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Bertz et al.

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(54) **COMMUNICATION SYSTEM TO PROVIDE SELECTIVE ACCESS TO A WIRELESS COMMUNICATION DEVICE**

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Related U.S. Application Data

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(51) **Int. Cl.**

H04W 4/00	(2009.01)
H04L 29/12	(2006.01)
H04W 74/00	(2009.01)
G01K 13/00	(2006.01)
G01N 33/00	(2006.01)
G01R 21/00	(2006.01)
G01W 1/00	(2006.01)
H04L 29/08	(2006.01)
H04W 4/02	(2009.01)
H04L 29/06	(2006.01)

(52) **U.S. Cl.**

CPC ***H04L 61/20*** (2013.01); ***G01K 13/00*** (2013.01); ***G01N 33/004*** (2013.01); ***G01R 21/00*** (2013.01); ***G01W 1/00*** (2013.01); ***H04L 61/1511*** (2013.01); ***H04W 74/006*** (2013.01); *H04L 67/325* (2013.01); *H04L 69/28* (2013.01); *H04W 4/025* (2013.01)

(58) **Field of Classification Search**

CPC combination set(s) only.

See application file for complete search history.

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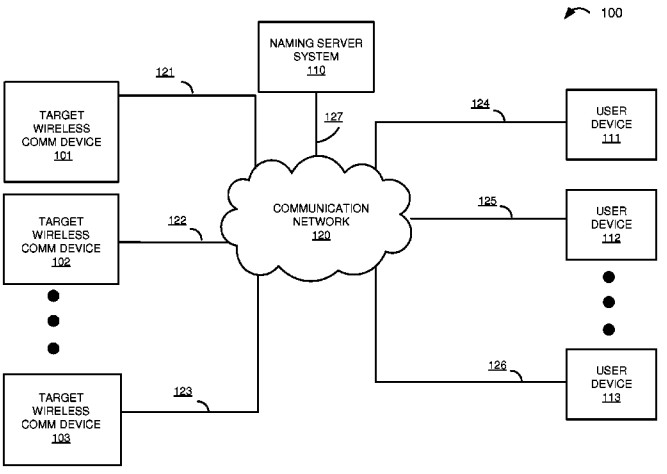
Primary Examiner — Frank Duong

(57) **ABSTRACT**

A communication system provides selective access to target wireless communication devices. A naming server system receives naming system registration messages from target wireless communication devices and address requests from user devices. The naming server system determines if the current time is within the access schedule for the target wireless communication device. If the current time is within the access schedule for the target wireless communication device, then the naming server system returns the address for the target wireless communication device. If the current time is not within the access schedule for the target wireless communication device, then the naming server system will respond with a timeframe when the target wireless communication device will be available for access.

20 Claims, 6 Drawing Sheets



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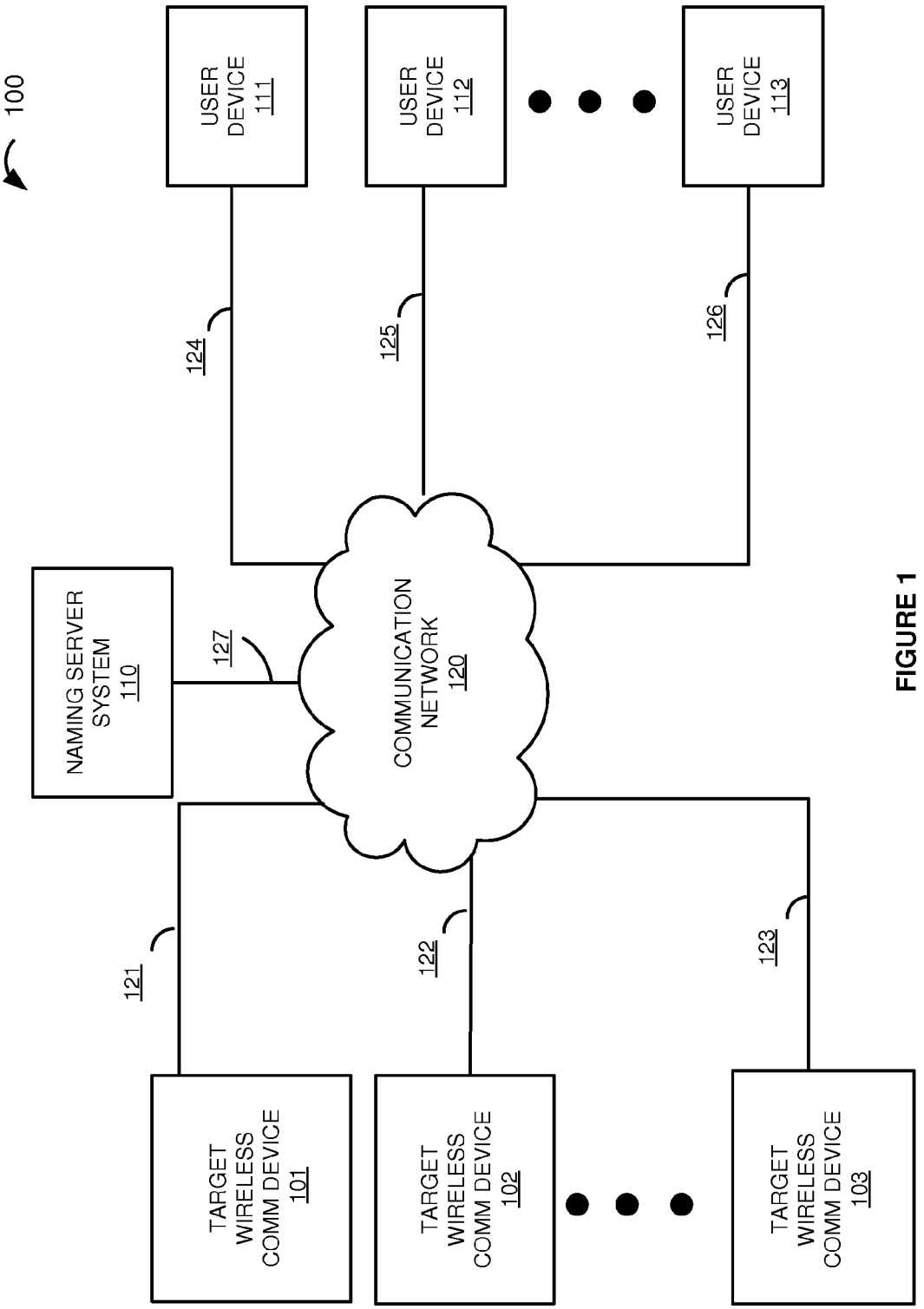
100
USER DEVICE 111
USER DEVICE 112
USER DEVICE 113
124
125
126
NAMING SERVER SYSTEM 110
127
COMMUNICATION NETWORK 120
121
122
123
TARGET WIRELESS COMM DEVICE 101
TARGET WIRELESS COMM DEVICE 102
TARGET WIRELESS COMM DEVICE 103

FIGURE 1

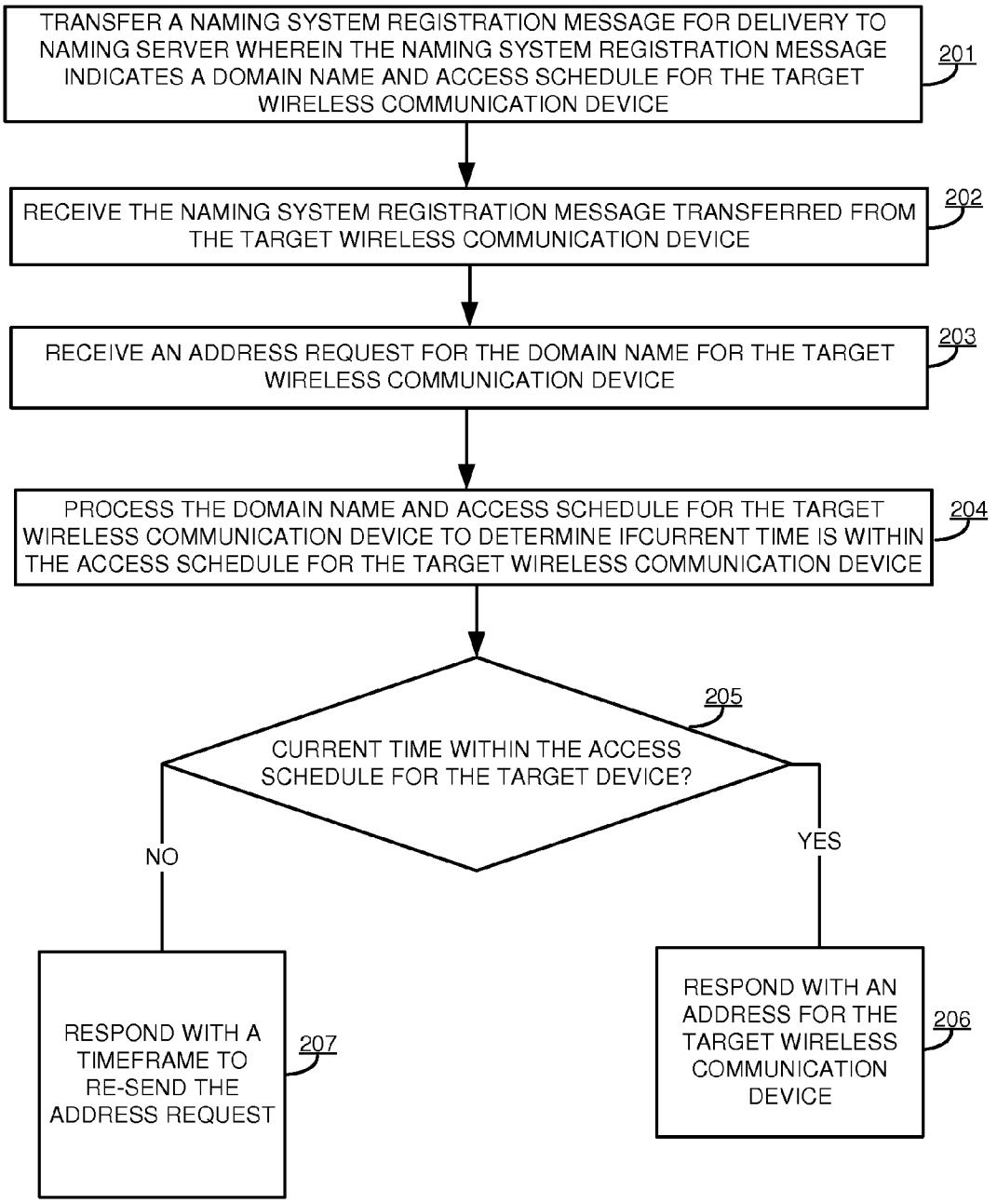
TRANSFER A NAMING SYSTEM REGISTRATION MESSAGE FOR DELIVERY TO NAMING SERVER WHEREIN THE NAMING SYSTEM REGISTRATION MESSAGE INDICATES A DOMAIN NAME AND ACCESS SCHEDULE FOR THE TARGET WIRELESS COMMUNICATION DEVICE
201
RECEIVE THE NAMING SYSTEM REGISTRATION MESSAGE TRANSFERRED FROM THE TARGET WIRELESS COMMUNICATION DEVICE
202
RECEIVE AN ADDRESS REQUEST FOR THE DOMAIN NAME FOR THE TARGET WIRELESS COMMUNICATION DEVICE
203
PROCESS THE DOMAIN NAME AND ACCESS SCHEDULE FOR THE TARGET WIRELESS COMMUNICATION DEVICE TO DETERMINE IFCURRENT TIME IS WITHIN THE ACCESS SCHEDULE FOR THE TARGET WIRELESS COMMUNICATION DEVICE
204
205
CURRENT TIME WITHIN THE ACCESS SCHEDULE FOR THE TARGET DEVICE?
NO
YES
RESPOND WITH A TIMEFRAME TO RE-SEND THE ADDRESS REQUEST
207
RESPOND WITH AN ADDRESS FOR THE TARGET WIRELESS COMMUNICATION DEVICE
206

FIGURE 2

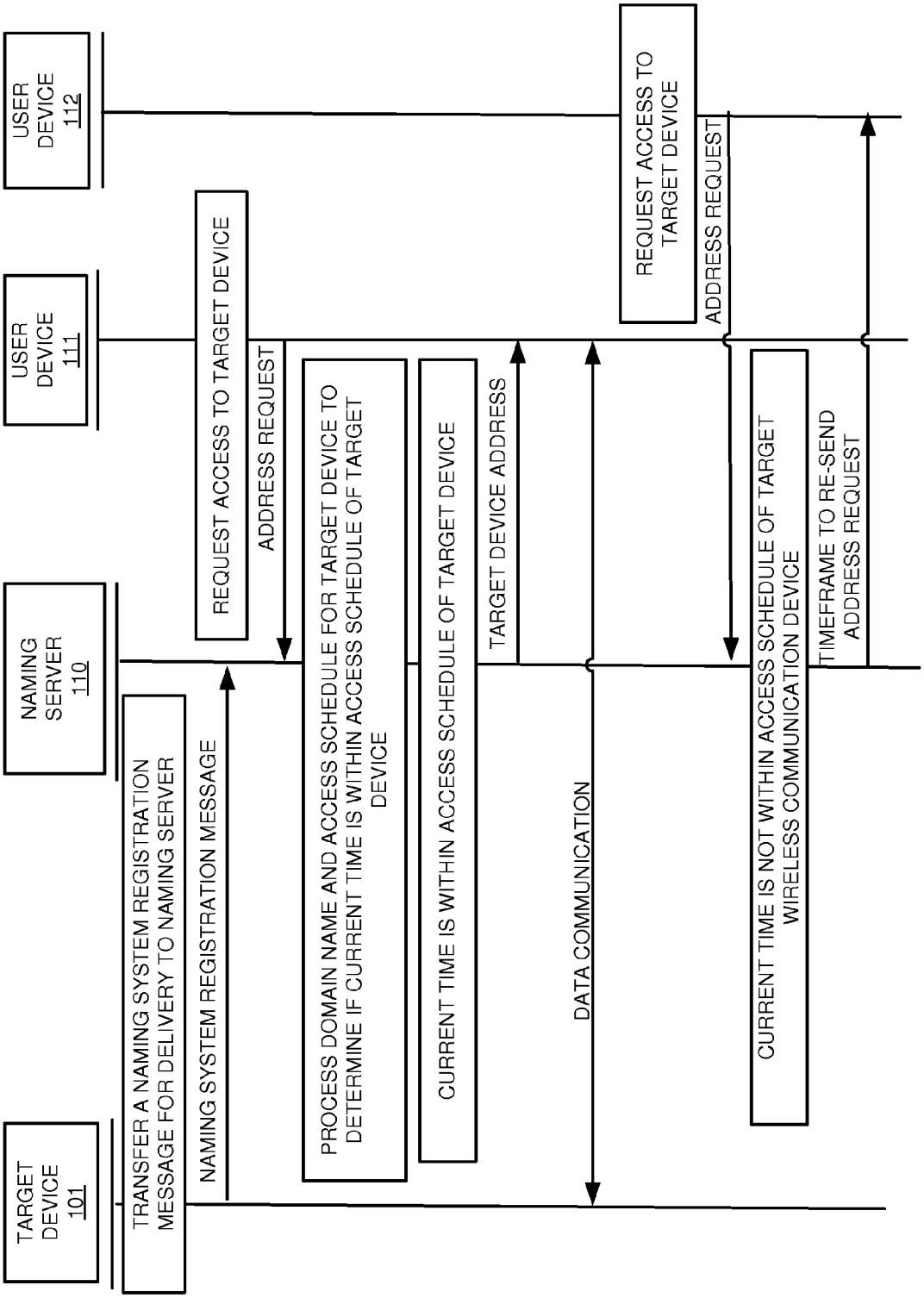
TARGET DEVICE 101
NAMING SERVER 110
USER DEVICE 111
USER DEVICE 112
TRANSFER A NAMING SYSTEM REGISTRATION MESSAGE FOR DELIVERY TO NAMING SERVER
NAMING SYSTEM REGISTRATION MESSAGE
REQUEST ACCESS TO TARGET DEVICE
ADDRESS REQUEST
PROCESS DOMAIN NAME AND ACCESS SCHEDULE FOR TARGET DEVICE TO DETERMINE IF CURRENT TIME IS WITHIN ACCESS SCHEDULE OF TARGET DEVICE
CURRENT TIME IS WITHIN ACCESS SCHEDULE OF TARGET DEVICE
TARGET DEVICE ADDRESS
DATA COMMUNICATION
REQUEST ACCESS TO TARGET DEVICE
ADDRESS REQUEST
CURRENT TIME IS NOT WITHIN ACCESS SCHEDULE OF TARGET WIRELESS COMMUNICATION DEVICE
TIMEFRAME TO RE-SEND ADDRESS REQUEST

FIGURE 3

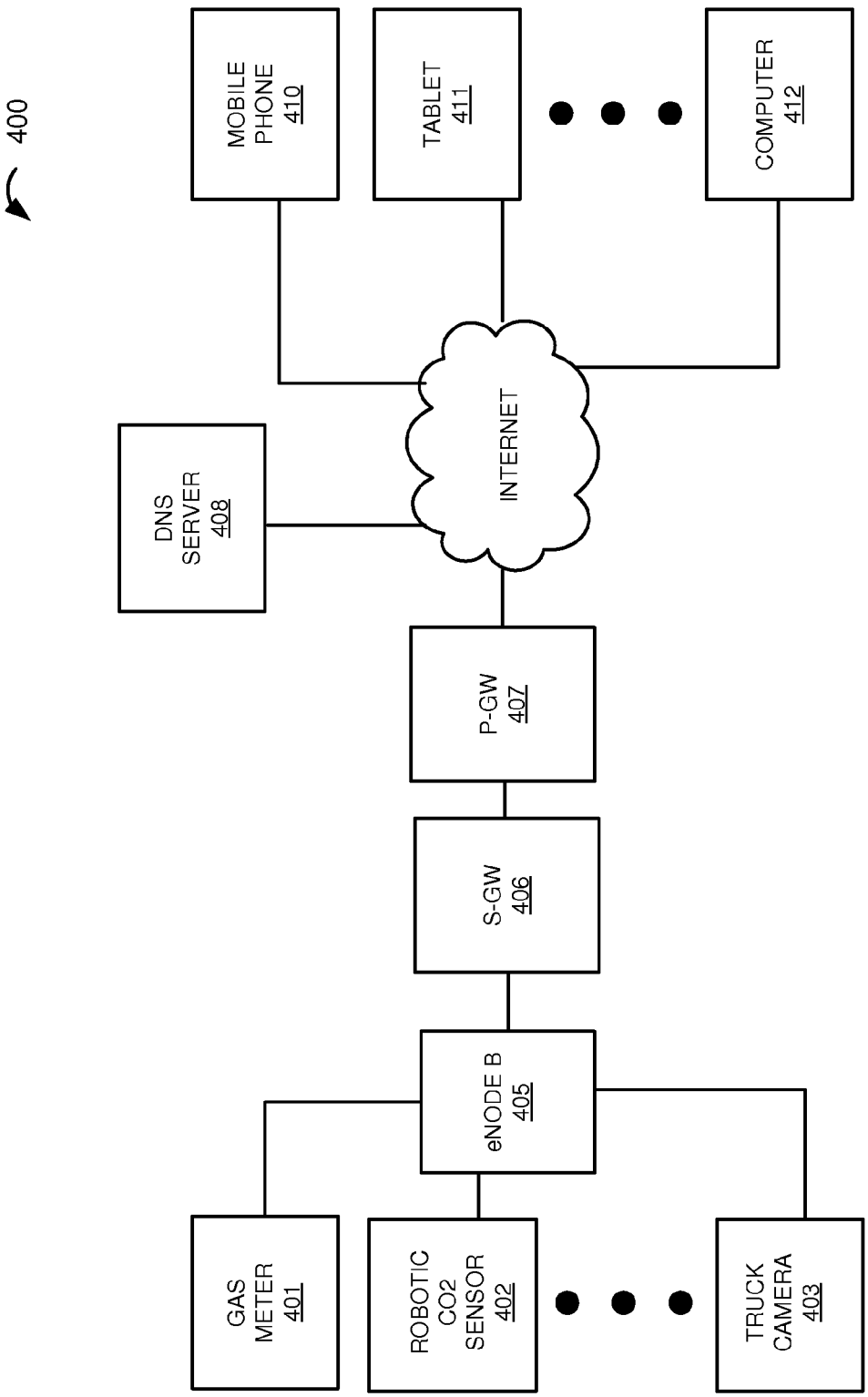
400
MOBILE PHONE 410
TABLET 411
COMPUTER 412
INTERNET
DNS SERVER 408
P-GW 407
S-GW 406
eNODE B 405
GAS METER 401
ROBOTIC CO2 SENSOR 402
TRUCK CAMERA 403

FIGURE 4

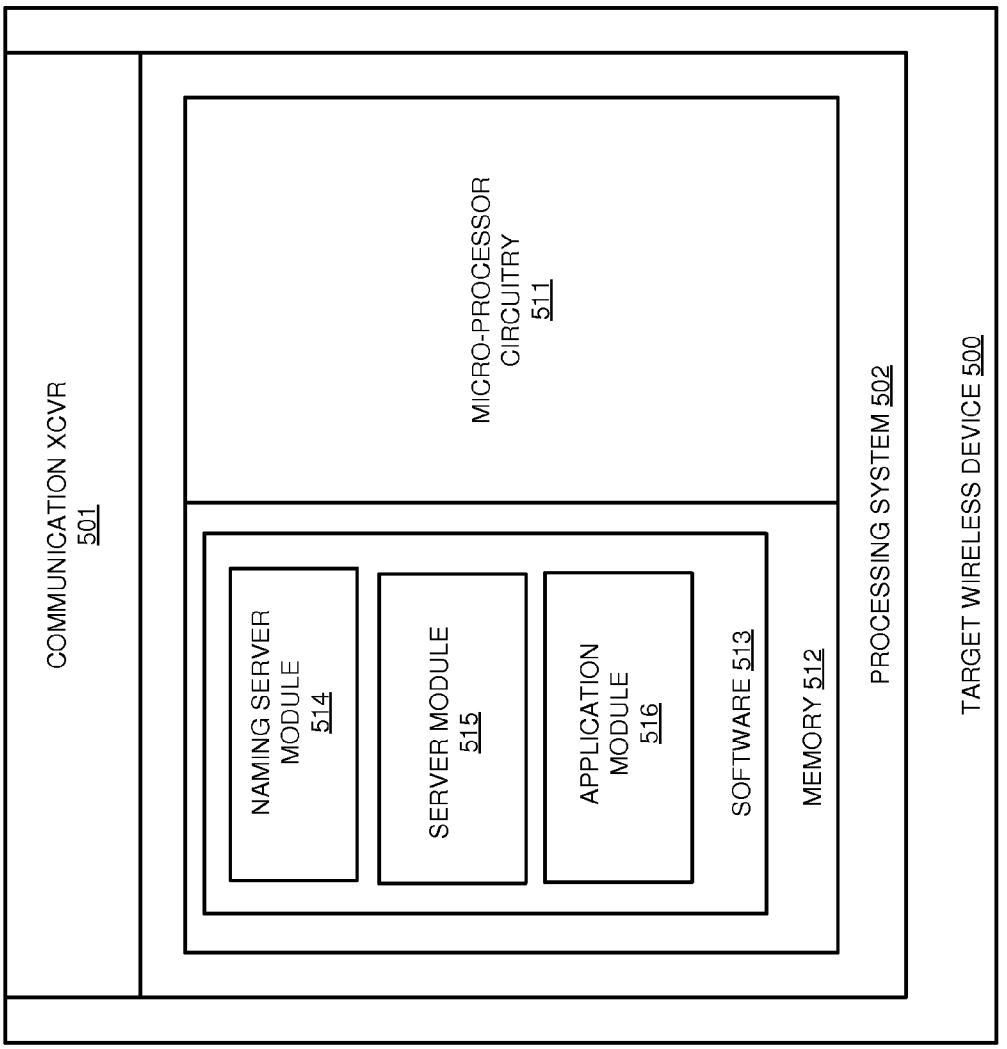
COMMUNICATION XCVR
501
PROCESSING SYSTEM 502
MICRO-PROCESSOR
CIRCUITRY
511
MEMORY 512
SOFTWARE 513
NAMING SERVER
MODULE
514
SERVER MODULE
515
APPLICATION
MODULE
516
TARGET WIRELESS DEVICE 500

FIGURE 5

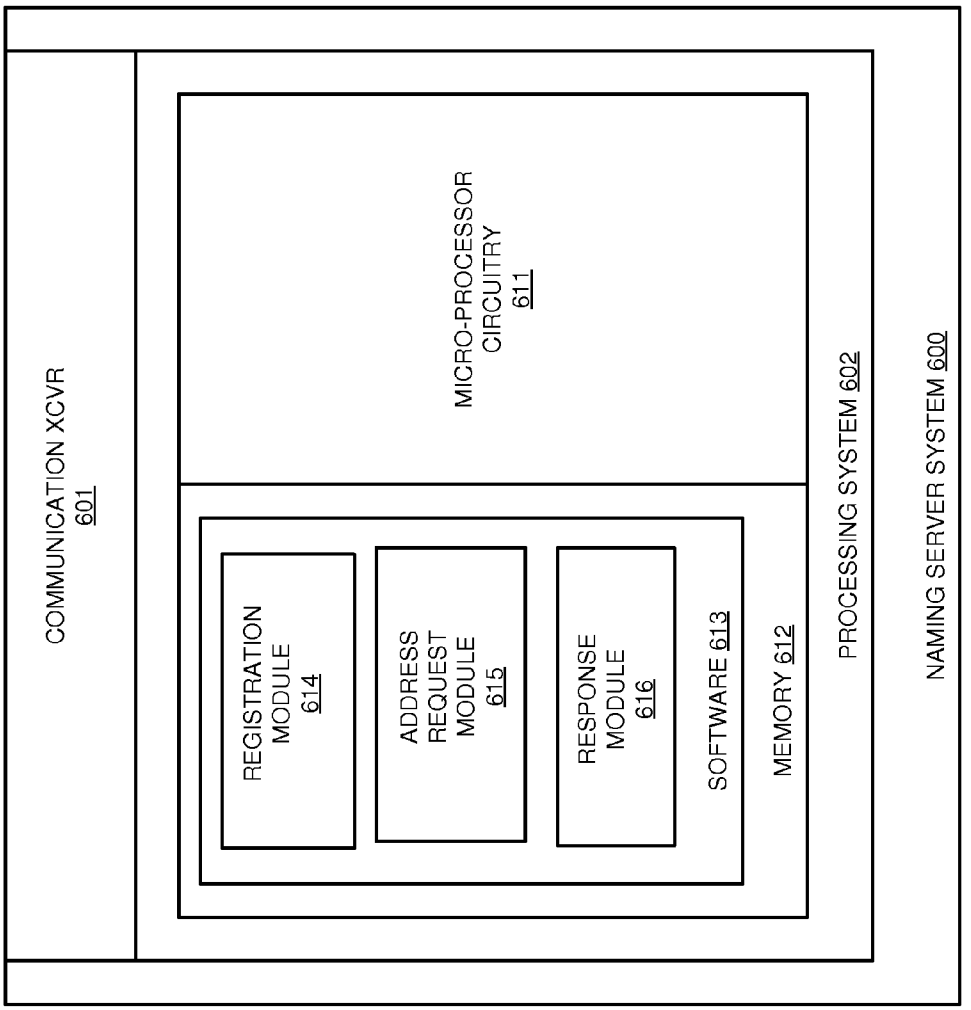
NAMING SERVER SYSTEM 600
PROCESSING SYSTEM 602
COMMUNICATION XCVR 601
MICRO-PROCESSOR CIRCUITRY 611
MEMORY 612
SOFTWARE 613
REGISTRATION MODULE 614
ADDRESS REQUEST MODULE 615
RESPONSE MODULE 616

FIGURE 6

COMMUNICATION SYSTEM TO PROVIDE SELECTIVE ACCESS TO A WIRELESS COMMUNICATION DEVICE

RELATED CASES

This patent application is a continuation of U.S. patent application Ser. No. 13/910,636 filed on Jun. 5, 2013 and titled "A COMMUNICATION SYSTEM TO PROVIDE SELECTIVE ACCESS TO A WIRELESS COMMUNICATION DEVICE." U.S. patent application Ser. No. 13/910,636 is hereby incorporated by reference into this patent application.

TECHNICAL BACKGROUND

Domain names are data strings that can be used to access resources over data networks. The domain names are often selected to ease user retention of the name. A prime example of a domain name is "uspto.gov" for the U.S. Patent Office. A Domain Naming System (DNS) stores and serves information associated with domain names. A prime example of the associated information is the current Internet Protocol (IP) addresses that can be used to communicate with resources in the domain. A common task for a DNS is the translation of domain names into their corresponding IP addresses. For example, a DNS would translate uspto.gov into the IP address of a Patent Office server system. The user then communicates with the Patent Office over the Internet using the IP address.

To load the DNS, Internet servers register their IP addresses with the DNS in association with their domain names. While these registrations are active, the DNS will serve out the IP addresses in response to queries having the domain names. Eventually, a given IP address registration may time-out, and the DNS will require another registration before serving out the IP address. In other scenarios, a properly registered IP address may still fail the user due to another reason, such as network or server problems. In addition to the IP address, the DNS may associate other information with the domain names, such as call state and network state.

Wireless communication devices are increasingly being used as content servers that interact with the DNS to provide their content over the Internet (or a private IP network). For example, a wireless camera having a domain name and an IP address may register the name and IP address with the DNS to serve out live images from the camera. These wireless communication devices may have limited availability due to power restraints, network availability, and the like. Unfortunately, the wireless devices and the DNS are not properly configured for efficient and effective interaction in the developing wireless environment.

TECHNICAL OVERVIEW

A communication system provides selective access to target wireless communication devices. A naming server system receives naming system registration messages from target wireless communication devices and address requests from user devices. The naming server system determines if the current time is within the access schedule for the target wireless communication device. If the current time is within the access schedule for the target wireless communication device, then the naming server system returns the address for the target wireless communication device. If the current time is not within the access schedule for the target wireless communication device, then the naming server system will respond with a timeframe when the target wireless communication device will be available for access.

DESCRIPTION OF THE DRAWINGS

FIG. **1** illustrates a communication system to provide selective access to a wireless communication device.

FIG. **2** illustrates the operation of a communication system to provide selective access to a wireless communication device.

FIG. **3** illustrates an operation of the communication system to provide selective access to a wireless communication device.

FIG. **4** illustrates an LTE communication system to provide selective access to a wireless communication device.

FIG. **5** illustrates a wireless communication device that interacts with a naming system to allow selective access.

FIG. **6** illustrates a naming server system that provides selective access to wireless communication devices.

DETAILED DESCRIPTION

FIG. **1** illustrates communication system **100** that provides selective access to target wireless communication devices **101-103**. Communication system **100** comprises: target wireless communication devices **101-103** (also referred to herein as "target devices"), naming server system **110**, user devices **111-113**, communication network **120**, and communication links **121-127**. Target wireless communication devices **101-103** might be phones, computers, cameras, sensors, or some other machine having wireless transceivers and control circuitry.

In communication system **100**, target wireless communication devices **101-103** register their names and network addresses with naming server system **110**. The registrations also include access schedules. Naming server system **110** serves out the network addresses and/or future access timeframes to user devices **111-113** based on the access schedule.

FIG. **2** illustrates the operation of communication system **100** to provide selective access to target wireless communication devices **101-103**. Target wireless communication devices **101-103** transfer naming system registration messages (also referred to herein as "registration messages") for delivery to naming server system **110** (**201**). The naming system registration messages indicate the associated domain names and access schedules for target devices **101-103**. The naming system registration messages may also indicate network addresses for target devices **101-103**, although the network addresses could be provided later.

Note that a single target device may have multiple names, addresses, and access schedules, or that multiple target devices may share names, addresses, and access schedules. The domain names comprise data strings, such as Uniform Resource Identifiers (URIs) and the like. The access schedules control whether naming server system **110** serves out the network addresses, or whether naming system **110** suggests a subsequent timeframe to obtain the network address from naming system **110**. Typically, the access schedules correspond to when target devices **101-103** will have adequate content, power, and network connectivity.

Naming server system **110** receives the naming system registration messages transferred by target wireless communication devices **101-103** (**202**). Naming server system **110** stores the provided data in association with the respective

domain name. One example of naming server system **110** is a DNS server, although other naming server systems could be used.

Naming server system **110** receives address requests from user devices **111-113** (**203**). The address requests indicate the domain names for target wireless communication devices **101-103**. Naming server system **110** processes the domain names and their associated access schedules to determine whether the current time is within the access schedules for the target wireless communication devices (**204**). If naming server **110** determines that the current time is within the access schedule of the target wireless communication device (**205**), then naming server system **110** responds with the address for the target wireless communication device (**206**). If naming server system **110** determines that the current time is not within the access schedule of the target wireless communication device (**205**), then naming server system **110** responds with a timeframe to re-send the address request (**207**).

In the above operation, target wireless communication devices **101-103** and naming server system **110** effectively and efficiently interact to conserve resources across communication system **100**. Target wireless communication devices **101-103** are not required to maintain the overly burdensome content, power, or network connectivity that is required to remain on-net. User devices **111-113** are not required to continually request address translations until the target devices become available. Likewise, naming server system **110** should also handle a lower amount of failed address requests. In addition, communication network **120** handles a lower amount of failed address requests to naming server system **110**. Communication network **120** also handles a lower amount of failed data transmissions that are directed to unavailable the target devices.

In some examples, the access schedule is a simple predetermined set of time periods, such as 9:00-11:00 PM on Mondays and Fridays. In other examples, the access schedule reflects an estimated future time when the target device expects to have adequate power, presence at a location, network connectivity, content access, and the like. In yet other examples, the access schedule reflects a calculated time-to-live for the target device power supply, presence at a location, estimated event time, network connectivity, and the like. In further examples, the access schedule is determined based on a trigger for the target device, such as: atmospheric conditions, temperature, wind speeds, motion, presence in a geographic location, network status, radio frequency network, and the like.

Consider an example where the target wireless device is solar powered sensor with limited battery capacity. Due to the amount of sun and usage, the battery power varies. The target device may then vary its access schedule in accord with changing solar and usage conditions. For example, the target device may reduce the length of time content is served during periods of reduced sun or periods of increased power usage.

Some target devices may trigger data availability based on conditions. For example, a target atmospheric sensor may register for 2-hours of content access starting in twelve hours in response to extreme CO_2 levels. A target security camera may register for ten minutes of content access starting immediately in response to unauthorized motion detection.

FIG. **3** illustrates an operation of communication system **100** to provide selective access to target wireless communication devices **101-103**. Naming server system **110** receives a naming system registration message from target wireless device **101**. The naming system registration message indicates a domain name and includes an access schedule for target wireless device **101**. Naming server system **110** also receives an address request from user device **111**. Naming server system **110** compares the current time with the access schedule for target wireless device **101**. Since the current time is within the access schedule for target wireless device **101**, naming server system **110** sends the network address for target wireless device **101** to user device **111**. Later user device **112** requests access to target wireless device **101**. Naming server system **110** compares the current time with the access schedule for target wireless device **101**. The current time is no longer within the access schedule for target wireless device **101**, so naming server system **110** responds with a timeframe when user device **112** should retry the address query.

FIG. **4** illustrates Long Term Evolution (LTE) communication system **400** to provide selective access to wireless devices **401-403**. LTE communication system **400** provides an example of communication system **100**, although communication system **100** may use alternative configurations and operations. LTE communication system **400** comprises target devices **401-403**, eNodeB **405**, S-GW **406**, P-GW **407**, DNS server **408**, and user devices **410-412**. Target devices **401-403** comprise a gas meter, robotic CO_2 sensor, and truck camera. User devices **410-412** comprise a mobile phone, tablet, and computer.

In some examples, gas meter **401** is programmed to be available on the 26th day of each month for ten minutes between 11:49 PM and 11:59 PM. Gas meter **401** registers with DNS server **408** with an access schedule that indicates these available time periods. If DNS server **408** receives an address request for gas meter **401** before 11:49 on the 26th of the month, then DNS server **408** responds with the timeframe when a DNS retry should be attempted—between 11:49 PM and 11:59 PM on the 26th day of the month. When the current time reaches 11:49 PM on the 26th day of the month, then DNS server **408** will begin to serve out the IP address of gas meter **401**. Thus, computer **412** may obtain the IP address of access gas meter **401** to download information for billing purposes. If DNS server **408** receives an address request for gas meter **401** after 11:59 on the 26th of the month, then DNS server **408** responds with the timeframe when a DNS retry should be attempted—between 11:49 PM and 11:59 PM on the 26th day of the next month. If desired, the domain name and IP address would be available for use by other gas meters before and after 11:49 PM and 11:59 PM on the 26th day of the month. In this way content downloads can be batched and staggered for multiple gas meters.

In another example, robotic CO_2 sensor **402** determines its access schedule based on an estimated future time for arrival in a geographic area. This could be calculated based on distance and speed of travel. Robotic CO_2 sensor **402** would register with DNS server **408** to start serving its IP address after its estimated time of arrival. As a result, DNS server **408** will provide the estimated time of arrival in response to address queries for robotic CO_2 sensor **402** until the current time reaches the estimated time.

Alternatively, robotic CO_2 sensor **402** may wait until it reaches the geographic area to register. Once robotic CO_2 sensor **402** detects that is within the geographic area, sensor **402** would then register with DNS server **408** to begin serving its IP address immediately and for another 2 hours—the length of time that robotic CO_2 sensor **402** remains within the geographic area. DNS translations during this

2-hour time period would indicate the IP address for robotic CO_2 sensor **402** and indicate the time-to-live at that geographic location.

In some examples, DNS server **408** will notify tablet **411** that robotic CO_2 sensor **402** is available. In other examples, robotic CO_2 sensor **402** may arrive at a specified geographic location but need to recharge its battery and will not be available until after a specified time to recharge. Different factors, such as type of power supply, remaining power, network connectivity, content, geographic location, and the like, may be considered in determining the access schedule for robotic CO_2 sensor **402**. Alternatively, rather than determining the access schedule based on detecting the device's presence in a pre-determine geographic location, robotic CO_2 sensor **402** may determine the access schedule based an estimated future time when robotic CO_2 sensor **402** will be within range of a pre-determined radio frequency (i.e. a carrier's base station) or when network load is expected to be low.

In another example, robotic CO_2 sensor **402** registers when it detects CO_2 levels above a threshold. The access schedule for robotic CO_2 sensor **402** is based on when registration is triggered and exact timeframes may not be known in advance. In addition, the response provided by DNS server **408** may also indicate the time remaining to access robotic CO_2 sensor **402** (i.e. "device will be available for ten more minutes"). This could be based on power usage and remaining battery power among other factors. In yet another example, robotic CO_2 sensor **402** powers on and records content when CO_2 levels are above a threshold. Robotic CO_2 sensor **402** then registers when the device memory storage is at 80% capacity or when battery power is at 15% remaining.

In another example, truck camera **403** determines its access schedule based on scheduled departure/arrival time and travel time. At the scheduled departure time, truck camera **403** powers on and registers with DNS server **408**. The access schedule for truck camera **404** may indicate that truck camera **403** will be available for the duration of the trip (i.e. "4 hours"). In other examples, truck camera **403** registers with DNS server **408** when it detects it is located within a pre-determined geographic area and remains registered while located within a specified geographic area. Alternatively, truck camera **403** powers up and registers with DNS server **408** when it detects it is in motion and does not de-register until it has been stationary for a specified amount of time.

In some examples, truck camera **403** is accessible only by authorized users. The access schedule for truck camera **403** indicates a list of approved users in addition to the timeframe(s) that truck camera **403** is available. In this example, the list of approved users includes tablet **411** and computer **412**, but not mobile phone **410**. When mobile phone **410** requests access to truck camera **403**, DNS server **408** determines mobile phone **410** is not on the list of approved users. DNS server **408** responds that access is denied. When computer **412** requests access during a time that is within the access schedule for truck camera **403**, DNS server **408** responds with the IP address for truck camera **403**.

FIG. **5** illustrates a target wireless communication device **500** that interacts with a naming system to allow selective access. Target wireless device **500** is an example of the target wireless devices **101-103** and **401-403**, although these devices may use alternative configurations and operations. Target wireless device **500** comprises communication transceiver **501** and processing system **502**. Processing system **502** includes processing circuitry **511** and memory **512** that stores software **513**. Software **513** comprises software modules **514-516**.

Communication transceiver **501** comprises communication components, such as antennas, amplifiers, filters, modulators, signal processing circuitry, software, and the like. Communication transceiver **501** may be configured to use IP, Ethernet, and various wireless protocols—including combinations thereof. Communication transceiver **501** transfers registration messages to a naming server system and transfers requested content to requesting devices.

Processing circuitry **511** comprises microprocessor and other circuitry that retrieves and executes operating software **513** from memory system **512**. Processing circuitry **511** may comprise a single device or could be distributed across multiple devices—including devices in different geographic areas. Processing circuitry **511** may be embedded in various types of equipment. Examples of processing circuitry **511** include central processing units, application specific processors, and logic devices, and/or any type of computer processing devices—including combinations thereof.

Memory system **512** comprises a non-transitory computer readable storage medium readable by processing system **502** and capable of storing software **513**, such as a disk drive, flash drive, data storage circuitry, or some other hardware memory apparatus—including combinations thereof. Memory system **512** can include volatile and non-volatile, removable and non-removable media implemented in any method or technology for storage of information, such as computer readable instructions, data structures, program modules, or other data—including combinations thereof. Memory system **512** may comprise a single device or could be distributed across multiple devices—including devices in different geographic areas. Memory system **512** may be embedded in various types of equipment.

Software **513** comprises computer programs, firmware, or some other form of machine-readable processing instructions. Software **513** may include an operating system, utilities, drivers, network interfaces, applications, or some other type of software. In this example, software **513** comprises: Naming Server module **514**, Server module **515**, and Application module **516**, although software **513** could have alternative configurations in other examples.

Software **513** can be implemented in program instructions and can be executed by processing system **502**. Software **513** can include additional processes, programs, or components, such as operating system software, database software, or application software—including combinations thereof. Software **513** can also comprise firmware or some other form of machine-readable processing instructions executable by processing system **502**.

When executed by processing system **502**, software **513** directs processing system **502** to operate as described herein to interact with naming server systems. In particular, Naming Server module **514** directs processing system **502** to transfer naming system registration messages with access schedules for delivery to a naming server system. Server module **515** directs processing system **502** to handle content requests to serve out the requested content. Application module **516** directs processing system **502** to develop content and access schedules.

FIG. **6** illustrates naming server system **600** that provides selective access to wireless communication devices. naming server system **600** is an example of naming server system **110** and DNS server **408**, although these systems may use alternative configurations and operations. Naming server system **600** comprises communication transceiver **601** and

processing system **602**. Processing system **602** includes processing circuitry **611** and memory **612** that stores software **613**. Software **613** comprises software modules **614-616**.

Communication transceiver **601** comprises components that communication over communication links such as network cards, ports, RF transceivers, processing circuitry and software, or some other communication components. Communication transceiver **601** may be configured to communication over metallic, wireless, or optical links. Communication transceiver **601** may be configured to use Time-Division Multiplexing (TDM), IP, Ethernet, optical networking, wireless protocols, communication signaling, or some other communication format—including combinations thereof. Communication transceiver **601** receives registration messages from target wireless communication devices and receives address requests from user devices.

Processing circuitry **611** comprises microprocessor and other circuitry that retrieves and executes operating software **613** from memory system **612**. Processing circuitry **611** may comprise a single device or could be distributed across multiple devices—including devices in different geographic areas. Processing circuitry **611** may be embedded in various types of equipment. Examples of processing circuitry **611** include central processing units, application specific processors, and logic devices, and/or any type of computer processing devices—including combinations thereof. Processing circuitry **611** processes the domain name and access schedule for the requested target wireless communication device to determine whether the current time is within the access schedule for the target wireless communication device.

Memory system **612** comprises a non-transitory computer readable storage medium readable by processing system **602** and capable of storing software **613**, such as a disk drive, flash drive, data storage circuitry, or some other hardware memory apparatus—including combinations thereof. Memory system **612** can include volatile and non-volatile, removable and non-removable media implemented in any method or technology for storage of information, such as computer readable instructions, data structures, program modules, or other data—including combinations thereof. Memory system **612** may comprise a single device or could be distributed across multiple devices—including devices in different geographic areas. Memory system **612** may be embedded in various types of equipment. In some examples, a computer apparatus could comprise memory system **612** and software **613**.

Software **613** comprises computer programs, firmware, or some other form of machine-readable processing instructions. Software **613** may include an operating system, utilities, drivers, network interfaces, applications, or some other type of software. In this example, software **613** comprises Registration module **614**, Address Request module **615**, and Response module **616**, although software **613** could have alternative configurations in other examples.

Software **613** can be implemented in program instructions and can be executed by processing system **602**. Software **613** can include additional processes, programs, or components, such as operating system software, database software, or application software—including combinations thereof. Software **613** can also comprise firmware or some other form of machine-readable processing instructions executable by processing system **602**.

When executed by processing system **602**, software **613** directs processing system **602** to operate as described herein to provide selective access to target wireless communication devices. In particular, Registration module **614** directs processing system **602** to process the naming system registration message from target wireless communication devices to register the target wireless communication devices. Address Request module **615** directs processing system **602** to process the address requests from user devices. Response module **616** directs processing system **602** to transfer responses to the address requests.

Referring back to FIG. **1**, target devices **101-103** comprise any device having wireless communication connectivity. Target devices **101-103** comprise radio frequency (RF) communication circuitry, antenna, and software elements. The RF circuitry typically includes amplifiers, filters, modulators, and signal processing circuitry. In some examples, target wireless device **101-103** includes circuitry and equipment to exchange wireless communications over wireless links with wireless access system, transfer registration requests for DNS registration, transfer access schedules, and receive access requests from user devices, among other operations. Target wireless devices **101-103** may also include user interface systems, memory devices, computer-readable storage medium, software, processing circuitry, or other communication components. Target wireless devices **101-103** may be a sensor, computer, meter, camera, vehicle, appliance, electronic device that uploads data or downloads available updates, or some other wireless communication apparatus—including combinations thereof.

Naming server system **110** comprises a processing system and communication transceiver. Naming server system **110** may also include other components such as a router, data storage system, and power supply. Naming server system **110** may reside in a single device or may be distributed across multiple devices. Naming server system **110** may be a discrete system or may be integrated within other systems—including other systems within communication system **100**. In some examples, naming server system **110** could comprise a network server system, network-attached storage, storage area network, home location register, visitor location register,

User devices **111-113** comprise any device having communication connectivity with hardware and circuitry programmed to function as a communication device. User devices **111-113** are used to access the target wireless communication devices. User devices **111-113** may also include user interface systems, memory devices, computer-readable storage medium, software, processing circuitry, or other communication components. User devices **111-113** may be a computer, laptop, tablet, personal digital assistant (PDA), mobile phone, cellular phone, smartphone, machine transceivers, televisions, mobile Internet devices, and/or some other apparatus having networking components—including combinations thereof.

Communication network **120** is representative and may be a single wireless network or may comprise multiple sub-networks—including wireless networks and the Internet. Communication network **120** typically includes wireless base stations, routers, servers, gateways, signaling processors, communication links, and the like.

Wireless communication links **121-123** use air or space as the transport medium. Wireless communication links **121-123** may use various protocols, such as Code Division Multiple Access (CDMA), Global System for Mobile communications (GSM), High-Speed Packet Access (HSPA), Evolution-Data Optimized (EVDO), Long Term Evolution (LTE), Worldwide Interoperability for Microwave Access (WiMax), IEEE 802.11 protocols (WIFI), Bluetooth (near-field), or some other wireless communication format—

including combinations thereof. Communication links **124-127** use metal, air, space, glass, plastic, and/or some other transport material. Communication links **124-126** could use various communication protocols, such as TDM, IP, Ethernet, optical networking, hybrid fiber coax (HFC), communication signaling, wireless protocols, or some other communication format—including combinations thereof. Communication links **121-127** are representative and may include intermediate links, systems, and networks.

The above description and associated figures teach the best mode of the invention. The following claims specify the scope of the invention. Note that some aspects of the best mode may not fail within the scope of the invention as specified by the claims. Those skilled in the art will appreciate that the features described above can be combined in various ways to form multiple variations of the invention. As a result, the invention is not limited to the specific embodiment described above, but only by the following claims and their equivalents.

What is claimed is:

1. A method of operating a target wireless communication device having a device sensor to provide communication access through a naming system, the method comprising:

detecting sensor data through the device sensor, processing the sensor data to detect a trigger condition, and determining an access schedule for the target wireless communication device;

transferring a registration request for delivery to the naming system indicating the access schedule and a domain name for the target wireless communication device, wherein the naming system transfers a network address for the target wireless communication device responsive to address requests received within the access schedule and transfers a network address retry timeframe responsive to other address requests received outside the access schedule; and

receiving data requests having the network address within the access schedule and responsively transferring content data for the data requests within the access schedule.

2. The method of claim **1** wherein detecting the sensor data through the device sensor comprises detecting atmospheric condition data in an atmospheric condition sensor.

3. The method of claim **1** wherein transferring the content data comprises transferring the atmospheric condition data.

4. The method of claim **1** wherein detecting the sensor data through the device sensor comprises detecting device power supply status in a power supply sensor.

5. The method of claim **1** wherein detecting the sensor data through the device sensor comprises detecting device geographic location in a geographic location sensor.

6. The method of claim **1** wherein detecting the sensor data through the device sensor comprises detecting device network connectivity in a network connectivity sensor.

7. The method of claim **1** wherein the target wireless communication device comprises a meter.

8. The method of claim **1** wherein the target wireless communication device comprises a carbon dioxide sensor.

9. The method of claim **1** wherein the target wireless communication device comprises a temperature sensor.

10. The method of claim **1** wherein the target wireless communication device comprises a camera.

11. A target wireless communication device to provide communication access through a naming system, the method comprising:

a processing system;

a communication transceiver to exchange data communications for the processing system;

a device sensor to detect sensor data for the processing system;

the processing system configured to process the sensor data to detect a trigger condition, determine an access schedule for the target wireless communication device, transfer a registration request for delivery to the naming system indicating the access schedule and a domain name for the target wireless communication device, receive data requests having the network address within the access schedule, and transfer content data for the data requests within the access schedule; and

wherein the naming system transfers a network address for the target wireless communication device responsive to address requests received within the access schedule and transfers a network address retry timeframe responsive to other address requests received outside the access schedule.

12. The target wireless communication device of claim **11** wherein the sensor comprises an atmospheric condition sensor.

13. The target wireless communication device of claim **11** wherein the content data comprises atmospheric condition data.

14. The target wireless communication device of claim **11** wherein the device sensor comprises a power supply sensor.

15. The target wireless communication device of claim **11** wherein the device sensor comprises a geographic location sensor.

16. The target wireless communication device of claim **11** wherein the device sensor comprises a network connectivity sensor.

17. The target wireless communication device of claim **11** wherein the target wireless communication device comprises a meter.

18. The target wireless communication device of claim **11** wherein the target wireless communication device comprises a carbon dioxide sensor.

19. The target wireless communication device of claim **11** wherein the target wireless communication device comprises a temperature sensor.

20. The target wireless communication device of claim **11** wherein the target wireless communication device comprises a camera.

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