its associated time stamp. If video application **36** determines that client system **12** has previously received video data for the particular video device **26** during the current login session, video application **36** may retrieve the video image identified in the request as the last video image received by client system **12**, based on the time stamp information for example. Video application **36** may collect a next video image captured by the particular video device **26**. It will be understood that the collection of the next video image by video application **36** in some cases may not be in response to the request. For example, video application **36** may be substantially continuously collecting video images captured by the particular video device **26**, and the next video image may be any video image collected substantially at the time the request is received (e.g., slightly before, at the same time, or slightly after receipt of the request).

Video application **36** may determine whether the appropriate video data to communicate to client system **12** should include the next collected video image. For example, in certain embodiments, video application **36** determines whether motion has occurred since the last video image received by client system **12** and the collected next video image, and if so, video application **36** may determine that the appropriate video data to communicate to client system **12** should include the collected next video image and its associated time stamp. In this example, if video application **36** determines that no motion has occurred since the last video image received by client system **12** and the collected next video image, video application **36** may determine that the appropriate video data to communicate to client system **12** should not included the collected next video image but should include the time stamp of the collected next video image.

At step **552**, video application **36** determines whether the determined appropriate video data includes a video image. If the determined video data does not include a video image, at step **554** video application may communicate a time stamp to client system **12**. Such a result may occur, for example, when client system **12** is currently displaying a video image and not motion has occurred since that currently displayed video image. At step **556**, client system **12** receives the time stamp and may display the time represented by the time stamp. For example, client application **70** may update a time displayed for the currently displayed video image at client system **12** with the time represented by the time stamp information. If video application **36** determines at step **552** that the determined appropriate video data includes a video image, then at step **558** video application **36** communicates the video image and its associated time stamp to client system **12**. At step **560**, client system **12** receives the video image and its associated time stamp, and may display the video image and the time represented by the time stamp.

Returning to step **510** in FIG. **18**A, if client application **70** determines that the request is a request for POS data, then the method proceeds to FIG. **18**D. FIG. **18**D illustrates an example method for processing a request for POS data associated with a POS device **30** located at one of premises **16**. At step **562**, client application **70** determines whether the request for POS data is a request for substantially real-time POS data.

If client application **70** determines that the request is a request for substantially real-time POS data, then the method proceeds to step **564**. The request for substantially real time POS data may include any suitable parameters, including a premises ID of a particular one of premises **16** and the device ID of a particular POS device **30** located at the particular premises **16**. At step **564**, client application **70** initiates communication of the request for substantially real-time POS data to the particular premises **16** specified in the request. For example, client application **70** may determine the identity of the particular premises **16** based on the premises ID included in the request. At step **566**, computer system **22** at the particular premises **16** communicates POS data for the POS device **30** identified in the request to client system **12** in substantially real time. For example, POS application **50** may receive and process POS data from the POS device **30** identified in the request, and may communicate the received POS data to client system **12** in substantially real time. At step **567**, client application **70** receives and displays at least a portion of the POS data received from computer system **22** at the particular premises **16**.

At step **568**, computer system **12** at the particular premises **16** determines whether the communications connection

between computer system **12** and client system **12** is closed. For example, in certain embodiments, when a client application requests substantially real-time POS data, a communications connection may be established between client system **12** and computer system **22** at the appropriate premises **16**, using network **18** and the appropriate links **20**. This connection may remain open until the client decides to no longer receive POS data in substantially real time, by closing a cash register display at client system **12** for example. Although this technique has been described, the present invention contemplates substantially real-time POS data being communicated to client system **12** in any suitable manner.

If computer system **22** determines at step **568** that the connection is not closed, then POS application may continue to communicate POS data to client system **12** in substantially real time. If computer system **22** determines at step **568** that the connection is closed, then POS application may cease communicating POS data to client system **12**.

Returning to step **562**, if client application **70** determines that the request received from client system **12** is not a request for substantially real-time POS data, then the method proceeds to step **572**. For example, client application **70** may determine that the request for POS data is a request for POS data stored in database **52** at registrar system **14**. As another example, client application **70** may determine that the request for POS data is a request for one or more historical reports of POS data. At step **572**, client application **70** may initiate communication of the request to registrar system **14**. At step **574**, registrar system **14** retrieves POS data responsive to the request. For example, registrar system **14** may retrieve the POS data responsive to the request from database system **62** associated with registrar system **14**. This retrieval of POS data may be based on one or more parameters specified in the request, such as one or more time parameters, one or more date parameters, one or more device ID parameters, one or more premises ID parameters, or any other suitable parameters according to particular needs.

At step **576**, registrar system **14** communicates the retrieved POS data responsive to the request to client system **12**. At step **578**, client system **12** receives the POS data communicated by registrar system **14**, and at step **580**, client system **12** displays at least a portion of the POS data received from registrar system **14** at client system **12**. For example, client application **70** may perform any suitable processing on the received POS data and then display at least a portion of the POS data on a display of client system **12**.

Returning to step **510** in FIG. **18**A, if client application **70** determines that the request received from client system **12** is not a request for POS data, then, at step **512**, client application **70** may determine that the request is a request for facility management device data and the method proceeds FIG. **18**E. FIG. **18**E illustrates an example method for processing a request for facility management device data associated with a facility management device **28** located at one of premises **16**. The request may one or more parameters, including for example a premises ID of a particular premises **16**, a device ID of a facility management device **28** located at the particular premises **16**, or any other suitable information.

At step **582**, client application **70** may initiate communication of the request for facility management device data to registrar system **14**. In certain embodiments, at least requests for facility management device data associated with input switches and sensors are communicated to registrar system **14**, although the present invention contemplates any suitable types of requests for facility management device data being communicated to registrar system **14**. At step **584**, registrar system **14** may retrieve facility management device data responsive to the request. For example, based on the one or more parameters included in the request, management application **64** at registrar system **14** may access one or more tables stored on database **62** to retrieve the facility management device data responsive to the request. At step **586**, registrar system **14** communicates the retrieved facility management device data responsive to request to client system **12**. At step **588**, client system **12** receives the facility management device data responsive to the request. Client application **70** may display the facility management device data responsive to the request at step **590**.

While the steps of the example methods described with reference to FIGS. **18**A-**18**E are described in a particular order, the present invention contemplates the steps of the methods being performed in any suitable order according to particular needs. Additionally, while a single client system **12** is described with reference to FIGS. **18**A-**18**E, it should be understood that registrar system may receive requests from multiple client system **12** for device data associated with devices **24** at a plurality of premises **16**. It will be understood that the requests communicated from client systems **12** may include any suitable identifier(s) to enable registrar system **14** to determine the client application **12** that communicated the request.

FIG. **19** illustrates an example method for determining whether to store a video image collected from a video device **26** at premises **16**. Although this example method is described, the present invention contemplates determining whether to store video images collected from video devices **26** in any suitable manner, including storing every video image collected from video devices **26**. At step **600**, video application **36** collects a first video image captured by a particular video device **26**. In certain embodiments, the first video image may be the last stored video image collected from the video device **26**. At step **602**, video application **36** divides the first video image into a plurality of sections. At step **604**, video application **36** calculates a value of each section of the first video image. For example, video application **36** may calculate the average brightness of each section of the first video image. At step **606**, video application **36** collects a second video image captured by the particular video device **26**. At step **606**, video application **36** divides the second video image into a plurality of sections. At step **610**, video application **36** calculates a value of each section of the second video image. For example, video application **36** may calculate the average brightness of each section of the second video image.

At step **612**, video application **36** may compare the value of each section of the first video image to the value of a corresponding section of the second video image. At step **614**, video application **36** determines whether motion has occurred between the first and second video images based on the comparison. In certain embodiments, video application **36** may make this determination after all values of each section of the first video image have been compared to the values of corresponding sections of the second video image. In certain other embodiments, the determination may be made after each comparison of a value of a section of the first video image to a value of a corresponding section of the second video image. In such embodiments, the determination may be repeated until motion is determined for particular corresponding sections of the first and second video images or until the last corresponding section of the first and second video images are compared and no motion is determined to have occurred. The comparison may be made by determining whether values

of section of the first image differ from values of corresponding sections of the second image by at least a predefined delta value.

If client application **36** determines at step **614** that no motion occurred between the first and second video images, then at step **616**, client application **36** may determine that the second video image should not be stored, but may store a time stamp for the second video image. If client application **36** determines at step **614** that motion has occurred between the first and second video images, then at steps **618** and **620**, client application **36** may store the second video image and a time stamp for the second video image, respectively.

While the steps of the example method described with reference to FIG. **19** are described in a particular order, the present invention contemplates the steps of the method being performed in any suitable order and substantially simultaneously, according to particular needs.

FIG. **20** illustrates an example method for correlating in time the displays at client system **12** of device data for two or more devices **24**. For example, client application **70** may display at client system **12** device data for each of a plurality of devices **24** each located at one or more of premises **16**. The displays may each be provided in a corresponding window, such as windows **256** illustrated in FIG. **8**. The device data for each device **24** may be displayed in a separate window on client system **12**. A user may be able to correlate in time the displays of each device data. Although the example method described with respect to FIG. **20** involves correlating in time two displays of device data, the present invention contemplates correlating in time any number of displays of device data.

At step **700**, client application **70** receives a request from a user of client system **12** to correlate in time first and second displays each corresponding to device data for first and second devices. For example, a user may submit a request to create a display group for the first and second devices. As another example, the first display may already be a member of a device group and the user may submit a request to add the second display to the display group of the first display. In certain embodiments, the user may right-click on the first or second display and make the request to correlate the two displays from a list of options.

At step **702**, client application **70** creates a display group that includes the first and second displays. The manner in which client application creates the display group may depend on the request made by the user. For example, client application **70** may create a new display group for the first and second displays. As another example, client application **70** may add the first display to a current display group of the second display. As another example, client application **70** may add the second display to a current display group of the first display.

At step **704**, client application **70** communicates a request for the first display, the request corresponding to a device **24** associated with the device data displayed in the first display and the request including a time stamp. For example, if the first display includes video data for a particular video device **26** at premises **16***a*, then a request may be communicated to premises **16***a* for video data corresponding to the time stamp and associated with particular video device **26**. At step **706**, client application **70** communicates request for the second display, the request corresponding to a device **24** associated with device data displayed in the second display and the request including the same time stamp as the time stamp included in the first request communicated at step **704**. In certain embodiments, the one or more first and second requests communicated at steps **704** and **706** are communicated substantially simultaneously. Additionally, although the requests are described as being for displays that include device data associated with a single device **24**, the present contemplates a display showing device data for multiple devices **24** (each at the same or different premises **16**), and a request being communicated for device data associated with each of the devices **24** and each including the same time stamp.

At step **708**, client system **12** receives the device data responsive to the first request, the device data being associated with the time stamp included in the request. At step **710**, client system **12** receives the device data responsive to the second request, the device data being associated with the time stamp included in the request. At step **712**, client application **70** may display the received device data responsive to the first request in the first display and the received device data responsive to the second request in the second display substantially simultaneously. In certain embodiments, using the above-described method may allow the first and second displays to be substantially correlated in time such that the device data displayed in the first display corresponds to the same time as the device data displayed in the second display.

While the steps of the example method described with reference to FIG. **20** are described in a particular order, the present invention contemplates the steps of the method being performed in any suitable order and substantially simultaneously, according to particular needs.

Although the present invention has been described in several embodiments, diverse changes, substitutions, variations, alterations, and modifications may be suggested to one skilled in the art, and it is intended that the invention may encompass all such changes, substitutions, variations, alterations, and modifications falling within the spirit and scope of the appended claims.

What is claimed is:

1. A system for remotely monitoring, controlling, and managing one or more remote premises, comprising:

a server system operable to communicate with one or more remote client systems, the client systems being remote from the one or more premises;

a database system associated with the server system and operable to store configuration information for a plurality of devices located at a remote premises, the plurality of devices comprising one or more camera devices and one or more facility management devices;

the server system operable to:

receive from the one or more premises device data for the one or more facility management devices located at the remote premises;

initiate storage of at least a portion of the received device data in the database system; and

communicate, in response to a request received from a particular one of the one or more remote client systems for device data for at least one facility management device, stored device data for the at least one facility management device responsive to the request to the particular client system.

2. The system of claim **1**, wherein the server system is further operable to:

receive, from the particular client system, a request to issue a command to a particular device at a particular premises, the command specifying an activity to perform with respect to one or more of the devices located at the particular premises; and

communicate the command to a computer system at the particular premises, the computer system operable to

execute the command by performing the activity with respect to the one or more devices.

3. The system of claim 1, wherein:

the database system is further operable to store a schedule specifying one or more times when a command should be communicated to a computer system at the particular premises, the command specifying an activity to perform with respect to one or more devices located at the particular premises and having been configured by a user of the particular client system; and

the server system is further operable to communicate the command at the one or more times specified in the schedule to the computer system at the particular premises, the computer system operable to execute the command by performing the activity with respect to the one or more devices.

4. The system of claim 1, wherein:

the database system is further operable to store:

one or more media files associated with a particular premises; and

a schedule specifying one or more times when a particular one of the media files should be played at the particular premises, the schedule having been configured by a user of the particular client system; and

the server system is further operable to:

communicate the one or more media files to a computer system at the particular premises; and

communicate to the computer system at the particular premises a command to play the particular media file at the one or more times.

5. The system of claim 1, wherein:

the database system is further operable to store configuration information for each of a plurality of alerts, each alert being associated with one or more of the devices located at the particular premises, the configuration information for each alert specifying an action to be performed by the server system in response to receiving a notification from a computer system at the particular premises that the alert has been triggered; and

the server system is further operable to, in response to receiving a notification from the computer system at the particular premises that a particular alert has been triggered:

access the database system to determine the action to be performed in response to receiving the notification; and

execute the action to be performed in response to receiving the notification.

6. The system of claim 5, wherein the action to be performed comprises one or more of:

communicating a notification that the particular alert has been triggered, the configuration information for the particular alert specifying a recipient for the notification; and

communicating a command to a computer system at the particular premises, the command specifying an activity to perform with respect to one or more devices located at the particular premises, the computer system operable to execute the command by performing the activity with respect to the one or more devices.

7. The system of claim 1, wherein:

a particular one of the plurality of devices located at the particular premises comprises a point-of-sale (POS) device; and

the server system is further operable to:

receive from a computer system at the particular premises POS data generated by the POS device; and

store the received POS data in the database system.

8. The system of claim 7, wherein the server system is further operable to:

receive a request from the particular client system for POS data matching one or more parameters;

access the database system to retrieve POS data matching the one or more parameters; and

communicate the POS data matching the one or more parameters to the particular client system.

9. The system of claim 1, wherein the one or more facility management devices each comprise one or more of:

a temperature sensor;

a chemical sensor;

a motion sensor;

a pressure sensor;

an input switch; and

an output switch.

10. A method for remotely monitoring, controlling, and managing one or more remote premises, comprising:

storing configuration information for a plurality of devices located at a remote premises, the plurality of devices comprising one or more camera devices and one or more facility management devices;

receiving from the one or more premises device data for the one or more facility management devices located at the remote premises;

initiating storage of at least a portion of the received device data in the database system;

communicating, in response to a request received from a remote client system for device data for at least one facility management device, stored device data for the at least one facility management device responsive to the request to the client system, the client systems being remote from the one or more premises.

11. The method of claim 10, further comprising:

receiving, from the client system, a request to issue a command to a particular device at a particular premises, the command specifying an activity to perform with respect to one or more of the devices located at the particular premises; and

communicating the command to a computer system at the particular premises, the computer system operable to execute the command by performing the activity with respect to the one or more devices.

12. The method of claim 10, further comprising:

storing a schedule specifying one or more times when a command should be communicated to a computer system at the particular premises, the command specifying an activity to perform with respect to one or more devices located at the particular premises and having been configured by a user of the client system; and

communicating the command at the one or more times specified in the schedule to the computer system at the particular premises, the computer system operable to execute the command by performing the activity with respect to the one or more devices.

13. The method of claim 10, further comprising:

storing one or more media files associated with a particular premises; and

storing a schedule specifying one or more times when a particular one of the media files should be played at the particular premises, the schedule having been configured by a user of the client system;

communicating the one or more media files to a computer system at the particular premises; and

communicating to the computer system at the particular premises a command to play the particular media file at the one or more times.

14. The method of claim 10, further comprising:
storing configuration information for each of a plurality of alerts, each alert being associated with one or more of the devices located at the particular premises, the configuration information for each alert specifying an action to be performed in response to receiving a notification from a computer system at the particular premises that the alert has been triggered; and
in response to receiving a notification from the computer system at the particular premises that a particular alert has been triggered:
determining the action to be performed in response to receiving the notification by accessing the stored configuration information; and
executing the action to be performed in response to receiving the notification.

15. The method of claim 14, wherein the action to be performed comprises one or more of:
communicating a notification that the particular alert has been triggered, the configuration information for the particular alert specifying a recipient for the notification; and
communicating a command to a computer system at the particular premises, the command specifying an activity to perform with respect to one or more devices located at the particular premises, the computer system operable to execute the command by performing the activity with respect to the one or more devices.

16. The method of claim 10, wherein:
a particular one of the plurality of devices located at the particular premises comprises a point-of-sale (POS) device; and
the method further comprises:
receiving from a computer system at the particular premises POS data generated by the POS device; and
storing the received POS data.

17. The method of claim 16, wherein the method further comprises:
receiving a request from the client system for POS data matching one or more parameters;
retrieving POS data matching the one or more parameters; and
communicating the POS data matching the one or more parameters to the client system.

18. The method of claim 10, wherein the one or more facility management devices each comprise one or more of:
a temperature sensor;
a chemical sensor;
a motion sensor;
a pressure sensor;
an input switch; and
an output switch.

19. A system for monitoring, controlling, and managing a premises, comprising:
a computer system located at the premises and operable to communicate with a remote client computer and a remote server system;
a plurality of devices located at the premises and comprising one or more camera devices and a plurality of facility management devices;
the computer system operable to:
poll one or more of the facility management devices at predetermined times to obtain device data associated with the facility management devices;
communicate at least a portion of the obtained device data to the remote server system;
collect video data corresponding to video images captured by the one or more camera devices;
store at least a portion of the collected video data in a memory associated with the computer system; and
in response to a request from the remote client system, communicate video data responsive to the request to the remote client system.

20. The system of claim 19, wherein:
at least one of the facility management devices comprises a sensor;
the device data obtained from the sensor comprises sensor data; and
the computer system is operable to communicate the sensor data obtained from the sensor to the remote server system for storage at the remote server system at one or more predetermined times.

21. The system of claim 19, wherein:
at least one of the facility management devices comprises an input switch having a state;
the device data obtained from the input switch comprises the state of the input switch; and
the computer system is operable to communicate the state of the input switch to the remote server system at one or more predetermined times.

22. The system of claim 19, wherein:
at least one facility management device comprises an output switch operable to receive a command to affect a state of the output switch and to change its state in response to the command; and
the computer system is operable to, in response to receiving a command from the remote server system, the command indicating that the state of the output switch should be changed, change the state of the output switch.

23. The system of claim 19, wherein:
a particular one of the plurality of devices located at the premises comprises a point-of-sale (POS) device, the POS device operable to generate POS data associated with the premises, the POS data comprising one or more transactions; and
the computer system is further operable to:
receive the POS data from the POS device;
parse the POS data to determine the one or more transactions; and
communicate at least a portion of the POS data to the remote server system.

24. The system of claim 23, wherein the computer system is operable to:
receive from the remote client system a request to receive POS data associated with the POS device in substantially real time; and
communicate the portion of the POS data to the remote client system in substantially real time.

25. The system of claim 19, wherein the computer system located at the premises is operable to:
collect the video data from a particular one of the one or more video cameras, the video data comprising one or more images captured by the particular video camera;
associate each collected video image with a time stamp;
determine whether to store each video image in a memory associated with the computer system located at the premises;
if the computer system determines that a collected video image should be stored, store the video image and its associated time stamp in the memory; and
if the computer system determines that a collected video image should not be stored, store the time stamp associated with the video image in the memory.

26. The system of claim 25, wherein the computer system located at the premises is operable to:
receive a request from the remote client computer, the request being a request to receive video data from the particular camera device in substantially real time; and
after receiving the request:
if the computer system determines that a video image should be stored, communicate the video image and its associated time stamp to the client computer; and
if the computer system determines that a video image should not be stored, communicate time stamp associated with the video image to the client computer.

27. The system of claim 25, wherein the computer system located at the premises is operable to:
receive a request from the remote client computer to download video data collected by the computer system from the particular video camera, the request specifying a start time and an end time;
determine which of the stored video images and stored time stamps should be communicated to the client computer based at least on the start time and the end time specified in the request;
communicate the determined video images and their associated time stamp and the stored time stamps to the client system.

28. The system of claim 19, wherein the computer system located at the premises is further operable to:
store in a memory associated with the computer system one or more alerts;
determine whether any of the one or more alerts have been triggered;
if it is determined that an alert has been triggered, communicate an alert notification to the remote server system, the notification comprising an identification of the triggered alert.

29. The system of claim 19, wherein the computer system located at the premises is further operable to:
receive from the remote server system a command to play a media file; and
initiate playback of the media file.

30. Software for monitoring, controlling, and managing one or more remote premises, each remote premises comprising a plurality of devices, the software embodied in a computer-readable storage medium and when executed operable to:
communicate to a remote server system requests for device data associated with one or more facility management devices located at a first one of the one or more remote premises, the remote server system being remote from the one or more premises;
receive from the remote server system device data responsive to the request;
display the device data in a first window associated with a client system that is remote from the one or more premises and from the server system;
communicate to a computer system located at a second one of the one or more remote premises requests for device data associated with one or more video devices located at the second remote premises, the device data comprising video data;
receive from the computer system located at the second one of the one or more remote premises video data responsive to the request; and
display one or more video images of the video data in a second window associated with the client system.

31. The software of claim 30, wherein:
the device data displayed in the first window is associated with a first time stamp;
the video data displayed in the second window is associated with a second time stamp; and
the software is further operable to correlate in time the display of the device data displayed in the first window and the display of the video data displayed in the second window such that the time stamp associated with the device data displayed in the first window is substantially the same as the time stamp associated with the video data displayed in the second window.

32. The software of claim 31, wherein the first and second remote premises are remote from one another.

33. The software of claim 30, wherein the first and second premises comprise the same premises.

34. The software of claim 30, further operable to communicate to the remote server system a request for point-of-sale (POS) data associated with a POS device located at the second remote premises.

35. The software of claim 34, wherein:
the request for POS data comprises a request to view POS data in substantially real time; and
the software is further operable to receive POS data responsive to the request for POS data in substantially real time from the second remote premises.

36. The software of claim 34, wherein:
the request for POS data comprises a request to view POS data stored at the remote server system, the POS data stored at the remote server system comprising historical POS data associated with one or more of the remote premises; and
the software is further operable to receive POS data responsive to the request for POS data from the remote server system.

37. The software of claim 30, further operable to display a plurality of windows on a display of the client system, each window displaying one or more of:
facility management device data associated with the first remote premises;
POS data associated with the second remote premises; and
video data associated with the third remote premises.

38. The software of claim 30, further operable to communicate configuration information to the remote server system, the configuration information specifying one or more configurations for a device associated with one of the remote premises.

39. The software of claim 30, further operable to:
communicate a media file to the remote server system, the media file associated with at least one of the remote premises;
communicate to the remote server system scheduling information specifying when the media file should be played at the at least one remote premises.

40. The software of claim 30, wherein:
a device located at a particular remote premises comprises an output switch; and
the software is further operable to communicate a command to the particular remote server system, the command specifying an operation to be performed with respect to the output device located at the particular remote premises.

41. The software of claim 30, further operable to:
communicate a request to a the first premises to download video data collected by the computer system from a video camera at the first premises, the request specifying a start time and an end time;
receive from the first premises a plurality of video images responsive to the request, the plurality of video images having been collected and stored by the premises, each video image having an associated time stamp.

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