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(54) **CONNECTING A CLOUD NETWORK TO THE INTERNET**

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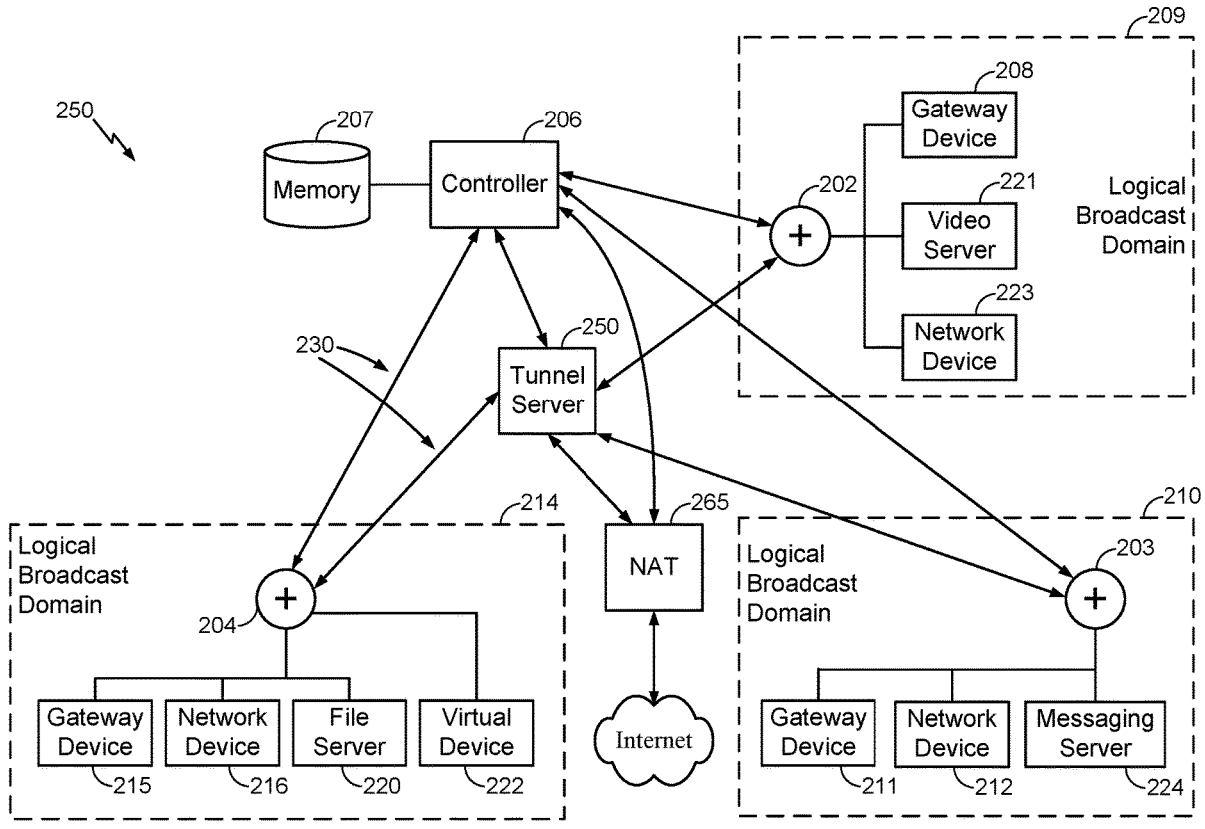
(57) **ABSTRACT**

Briefly, methods and/or apparatuses of connecting a private network to the Internet are described.



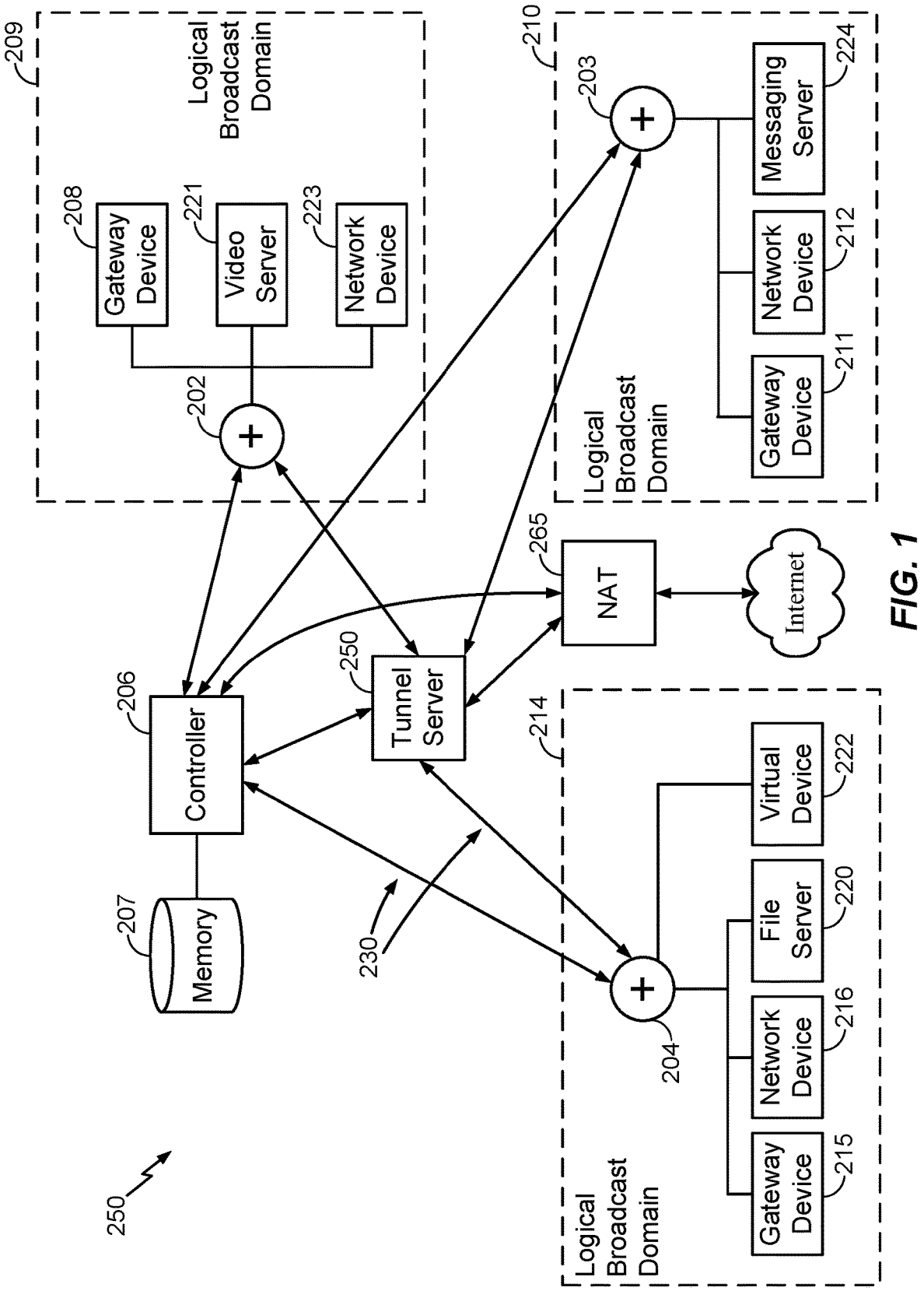

209
Logical Broadcast Domain
208
Gateway Device
221
Video Server
223
Network Device
202
210
203
Messaging Server
224
Network Device
212
Gateway Device
211
Logical Broadcast Domain
265
NAT
Internet
250
Tunnel Server
206
Controller
207
Memory
230
214
Virtual Device
222
File Server
220
204
Network Device
216
Gateway Device
215
Logical Broadcast Domain
250

FIG. 1

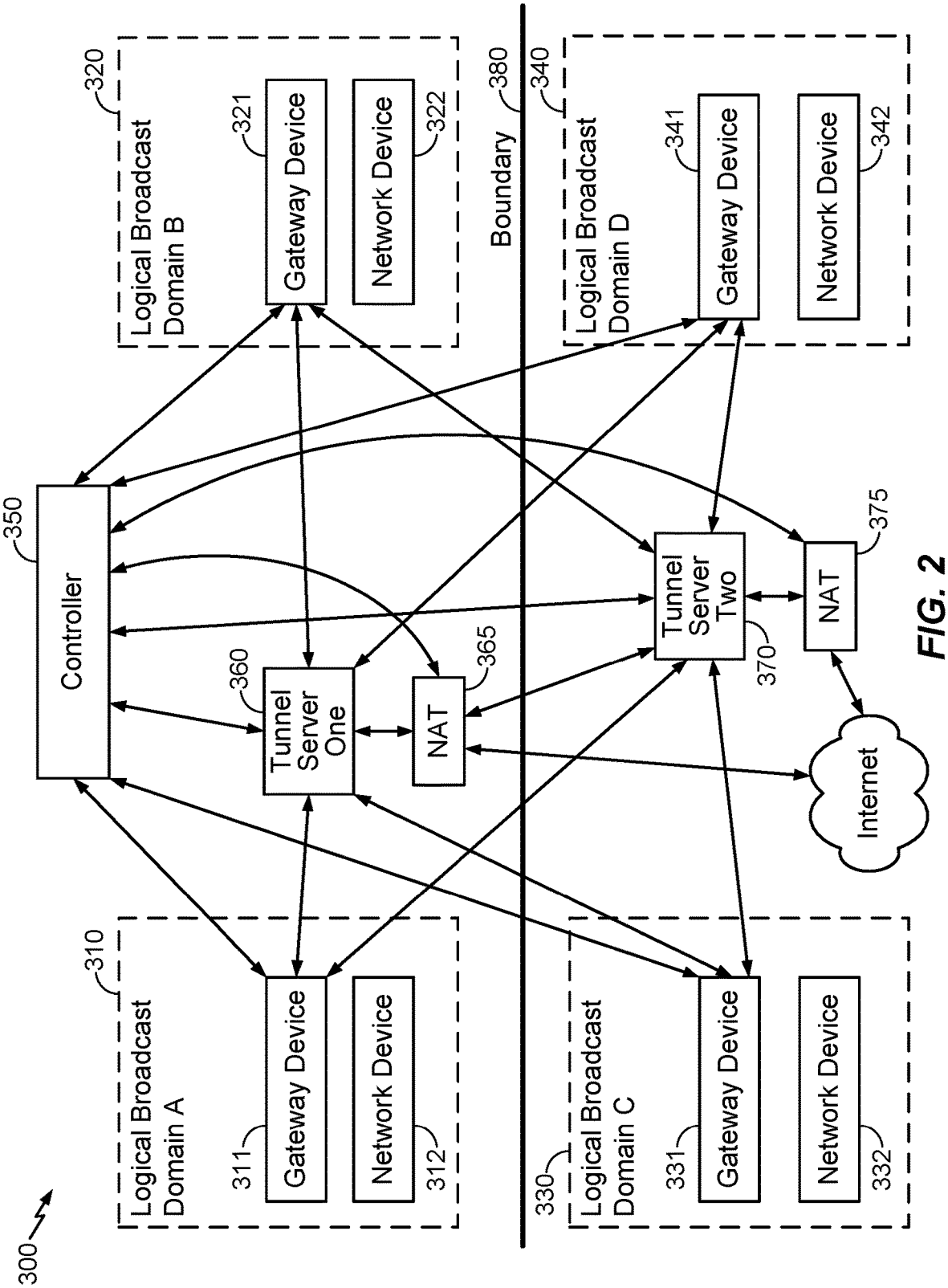

300
Logical Broadcast Domain A
310
Gateway Device
311
Network Device
312
Logical Broadcast Domain B
320
Gateway Device
321
Network Device
322
Logical Broadcast Domain C
330
Gateway Device
331
Network Device
332
Logical Broadcast Domain D
340
Gateway Device
341
Network Device
342
Boundary
380
Controller
350
Tunnel Server One
360
NAT
365
Tunnel Server Two
370
NAT
375
Internet

FIG. 2

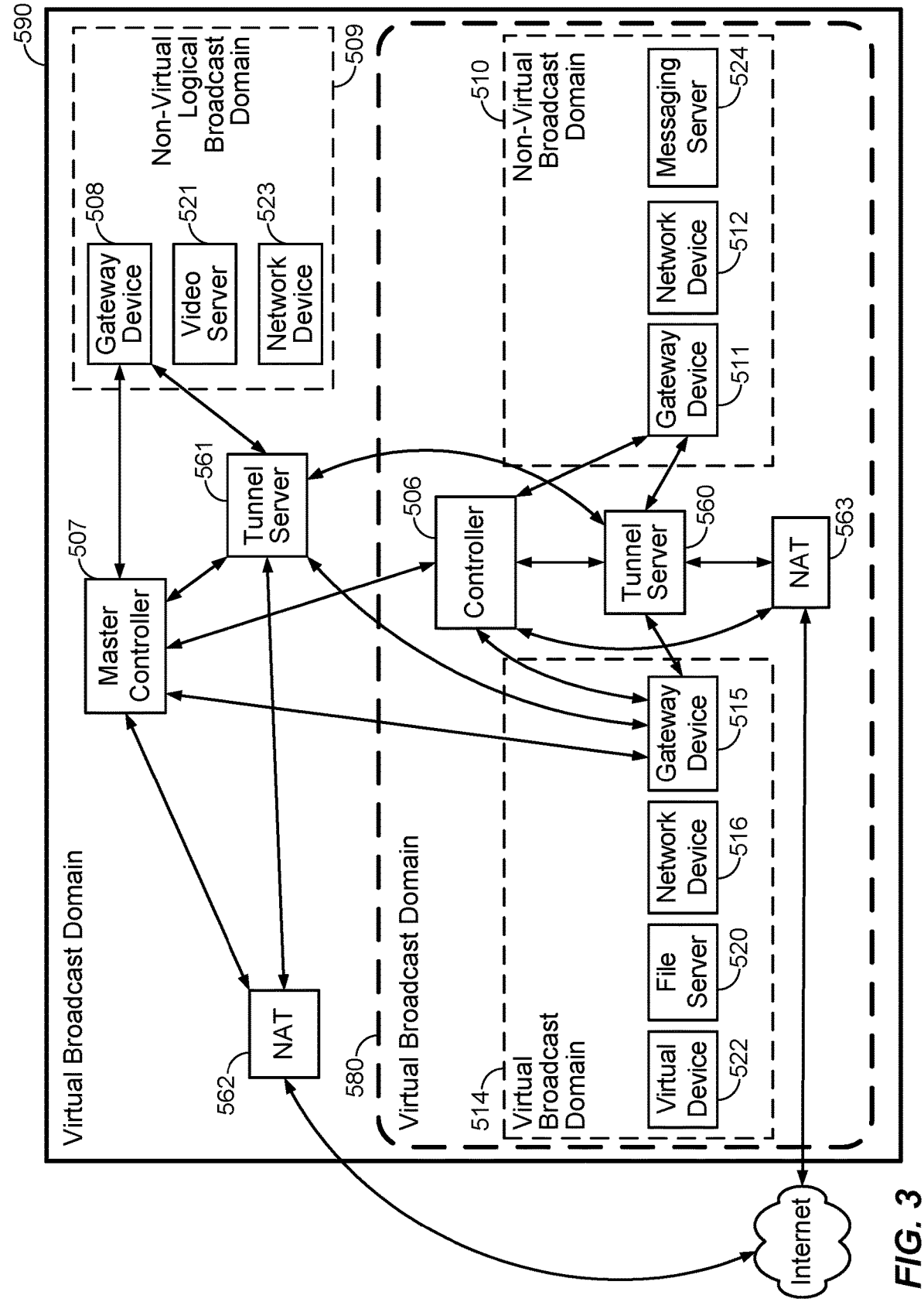

590
Virtual Broadcast Domain
Non-Virtual Logical Broadcast Domain
509
Gateway Device
508
Video Server
521
Network Device
523
Non-Virtual Broadcast Domain
510
Messaging Server
524
Network Device
512
Gateway Device
511
Tunnel Server
561
Master Controller
507
Controller
506
Tunnel Server
560
NAT
563
Virtual Broadcast Domain
580
Virtual Broadcast Domain
514
Gateway Device
515
Network Device
516
File Server
520
Virtual Device
522
NAT
562
Internet

FIG. 3

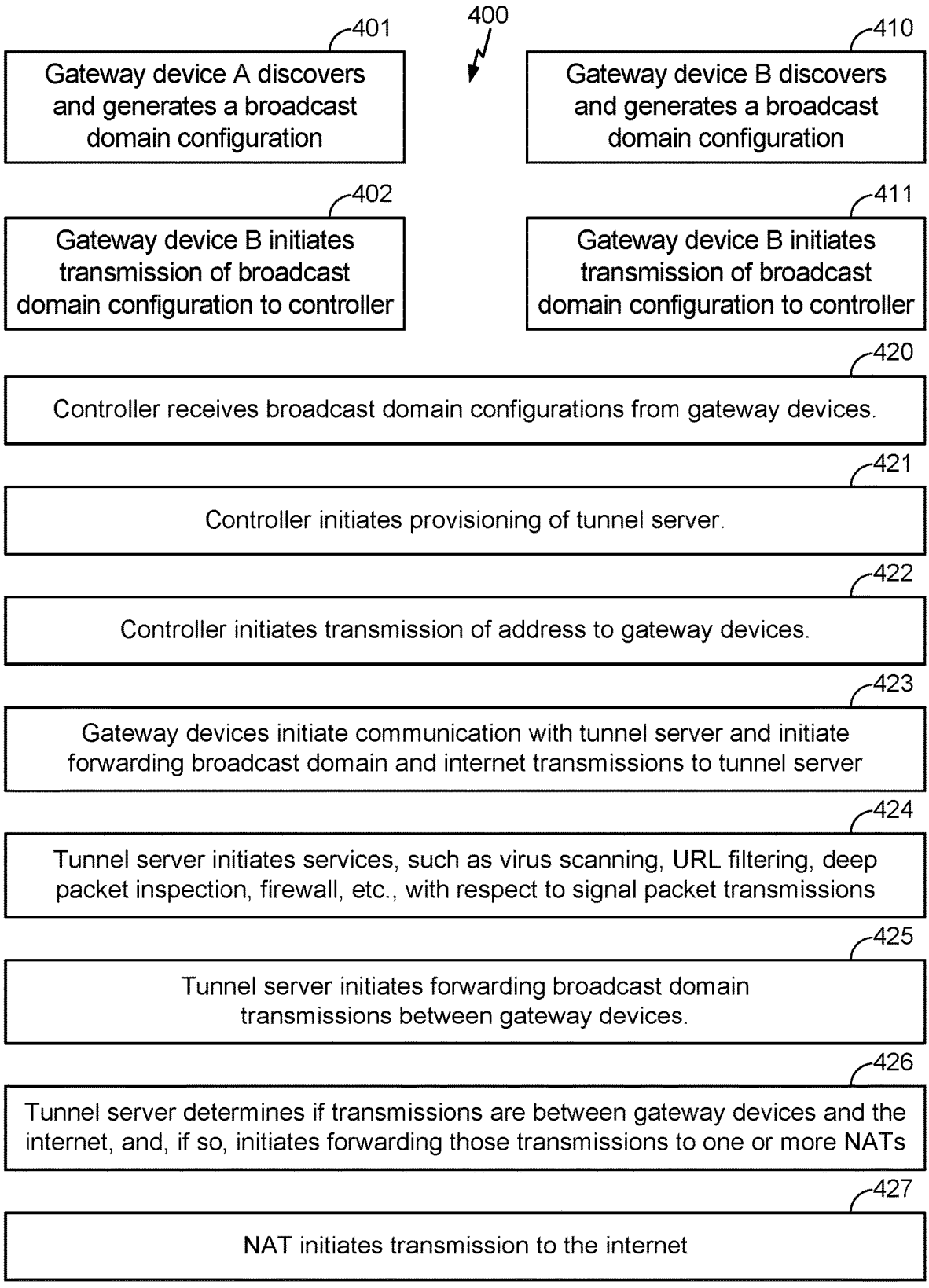

400
401
Gateway device A discovers and generates a broadcast domain configuration
410
Gateway device B discovers and generates a broadcast domain configuration
402
Gateway device B initiates transmission of broadcast domain configuration to controller
411
Gateway device B initiates transmission of broadcast domain configuration to controller
420
Controller receives broadcast domain configurations from gateway devices.
421
Controller initiates provisioning of tunnel server.
422
Controller initiates transmission of address to gateway devices.
423
Gateway devices initiate communication with tunnel server and initiate forwarding broadcast domain and internet transmissions to tunnel server
424
Tunnel server initiates services, such as virus scanning, URL filtering, deep packet inspection, firewall, etc., with respect to signal packet transmissions
425
Tunnel server initiates forwarding broadcast domain transmissions between gateway devices.
426
Tunnel server determines if transmissions are between gateway devices and the internet, and, if so, initiates forwarding those transmissions to one or more NATs
427
NAT initiates transmission to the internet

FIG. 4

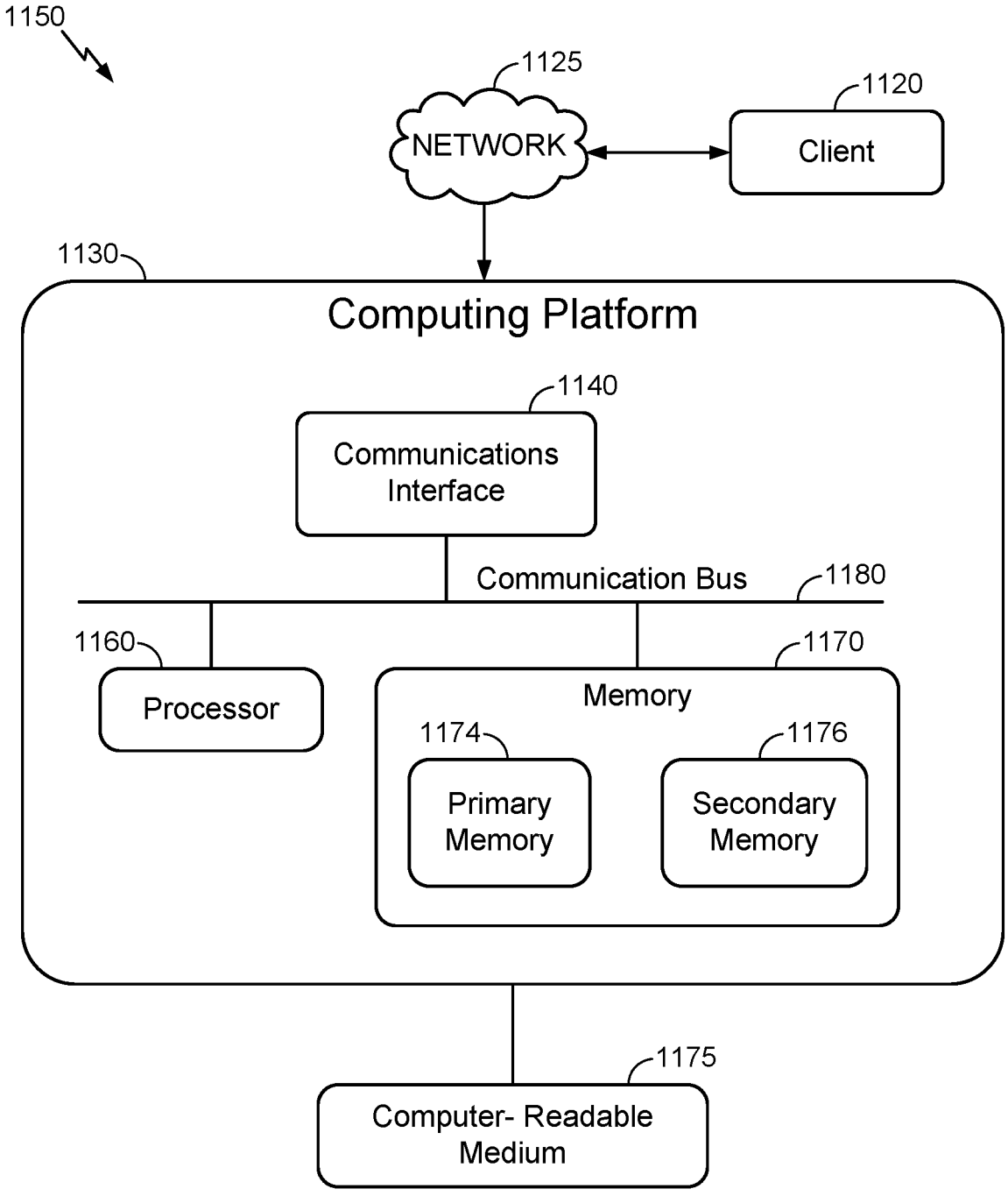

1150
1125
NETWORK
1120
Client
1130
Computing Platform
1140
Communications Interface
Communication Bus
1180
1160
Processor
1170
Memory
1174
Primary Memory
1176
Secondary Memory
1175
Computer- Readable Medium

FIG. 5

CONNECTING A CLOUD NETWORK TO THE INTERNET

FIELD

[0001] The present application relates to a technique to connect a private network and/or a cloud network to the Internet.

BACKGROUND

[0002] Various advancements in networking address interoperability of one or more devices across one or more networks. Two different physical networks may communicate via a network device. A network device, such as a router, may create a hardware bridge between two networks. Additionally, a remote device, such as a device on a remote network, for example, may communicate with a local network by executing a virtual private network (VPN), typically by executing a software program. In this context (e.g., throughout this document), the term "remote" or similar terms refer to the device not being a part of a particular network and the term "local" or similar terms refer to a collection of devices, for example, that are part of that network. VPN software, for example, may create a reasonably secure channel of communication between a remote device and local network and may route traffic to the remote device. This may allow the remote device to communicate with the local network as if the remote device were physically part of the local network, rather than remote. Unfortunately, such approaches have various drawbacks.

BRIEF DESCRIPTION OF THE DRAWINGS

[0003] Claimed subject matter is particularly pointed out and/or distinctly claimed in the concluding portion of the specification. However, both as to organization and/or method of operation, together with objects, features, and/or advantages thereof, claimed subject matter may be understood by reference to the following detailed description if read with the accompanying drawings in which:

[0004] FIG. **1** is a schematic diagram illustrating an embodiment to connect a private network to the Internet;

[0005] FIG. **2** is a schematic diagram illustrating another embodiment to connect a private network to the Internet;

[0006] FIG. **3** is a schematic diagram illustrating yet another embodiment to connect a private network to the Internet;

[0007] FIG. **4** is a flowchart illustrating an embodiment of a method for connecting a private network to the Internet; and

[0008] FIG. **5** is a schematic diagram illustrating a computing environment in which an embodiment may be implemented.

[0009] Reference is made in the following detailed description to accompanying drawings, which form a part hereof, wherein like numerals may designate like parts throughout to indicate corresponding and/or analogous components, for example. It will be appreciated that components illustrated in the figures have not necessarily been drawn to scale, such as for simplicity and/or clarity of illustration. For example, dimensions of some components may be exaggerated relative to other components. Further, it is to be understood that other embodiments may be utilized. Furthermore, structural and/or other changes may be made without departing from claimed subject matter. It should also be noted that directions and/or similar references, for example, up, down, top, bottom, and so on, may be used to facilitate discussion of drawings and/or are not intended to restrict application of claimed subject matter. Therefore, the following detailed description is not to be taken to limit claimed subject matter and/or equivalents.

DETAILED DESCRIPTION

[0010] In the following detailed description, numerous specific details are set forth to provide a thorough understanding of claimed subject matter. For purposes of explanation, specific numbers, systems and/or configurations are set forth, for example. However, it should be apparent to one skilled in the relevant art having benefit of this disclosure that claimed subject matter may be practiced without specific details. In other instances, well-known features may be omitted and/or simplified so as not to obscure claimed subject matter. While certain features have been illustrated and/or described herein, many modifications, substitutions, changes and/or equivalents may occur to those skilled in the art. It is, therefore, to be understood that appended claims are intended to cover any and all modifications and/or changes as fall within claimed subject matter.

[0011] Reference throughout this specification to one implementation, an implementation, one embodiment, an embodiment and/or the like may mean that a particular feature, structure, and/or characteristic described in connection with a particular implementation and/or embodiment may be included in at least one implementation and/or embodiment of claimed subject matter. Thus, appearances of such phrases, for example, in various places throughout this specification are not necessarily intended to refer to the same implementation or to any one particular implementation described. Furthermore, it is to be understood that particular features, structures, and/or characteristics described may be combined in various ways in one or more implementations. In general, of course, these and other issues may vary with context. Therefore, particular context of description and/or usage may provide helpful guidance regarding inferences to be drawn.

[0012] Operations and/or processing, such as in association with networks, such as communication networks, for example, may involve physical manipulations of physical quantities. Typically, although not necessarily, these quantities may take the form of electrical and/or magnetic signals capable of, for example, being stored, transferred, combined, processed, compared and/or otherwise manipulated. It has proven convenient, at times, principally for reasons of common usage, to refer to these signals as bits, data, values, elements, symbols, characters, terms, numbers, numerals and/or the like. It should be understood, however, that all of these and/or similar terms are to be associated with appropriate physical quantities and are intended to merely be convenient labels.

[0013] Likewise, in this context, the terms "coupled", "connected," and/or similar terms may be used generically. It should be understood that these terms are not intended as synonyms. Rather, "connected" if used generically may be used to indicate that two or more components, for example, are in direct physical and/or electrical contact; while, "coupled" if used generically may mean that two or more components are in direct physical or electrical contact; however, "coupled" if used generically may also mean that two or more components are not in direct contact, but may

nonetheless co-operate or interact. The term coupled may also be understood generically to mean indirectly connected, for example, in an appropriate context.

[0014] The terms, "and", "or", "and/or" and/or similar terms, as used herein, may include a variety of meanings that also are expected to depend at least in part upon the particular context in which such terms are used. Typically, "or" if used to associate a list, such as A, B or C, is intended to mean A, B, and C, here used in the inclusive sense, as well as A, B or C, here used in the exclusive sense. In addition, the term "one or more" and/or similar terms may be used to describe any feature, structure, and/or characteristic in the singular and/or may be used to describe a plurality or some other combination of features, structures and/or characteristics. Though, it should be noted that this is merely an illustrative example and claimed subject matter is not limited to this example. Again, particular context of description and/or usage may provide helpful guidance regarding inferences to be drawn.

[0015] It should be understood that for ease of description a network device (also referred to as a networking device) may be embodied and/or described in terms of a computing device. However, it should further be understood that this description should in no way be construed that claimed subject matter is limited to one embodiment, such as a computing device or a network device, and, instead, may be embodied as a variety of devices or combinations thereof, including, for example, one or more illustrative examples.

[0016] In this context, the term network device refers to any device capable of communicating via and/or as part of a network. While network devices may be capable of sending and/or receiving signals (e.g., signal packets), such as via a wired or wireless network, they may also be capable of performing arithmetic and/or logic operations, processing and/or storing signals, such as in memory as physical memory states, and/or may, for example, operate as a server in various embodiments. Network devices capable of operating as a server, or otherwise, may include, as examples, dedicated rack-mounted servers, desktop computers, laptop computers, set top boxes, tablets, netbooks, smart phones, integrated devices combining two or more features of the foregoing devices, the like or any combination thereof.

[0017] A network may comprise two or more network devices and/or may couple network devices so that signal communications, such as in the form of signal packets, for example, may be exchanged, such as between a server and a client device and/or other types of devices, including between wireless devices coupled via a wireless network, for example.

[0018] A network may also include now known, or to be later developed arrangements, derivatives, and/or improvements, including, for example, past, present and/or future mass storage, such as network attached storage (NAS), a storage area network (SAN), and/or other forms of computer and/or machine readable media, for example. A network may include the Internet, one or more local area networks (LANs), one or more wide area networks (WANs), wire-line type connections, wireless type connections, other connections, or any combination thereof. Thus, a network may be worldwide in scope and/or extent. Likewise, sub-networks, such as may employ differing architectures or may be compliant and/or compatible with differing protocols, such as communication protocols (e.g., network communication protocols), may interoperate within a larger network. In this context, the term sub-network refers to a portion or part of a network. Various types of devices, such as network devices and/or computing devices, may be made available so that device interoperability is enabled and/or, in at least some instances, may be transparent to the devices. In this context, the term transparent refers to devices, such as network devices and/or computing devices, communicating via a network in which the devices are able to communicate via intermediate devices, but without the communicating devices necessarily specifying one or more intermediate devices and/or may include communicating as if intermediate devices are not necessarily involved in communication transmissions. For example, a router may provide a link or connection between otherwise separate and/or independent LANs. In this context, a private network refers to a particular, limited set of network devices able to communicate with other network devices in the particular, limited set, such as via signal packet transmissions, for example, without a need for re-routing and/or redirecting such network communications. A private network may comprise a stand-alone network; however, a private network may also comprise a subset of a larger network, such as, for example, without limitation, the Internet. Thus, for example, a private network "in the cloud" may refer to a private network that comprises a subset of the Internet, for example. Although signal packet transmissions may employ intermediate devices to exchange signal packet transmissions, those intermediate devices may not necessarily be included in the private network by not being a source or destination for one or more signal packet transmissions, for example. As another example, a logical broadcast domain, explained in more detail herein, may comprise an example of a private network. It is understood in this context that a private network may provide outgoing network communications to devices not in the private network, but such devices outside the private network may not direct inbound network communications to devices included in the private network.

[0019] The Internet refers to a decentralized global network of interoperable networks that comply with the Internet Protocol (IP). It is noted that there are several versions of the Internet Protocol. Here, the term Internet Protocol or IP is intended to refer to any version, now known or later developed. The Internet includes local area networks (LANs), wide area networks (WANs), wireless networks, and/or long haul public networks that, for example, may allow signal packets to be communicated between LANs. The term world wide web (WWW) and/or similar terms may also be used, although it refers to a sub-portion of the Internet that complies with the Hypertext Transfer Protocol or HTTP. It is noted that there are several versions of the Hypertext Transfer Protocol. Here, the term Hypertext Transfer Protocol or HTTP is intended to refer to any version, now known or later developed. It is likewise noted that in various places in this document substitution of the term Internet with the term world wide web may be made without a significant departure in meaning and may, therefore, not be inappropriate in that the statement would remain correct with such a substitution.

[0020] Signal packets, also referred to as signal packet transmissions, may be communicated between nodes of a network, where a node may comprise one or more network devices and/or one or more computing devices, for example. As an illustrative example, but without limitation, a node may comprise one or more sites employing a local network

address. Likewise, a device, such as a network device and/or a computing device, may be associated with that node. A signal packet may, for example, be communicated via a communication channel or a communication path comprising the Internet, from a site via an access node coupled to the Internet. Likewise, a signal packet may be forwarded via network nodes to a target site coupled to a local network, for example. A signal packet communicated via the Internet, for example, may be routed via a path comprising one or more gateways, servers, etc. that may, for example, route a signal packet in accordance with a target address and availability of a network path of network nodes to a target address. Although the Internet comprises a network of interoperable networks, not all of those interoperable networks are necessarily available or accessible to the public.

[0021] Although physically connecting a network via a hardware bridge is done, there may be one or more drawbacks. A hardware bridge may not typically include a capability of interoperability via higher levels of a network communications protocol. A network communications protocol refers to a set of signaling conventions for communications between or among devices in a network, typically network devices; for example, devices that substantially comply with the protocol or that are substantially compatible with the protocol. In this context, the term "between" and/or similar terms are understood to include "among" if appropriate for the particular usage. Likewise, in this context, the terms "compatible with", "comply with" and/or similar terms are understood to include substantial compliance and/or substantial compatibility.

[0022] Typically, a network communications protocol has several layers. These layers may be referred to here as a network communication stack. Various types of network communications may occur across various layers. For example, as one moves higher in a network communication stack, additional operations may be available by transmitting network communications that are compatible and/or compliant with a particular network communications protocol at these higher layers. Therefore, for example, a hardware bridge may be unable to forward signal packets since it may operate at a layer of a network communication stack that does not provide that capability. Although higher layers of a network communications protocol may, for example, affect device communication permissions, user communication permissions, etc., a hardware bridge, for example, may typically provide little user control, such as for higher layer operations. Furthermore, making changes at a hardware layer may potentially affect performance of network communications, such as for one or more layers, for example. Another drawback, as mentioned previously, is that it may be difficult, time consuming and/or expensive to setup and/or modify features of a hardware bridge without specialized skills and/or experience, such as technical know-how.

[0023] A VPN, such as previously described, may enable a remote device to communicate via a local network, but may also have drawbacks. A router may allow network communications in the form of network transmissions (e.g., signal packets), for example, to occur from a remote device to a VPN server on a local network. A remote device may be authenticated and a VPN server, for example, may create a special route between a local network and the remote device through an intervening router. However, a route may be generated and/or also regenerate if the remote device is power cycled, for example. Also, a VPN typically may affect a single remote device, which may be limiting, for example, in some situations. Similarly, here too, as mentioned previously, it may be difficult, time consuming and/or expensive to setup and/or modify features of a VPN without specialized skills and/or experience, such as technical know-how.

[0024] A network may be very large, such as comprising thousands of nodes, millions of nodes, billions of nodes, or more, as examples. As the number of network devices communicating via a network grow, signals transmissions via a network, such as in the form of signal packets, for example, may begin to interfere. Thus, it may be desirable to create and/or generate a logical, private network, such as via (e.g., over) the Internet, to potentially limit the number of signal transmissions at least partially without necessarily limiting geographies, for example, by having portions of a logical, connected, secure private network in geographies of potential interest. In addition, it may be possible to purchase available capacity, such as memory and/or processing capacity of a third party, as examples, in separate markets, such as markets where costs may be more appealing, providing another potential benefit, as explained in more detail later. For example, applications, such as software applications, may execute above or on infrastructure, such as networking infrastructure and/or computing infrastructure, in a manner to provide capabilities, such as these as well as others. Thus, for example, one or more software applications may execute on computing and/or memory resources owned by a third party to create and/or generate a logical, private network for an entity other than the third party that owns the computing and/or memory resources, as explained in more detail later. In this context, networking infrastructure refers to conventional hardware and software that is deployed or deployable to provide networking functionality and/or network services without using or including components substantially in accordance with claimed subject. Likewise, in this context, computing infrastructure refers to conventional hardware and software that is deployed or deployable to provide computing functionality and/or services without using or including components substantially in accordance with claimed subject matter.

[0025] Although a router may link otherwise independent LANs through routing of signal packets, a router may also provide some limits on signal packet transmissions to a select set of devices, such as network devices and/or computing devices, for example. A router may limit signal packet transmissions via implicitly or explicitly producing a broadcast domain (also referred to as BD or as a broadcast domain). In this context, the term broadcast domain refers to a set of devices, such as network devices and/or computing devices, including associated services and/or support, occupying a network address space, such as a local network address space, in which any device is able to communicate with any other device in the broadcast domain without rerouting a transmission, such as a signal packet, for example. Although claimed subject matter is not necessarily limited in scope in this respect, additional example embodiments of a broadcast domain (along with related technology) may be discussed in U.S. patent application Ser. No. 13/543,729, titled "COMMUNICATION BETWEEN BROADCAST DOMAINS," filed on Jul. 6, 2012, by Hankins et al., herein incorporated by reference in its entirety and assigned to the assignee of currently claimed subject matter. For example, a signal packet may be transmitted to other devices

in a broadcast domain without being directed or redirected via a router or similar device, such as a device capable of affecting routing of signal packets, for example. Using a router or a similar device able to perform network address translation, portions of networks may be logically separate and independent such that transmissions in the form of signal packets transmitted by a network device on a network, for example, may not necessarily be forwarded from the BD unless a destination having a particular destination address of a signal packet transmission exists outside the particular broadcast domain. In this context, a device capable of performing network address translation is referred to generically as a NAT device or a NAT. The foregoing effectively illustrates one example of logically independent and separate (e.g., non-overlapping) divisions of a network, in which the divisions may comprise examples of respective broadcast domains.

[0026] Examples of broadcast domains may include logical BDs, virtual BDs, physical BDs or non-virtual BDs. For example, in this context, a physical BD refers to a traditional BD comprising a set of physical devices, in which a physical device is able to communicate with another physical device in the broadcast domain, e.g., as previously explained, without being rerouted. For example, a signal packet may be transmitted from one device in the BD to another device in the BD without being directed or redirected via a router or similar device, such as a device capable of affecting routing of signal packets, for example. In contrast, a virtual BD refers to a BD that includes at least some virtual components within the BD, such as a virtual device, and/or to a BD in which physical devices are linked, such as via a tunnel server, for example, as explained in more detail later. If used in a networking context, rather than generically, the terms linked and/or connected, such as, for example, if used to refer to devices in separate BDs, such as network devices and/or computing devices, refers to allowing signal packets to communicate between broadcast domains as if the broadcast domains are not separate, but without substantially changing the broadcast domain configuration of the separate broadcast domains. Again, although claimed subject matter is not necessarily limited in scope in this respect, additional example embodiments (along with related technology) may be discussed in aforementioned U.S. patent application Ser. No. 13/543,729. The terms connected, linked, logically joined and/or similar terms may be used interchangeably in context, such as in a networking context. Likewise, in this context, a virtual broadcast domain may refer to a broadcast domain generated and/or created by linking two or more broadcast domains at least for a period of time. A virtual BD operates like (e.g., similar to) a physical BD, however, a virtual device that may be part of a BD (e.g., a virtual BD), for example, is not necessarily associated with the same particular physical devices at all times. For example, a virtual device in a virtual BD, may move from one physical device to a different physical device, as a simple example, and remain in the BD where, for example, state of the device, although virtual, is maintained. Thus, while a virtual device in the BD necessarily executes on a physical device, it does not necessarily always execute on the same physical device at all times.

[0027] A broadcast domain may also be referred to as a logical broadcast domain (also referred to as LBD). A logical broadcast domain may comprise a virtual broadcast domain and/or a physical broadcast domain. A logical broadcast domain that includes a virtual broadcast domain, for example, may refer to a logical broadcast domain in which spatial confines, so to speak, of at least portions of the broadcast domain may not be entirely related to a particular set of physical devices. For example, some devices in the BD may not be consistently limited or associated with any particular physical devices. Some devices of the broadcast domain, for example, may be logically independent of physical devices, as alluded to above in connection with discussion of a virtual BD.

[0028] Along similar lines, a virtual local area network (VLAN) may, for example, comprise a logical partition or sub-partition of an otherwise physical LAN and/or logically joined (e.g., linked) logical partitions or logical sub-partitions of multiple physical LANs, for example. Likewise, a virtual network may comprise a similar concept in which logical partitions or sub-partitions of LANs, VLANs or virtual broadcast domains, may, for example, in an embodiment, be logically joined (e.g., linked) at least for a period of time. A non-virtual broadcast domain simply is another way to refer to a physical BD since it refers to a broadcast domain in which the broadcast domain devices exclude any virtual devices. Thus, devices in a non-virtual BD may comprise physical devices, such as a router, a computing platform (that includes a computing device, for example), a network device, etc. The term broadcast domain is also used in a generic sense meaning that it is not limited exclusively to a broadcast type of signal packet transmission scheme and/or may include in addition to and/or in place of a broadcast, other types of signal packet transmission schemes, such as, but not limited to, anycast, broadcast, multicast, unicast, geocast, the like, or any combinations thereof.

[0029] A network device comprises a device capable of communicating via a network, as mentioned. A computing device comprises a device capable of executing computations. Thus, for example, network devices may comprise computing devices, non-computing devices, and/or other devices. A network device may comprise, as non-limiting examples, a router, gateway, hub, switch, host, mobile device, server, client, NAT device, the like, or any combinations thereof. A server, which may comprise a computing device, may also operate as network device, by serving content over a network. For example, a server may provide now known and/or to be later developed, service arrangements, derivatives, and/or improvements, including past, present, and/or future services comprising, but not limited to, web services, third-party services, audio services, video services, email services, instant messaging (IM) services, SMS services, MMS services, voice over IP (VOIP) services, calendaring services, photo services, database services, facsimile services, file services, domain name services, game services, printing services, proxy services, data streaming services, peer-to-peer services, other services, the like or any combinations thereof. Examples of content may include text, images, audio, video, the like, or any combinations thereof, which may be processed in the form of physical signals, such as electrical signals, for example, or may be stored in memory, as physical states, for example.

[0030] As indicated above, a logical broadcast domain refers to at least a logical division of a network comprising a plurality of network devices such that network devices communicating via the logical division of the network may communicate with other network devices communicating

via the logical division without use of a router or other network device capable of limiting network communications and/or rerouting signal packet transmissions. For example, as a non-limiting illustration, a single logical broadcast domain may be constructed using multiple repeaters, hubs, NAT devices, and/or switches, whereby a network device communicating via one of the multiple repeaters, hubs, NAT devices or switches may communicate with another network device communicating via one of the repeaters, hubs, NAT devices and/or switches.

[0031] In one example illustrative embodiment, use of a discovery device and a reflecting device, may allow network devices communicating via their respective broadcast domains, for example, to discover and request services available via other network devices while still communicating via remote broadcast domains and potentially with less complexity, traffic and/or expense than conventional routing. In one possible illustrative embodiment, a controller may manage a plurality of respective discovery and reflecting devices communicating via their respective broadcast domains. In still another possible embodiment, a controller may provision one or more tunnel servers, for example, to facilitate communications between network devices communicating as part of different broadcast domains. Likewise, in still another illustrative embodiment, a controller may comprise a master controller that may be used to manage other controllers, for example, although there may, of course, be more than one or even several master controllers in a particular embodiment. In one or more embodiment, operations may be performed, for example, by software implemented applications that may be executing on or above a software stack of a device, such as a network device and/or a computing device; of course, this is not necessarily required, but it may be typical in some embodiments.

[0032] For example, in an embodiment, a discovery device may comprise a network device capable of communicating as part of a broadcast domain to discover features of the particular broadcast domain without human intervention to generate a broadcast domain configuration of the particular broadcast domain. A discovery device may engage in a variety of activities to accomplish this including, but not limited to any of the following: passively monitoring signal packets, actively probing other network devices, port scanning other network devices, querying other network devices, querying servers, such as a domain controller or other server responsible for a directory of broadcast domain features, any combinations thereof, or other approaches. In this context, as mentioned, without human intervention indicates that processes may be executed without human intelligence being on hand or otherwise available to make appropriate adaptations or changes, such as, if unanticipated events take place, for example. One or more processes may execute satisfactorily to accomplish a particular result, for example, without such human intelligence, interaction or direction. Thus, in a sense, processes may be performed automatically, so to speak. As previously mentioned, in one or more embodiments, operations may be performed, for example, by software implemented applications that may be executing on or above a software stack of a device, such as a network device and/or a computing device; of course, this is not necessarily required, but it may be typical in some embodiments.

[0033] Industry software applications may also assist in generating a broadcast domain configuration. For example, Nmap, a GNU software program, written by Gordon Lyon (also known by his pseudonym Fyodor Vaskovich) and available for download, for example, at the website www.nmap.org, comprises network scanner software capable of discovering hosts and/or services on a broadcast domain. Nmap may be executed by a computing or a network device to send network transmissions in the form of signal packets to hosts on a broadcast domain and may evaluate received response packets. Nmap is at least capable of discovering a host operating system, names and versions of available services, estimated uptime, hardware parameters and/or other network parameters. A discovery device, for example, may discover a broadcast domain configuration parameter using Nmap or any other software application capable of similar discovery. Thus, a software implemented application to perform discovery, for example, may execute above or on other software of a software stack executing on a device, such as a computing device and/or a network device, for example. As an example, a virtual device may be executing discovery. Likewise, as previously indicated, in an embodiment, the virtual device may be executing on a physical device owned by a third party, for example; although, again, not necessarily.

[0034] Thus, in an example embodiment, a broadcast domain configuration may be generated by a discovery device monitoring discovery signal packets via a broadcast domain. A discovery device in an embodiment, as indicated, may comprise a network device and/or a computing device executing an appropriate software application. A discovery device may also passively monitor signal packets that may comprise information relative to a broadcast domain configuration. A discovery device may also actively probe one or more devices, such as communicating as part of a broadcast domain or addressable via a broadcast domain. For example, a discovery device may port scan another device communicating as part of a broadcast domain, or use a software application capable of accomplishing such a task, for example. In this context, a domain controller refers to a network device that is capable of responding to security authentication requests on a broadcast domain. A discovery device may request broadcast domain configuration parameters from an active directory server or other network device capable of maintaining a directory of broadcast domain configuration parameters. For example, a domain controller may comprise an active directory server, and a discovery device may query an active directory server by transmitting signal packets requesting a response comprising discovery signal information. Again, as indicated, a software implemented application, for example, may perform operations in an embodiment.

[0035] Likewise, in another embodiment, available services via a network device may be determined based at least in part on which ports are open on a network device. Port scanning a network device may determine which ports may be open by transmitting signal packets to request a connection with a network device on a port. A network device may respond, for example, by transmitting signal packets indicating an available connection. See, for example, RFC 793—Transmission Control Protocol, available, for example, from the Internet Engineering Task Force (IETF), at www.ietf.org. Signal packets comprising responses may imply that a port may be available.

[0036] Because network port numbers may consistently map to known services, a network device monitoring these

responses may at least in part discover which services may be available via other network devices. For example, an open port **20** or **21** may imply that an FTP service may be available. Additionally, SSH may be available via port **22**, Telnet may be available via port **23**, SMTP may be available via port **25**, POPS may be available via port **110**, or HTTPS may be available via port **443**, for example. As is known in the art, associations between port numbers and services may be consistent, or may change over time. As associations between port numbers and services evolve, it is intended that claimed subject matter include discovery of available services according to evolving industry standards. As in known in the art, port scanning may be accomplished via TCP scanning, SYN scanning, UDP scanning, ACK scanning, Window scanning, FIN scanning, or other scanning types or methods, as may be known in the art or may later be developed.

[0037] In another illustrative embodiment, a reflecting device may comprise a network device capable of communicating as part a broadcast domain and capable of emulating a generated (e.g., other) broadcast domain configuration without human intervention. As previously mentioned in connection with discussion of a discovery device, in one or more embodiments, operations of a reflecting device may be performed, for example, by software implemented applications that may be executing on or above a software stack of a device, such as a network device and/or a computing device; of course, this is not necessarily required, but it may be typical in some embodiments. In this context, the term emulate refers to software stored or capable of executing on a physical device in which, the software, if executed by a physical device, for example, would appear to another network device as a device other than the physical device that is executing the software. Emulation may include operating as a proxy, meaning to appear as another device that may exist or it may include appearing as a device that does not exist anywhere. Likewise, emulation may include appearing as an enhanced or augmented version of another device or as a more limited version of another device. Furthermore, the term device, unless specified to be a physical device may include a virtual device or an emulated device.

[0038] In an embodiment, emulation may comprise, for example, a first network device simulating another network device via a broadcast domain. Another network device, in this example, may comprise a physical network device, or a virtual network device. Therefore, the emulated device may not exist as a physical piece of hardware. The emulating device may, however, make services available via a broadcast domain by transmitting signal packets in which, for example, requests for services may be forwarded to the emulated device to perform advertised services, for example, if the emulated device comprises a physical device. In another embodiment, an emulating device may offer services via a broadcast domain without forwarding requests to another network device. Additionally, emulation, in an embodiment, may comprise imitating another network device. However, another network device may exist virtually, and/or may comprise a set instructions being executed via another network device and/or computing device. Although services may appear to be available via a device, the device may, therefore, in an embodiment, comprise a virtual device. For example, a software application may execute instructions such as a virtual device on or above a software stack of a physical device.

[0039] In a possible example embodiment, a reflecting device may receive signal packets from a discovery device communicating via a remote broadcast domain, which may comprise a broadcast domain configuration including features of a broadcast domain, such as those disclosed below, for example. A reflecting device may forward signal packets via a local broadcast domain in a manner so as to emulate a generated broadcast domain configuration.

[0040] In this context, the term logical broadcast domain configuration refers to various hardware devices, firmware, and/or software applications (if residing in one or more locations within a LBD so as to be capable of being accessed or executed electronically, such as via a computing device) supporting a logical broadcast domain. As used in this specification, a logical broadcast domain configuration, therefore, may include stored signal packets relating to one or more features of a logical broadcast domain. For example, a configuration may represent, characterize and/or specify information, although in physical form, such as signals, related to one or more features, and/or other stored information, again, in physical form, such as memory states, relating to one or more features of a network device communicating via the logical broadcast domain, such as to represent, characterize and/or specify the one or more features of the LBD. Although claimed subject matter is not necessarily limited in scope in this respect, additional example embodiments of a broadcast domain configuration (along with related technology) may be discussed in aforementioned U.S. patent application Ser. No. 13/543,729.

[0041] For example, a broadcast domain configuration may include a subset of, and/or additions to the following non-limiting illustrative examples of features: one or more network protocols, available addresses, used addresses, topologies, devices used, such as switches or hubs, historical settings, such as for security, for a network protocol, etc., modifications of the foregoing, user accounts, including status, authentication, etc., security settings of a broadcast domain, workgroup or domain names, device names including status, available device features, etc., services available and/or used, status of the network devices, as well as other features.

[0042] In one example illustrative embodiment, use of a network device, for example, may allow network devices communicating via their respective logical broadcast domains, for example, to discover and/or request services available via network devices of another logical broadcast domain while still communicating via their respective logical broadcast domains, potentially at least partially with less complexity, traffic and/or expense than conventional routing. In this context, the term gateway device may also be employed to refer to a network device able to link logical broadcast domains via a tunnel server. As a matter of convenience, however, it is understood that any network device may include such a capability, such as, for example, if loaded with software providing an appropriate capability, as described in more detail throughout this specification. Therefore, it is not intended that the term gateway be used in this document to exclusively refer to devices having such capability. Likewise, in this context, the term linking logical broadcast domains refers to allowing signal packets to communicate between logically separate broadcast domains as if the logical broadcast domains are not separate, but

without substantially changing the broadcast domain configuration of the separate, logical broadcast domains. As mentioned, the terms connected, linked, logically joined and/or similar terms are used interchangeably in context, such as in a networking context (as opposed to generically). Likewise, in this context, a virtual broadcast domain may be generated and/or created by linking logical broadcast domains at least for a period of time. It is also noted that in an embodiment or implementation, a logical broadcast domain may comprise a single and/or remote stand-alone device.

[0043] Thus, in one embodiment, devices communicating as part of a virtual broadcast domain, may communicate with devices operating as part of a non-virtual broadcast domain, respectively, for example. In one illustrative embodiment, this may be accomplished via use of a tunnel server linking several network devices, for example. A tunnel server may, for example, execute software capable of receiving and/or sending signal packets from network devices in different logical broadcast domains. Different logical broadcast domains may otherwise use separate routers, for example. Typically, therefore, different logical broadcast domains may occupy separate network address spaces, such as separate IP address spaces, as an example. Also, typically, routers may provide network address translation so that signal packets may be properly routed after leaving a particular logical broadcast domain. However, if, for example, separate routers for respective BDs include a routing table, or similar mechanism, such that signal packets intended to reach another logical broadcast domain are routed to a tunnel server, in this example embodiment, as a result, network address translation may be by-passed. Network devices in separate logical broadcast domains may, therefore, communicate with and/or via a tunnel server. A tunnel server may forward traffic (e.g., signal packet transmissions) between gateway devices, for example, such as for communications between different logical broadcast domains. Although claimed subject matter is not necessarily limited in scope in this respect, additional example embodiments of a tunnel server (along with related technology) may be discussed in U.S. patent application Ser. No. 13/675,552, titled "LINKING LOGICAL BROADCAST DOMAINS," filed on Nov. 13, 2012, by Hankins et al., herein incorporated by reference in its entirety and assigned to the assignee of currently claimed subject matter.

[0044] Thus, for example, if a virtual broadcast domain provides a signal packet A to a tunnel server, it may be encapsulated. Likewise, if a non-virtual broadcast domain provides a signal packet B to a tunnel server it may be encapsulated. However, in this embodiment, a tunnel server may likewise remove encapsulation (e.g., referred to as termination) to determine where to forward a signal packet and re-encapsulate it for forwarding. It is noted that the encapsulation is a term of art, but may take a variety of forms. Claimed subject matter is not intended to be limited to a particular form of encapsulation. Likewise, in an embodiment, as a few non-limiting illustrative examples, encapsulation may include encryption as well, and/or may separate encapsulation from termination. Of course, use of gateway devices, network devices and/or tunnel servers may involve much more complex network transmission and/or routing arrangements as well. The previous description is simplified for purposes of illustration and, therefore, is not intended to be limiting.

[0045] In one possible illustrative embodiment, a controller may manage a plurality of respective gateway devices communicating via their respective logical broadcast domains. In still another possible embodiment, a controller may provision one or more tunnel servers, for example, to facilitate communications between network devices communicating as part of different, respective logical broadcast domains (e.g., gateways in respective LBDs may communicate via a tunnel server). Likewise, in still another illustrative embodiment, a controller may comprise a master controller that may be used to manage other controllers, for example, although there may, of course, be more than one or even several master controllers, as well as several private networks, in a particular embodiment. As shall become clear later, in an embodiment, although subject matter is not limited in scope in this respect, use of a controller may provide a capability for centralized management of a private network, for example. In an embodiment, for example, this may at least partially, for example, include one or more software implemented applications.

[0046] The term tunnel server refers to a mechanism or technique capable of being implemented in a network, such as in software, firmware, hardware or any combination thereof (other than software per se, since software is executed, of course, typically on one or more computing devices), that includes a capability to link logical broadcast domains, such as via encapsulation of signal packets, as previously described, for example. For example, a tunnel server may comprise a software application initiated by a controller, but potentially executed elsewhere, such as on a separate server. Throughout this document the term software application and/or software implemented application is understood to also encompass more than one software application and/or more than one software implemented application. For example, in an embodiment, a tunnel server may be implemented as a virtual device executing on one or more servers owned by one or more third parties; although claimed subject matter is not limited in scope in this respect. Furthermore, in another embodiment, a tunnel server may comprise a network device physically, logically, virtually or non-virtually separate from a controller. Likewise, a tunnel server may execute additional services. For example, in an embodiment, a tunnel service may also include a capability to implement a private network policy and inspection. In this context, the term private network policy and inspection refers to a capability to implement a unified networking policy, despite potentially being physically or logically separate networks and/or physically or logically separate sub-networks, for example. Furthermore, implementing a private network policy and inspection includes a capability for selected networks and/or sub-networks to implement selected policies or for selected networks and/or sub-networks to implement or employ a unified policy. Selected networking policies or a unified networking policy may, for example, include particulars regarding implementing at least one of the following processes: virus scanning, authentication, filtering (including URL filtering, for example), deep packet inspection, encryption, a firewall, or any combinations thereof.

[0047] Likewise, in an embodiment, a gateway device may comprise a network device capable of communicating as part of a broadcast domain to discover features of another broadcast domain without human intervention, such as, for example, to generate a broadcast domain configuration of

another broadcast domain. Although claimed subject matter is not necessarily limited in scope in this respect, additional example embodiments of a broadcast domain configuration (along with related technology) may be discussed in aforementioned U.S. patent application Ser. No. 13/543,729. As described previously, the term gateway device is introduced as a matter of convenience; it is intended that within this specification any network device may include such a capability, such as via one or more software implemented applications, for example. For example, a network device may engage in a variety of activities to accomplish this including, but not limited, to any of the following: passively monitoring signal packets, actively probing other network devices, port scanning other network devices, querying other network devices, querying servers, such as a domain controller and/or other server responsible for a directory of broadcast domain features, any combinations thereof, or even other approaches. Thus, although a gateway device may be referred to as a matter of convenience in connection with a broadcast domain, for example, it is to be understood, of course, that a gateway device is provided as merely one illustration of a network device, such as a network device with capability to perform operations, as described, for example, such as, discovery, reflection, communication with a tunnel server, operating as a tunnel server, operating as a controller, etc. Likewise, a network device may be implemented virtually (e.g., logically) or non-virtually (e.g., physically). Furthermore, in this context, without human intervention indicates that processes may be executed without human intelligence being on hand or otherwise generally available to make appropriate adaptations or changes, such as, if unanticipated events take place, for example. Throughout this specification, unless otherwise stated, it is intended that a process or processes be interpreted as being executed without human intervention. Thus, one or more processes may execute satisfactorily to accomplish a particular result, without human intelligence, interaction and/or direction, for example. Thus, in a sense, such processes at least may be said to be performed automatically. Typically, although not necessarily, this may include one or more software implemented applications.

[0048] As previously described, in an embodiment, for example, a controller may provide a capability of centralized management of a private network, such as a network comprising at least two logical broadcast domains, for example. As suggested, although claimed subject matter is not necessarily limited in this respect, in an embodiment, for example, a controller may be implemented via a server that may be associated with a node on the Internet, for example. However, as also suggested previously, management of a network, such as a private network, (which may, as simply an example, comprise a communications network for a business or an entity, for example) conventionally or typically involves some depth of technical knowledge and/or experience, such as typically may reside in a company's IT department, for example. Unfortunately, however, for small businesses or the like, as non-limiting examples, such knowledge, experience and/or capability may at least in some respects be out of reach, as a result of overhead expense, for example, that may accompany maintaining such a department.

[0049] One advantage of employing approaches consistent with embodiments previously discussed and/or related subject matter may be that a communications network may be initiated, expanded, modified and/or maintained yet still realize an associated reduced cost and/or performance improvement in comparison with traditional, conventional or state of the art networking approaches. Of course, medium or large size business may also benefit from such as approach. As will be discussed, additional advantages may also be present in an embodiment.

[0050] Possible benefits depending, of course, on particulars of an embodiment may include, for example, providing essentially a "turnkey" mechanism to bring "online" a private network of potentially worldwide geographical scope with roughly little more than an amount of technical knowledge usually employed to operate a standardly available web browser on a standardly available computing device, for example, such as the amount of technical knowledge employed to participate in a social network, such as Facebook or Google+, as simply illustrative examples. Thus, in an embodiment, a private network "in the cloud" may be managed via a GUI essentially as easily as it is to "friend" someone via Facebook, for example. Furthermore, in some embodiments, for example, hardware installation or even ownership may not necessarily be involved, as alluded to previously and explained in more detail later. Likewise, as alluded to, an embodiment of a private network in accordance with claimed subject matter, for example, may be secure, seamless, scalable and provide real-time, nearly instant (e.g., on demand) service.

[0051] As alluded, embodiments, for example, may be of benefit to smaller businesses, entities or the like, that typically may not have sufficient resources to finance or maintain an IT department on even a modest scale (although, as indicated, larger businesses may likewise benefit). Likewise, as also alluded, embodiments may leverage, for example, common place technical knowledge possessed by individuals, for example, such as those who may not be technical professionals and/or may possess a passing familiarity with computing and/or network communications technology (e.g., an amount of familiarity to use conventional computing devices, such as laptops, for example, and/or to communicate with others via those devices, etc.), but little more. Of course, it is also appreciated that these are merely illustrative examples and it is not intended that claimed subject matter be limited in scope to examples provided merely for illustrative purposes

[0052] To provide only a few non-limiting examples here, in an embodiment, simple, but also seamless management capabilities may include: provisioning and/or removing computing and/or memory resources, provisioning and/or removing technical services, provisioning and/or removing software applications, adding and/or removing network users, adding and/or removing network devices, structuring groups of users and/or devices, such as for merger and/or segregation for on-going business projects, etc. As suggested, in this context, in general, resources refer to physical resources, such as may be provided by hardware (e.g., additional memory and/or processing capability). Likewise, in general, applications refer to software-related applications (e.g., at least partially implemented via software). The term 'services' refers generally to provisioning a capability for use, such as via a particular private network, which may, for example, include provisioning of resources and/or applications for use.

[0053] For example, in an embodiment, to manage a private network, such as one including at least two LBDs,

for example, signal packet transmissions through a network may be initiated via (e.g., from) a network device. The initiating network device, nonetheless, need not be included in the private network. Devices included in a private network, as previously discussed, refers to a particular, limited set of network devices able to communicate with other network devices in the particular, limited set, such as via signal packet transmissions, for example, without a need for re-routing and/or redirecting such communications. In contrast, however, a device not included in the private network may be capable of being employed in management of the private network, without necessarily being a device within the private network. Of course, likewise, a device within the private network may also be capable of being employed to manage the private network. Likewise, one or more third party devices, such as a virtual device executing on one or more third party servers, as an example, may be employed.

[0054] For example, in an embodiment, a network device may be associated with a node and a controller may be associated with another node. Although claimed subject matter is not limited in scope in this respect, thus, in one example, the network device and the controller may respectively be associated with separate nodes, the nodes being accessible via the Internet, as an illustration. Thus, signal packet transmissions may be initiated from a network device to a controller, for example. In this example, a controller may comprise a mechanism for centralized management of a private network, such as previously described. For example, a controller may be implemented on a server, as one example, mentioned previously. Typically, but not necessarily, a controller may exist virtually, and/or may comprise a set instructions being executed via a device, such as a network device and/or computing device. Although a controller may appear to be available, the device may, in an embodiment, comprise a virtual device. For example, a software application may execute instructions such as a virtual device on or above a software stack of a physical device.

[0055] A network device, such as described in this example, typically may include a GUI, so that rendering of the GUI may take place. Of course, any one of a host of mechanisms to accomplish this are possible. For example, a standard web browser may be employed to render a GUI. A GUI, for example, may be rendered on a network device and/or a computing device based at least in part on signal packet transmissions to the device that may be initiated by a controller, for example. Thus, a client-server model in which, for example, a controller serves content to a client may be employed to render a GUI on a network device via a conventional browser without a plug-in, for example. Alternately, a plug-in may be employed to facilitate rendering of a GUI. In still another possible embodiment, a device, such as a network device and/or computing device, may include native software to render a GUI. These, of course, are merely illustrative examples and claimed subject matter is not restricted in scope to these or any other particular approaches, now known or later developed, that may be employed to render a GUI on a device having a display, such as on a network device, for example. Although in this example, the Internet was discussed, in an alternative embodiment, of course, the network may comprise any network, such as a stand-alone private network, an Intranet, a local area network, a wide area network, etc. Thus, as alluded to previously, a device, such as a network device and/or a computing device, to manage a private network may be included within the private network, but is not necessarily so.

[0056] As suggested previously, signal packet transmissions may be initiated from a device, such as a network device and/or a computing device. Initiated signal packet transmissions may be of use at least in part in terms of management of a private network, such as one comprising at least two or more logical broadcast domains. Again, as one simple and non-limiting example, initiated signal packet transmissions may result in a controller generating a separate logical broadcast domain that includes several devices that are included in a particular private network and are accessible to a controller of that network, for example. Similarly, but alternately, initiated signal packet transmissions may result in a controller generating a separate logical broadcast domain that includes several users for a private network, where, for example, users may be accessible via devices on the private network, the devices being associated with the users.

[0057] Although the previous example referred to a single device, of course, multiple devices may respectively have GUIs with similar capabilities. Likewise, an embodiment may involve multiple private networks. Furthermore, although a network device and/or a computing device may comprise a physical device; likewise, a device may comprise a virtual device in an embodiment, such as previously indicated. Along similar lines, in a generated LBD, as discussed above, one of the devices associated with one of the users may comprise a physical device, a virtual device or a user may, for example, have both an associated physical device and another associated virtual device, as an example.

[0058] In an embodiment, a device may relationally depict or display a network, such as a private network, in terms of users on the network, rather than in terms of devices on the network. One possible advantage includes a capability to thereby manage the network in a manner more in terms of the particular trait being depicted. For example, a network may be managed or oriented with respect to users, rather than devices, which may, in some situations or environments, turn out to be more useful or desirable. It is noted that the terms depict, display or similar terms may be used interchangeably. Although claimed subject matter is not necessarily limited in scope in this respect, additional example embodiments of a broadcast domain configuration (along with related technology) may be discussed in U.S. patent application Ser. No. 14/763,805, titled "PEOPLE CENTRIC MANAGEMENT OF CLOUD NETWORKS VIA GUI", filed on Jan. 22, 2013, by Cartsonsi et al., herein incorporated by reference in its entirely and assigned to the assignee of claimed subject matter.

[0059] In an example embodiment, a database, such as a relational database, may store network-related associations (e.g., traits), for example. Therefore, in an illustrative, yet simplified embodiment, a device may display a relational GUI. For example, a depiction of a network may be rendered in terms of users, for example. However, it may be desirable to see a display of geographies in which those users are located, for example. In an embodiment, manipulation of a relational GUI on a device may result in querying a relational database. Signal packet transmissions from a controller may provide query results and a relational GUI may re-render a display of a network of users in terms of geography. Again, this is merely an illustrative, yet simpli-

fied, example and it is not intended that claimed subject matter be limited to simplified, illustrative examples, of course.

[0060] An example of an embodiment of a private network, such at least two LBDs, is discussed below. FIG. **1** is a diagram illustrating an embodiment. However, in addition, as further discussed below, in this embodiment, for example, the private network may be linked or connected to the Internet. A capability to generate a private network and link it to the Internet may provide desirable features.

[0061] For example, in one embodiment, a method may include connecting and/or linking one or more private networks to the Internet where a private network includes at least two logical broadcast domains. For example, as explained in more detail, the one or more logical broadcast domains may comprise dynamically linked logical broadcast domains (LBDs). For example, linking may be accomplished via one or more tunnel servers, as discussed previously, in an embodiment. As alluded to previously, in an embodiment, a tunnel server may be implemented as a virtual device on a third party server, for example; however, claimed subject matter is not limited in scope to illustrations, such as the foregoing illustrations.

[0062] As shall be described, one or more dynamically linked LBDs may be dynamically added or dynamically removed. Similarly, one or more devices may be dynamically added or dynamically removed from the one or more logical broadcast domains. Furthermore, one or more devices may comprise one or more virtual devices. Therefore, one or more private networks may include virtual network portions and the one or more virtual network portions may be dynamically added or dynamically removed. Along similar lines, one or more sub-networks may be dynamically added or dynamically removed from the one or more logical broadcast domains.

[0063] A possible feature for one or more private networks may include a capability implement a private network policy and inspection process. For example, a unified networking policy may be implemented, despite potentially being physically or logically separate networks and/or physically or logically separate sub-networks, for example. Likewise, a private network policy and inspection process may include selected networks and/or sub-networks employing selected policies or selected networks and/or sub-networks employing a unified policy. A selected or a unified networking policy may, for example, include particulars regarding implementing at least one of the following processes: virus scanning, authentication, filtering (for example, URL filtering), deep packet inspection, encryption, a firewall, or any combinations thereof. Additionally, the one or more private networks are reconfigurable in real-time. As simply one example of re-configurability, the private networks may be geographically reconfigured, as explained later.

[0064] As mentioned, the one or more private networks may also be linked (e.g., connected) to the Internet. This may be accomplished via one node or more than one node. Likewise, the one or more nodes respectively each may comprise one or more devices. In an embodiment, for a node, the one or more devices, for example, may comprise at least one virtual device executing on a third party server. Thus, the one or more devices may be more or other than merely one or more dedicated hardware devices. Furthermore, since, as mentioned, configurability may be real-time, the one or more devices may be more or other than merely one or more pre-existing, configured devices.

[0065] As discussed above, in one embodiment, one or more tunnel servers may be employed. Although claimed subject matter is not limited in scope in this respect, the one or more tunnel servers may incorporate network address translation or a NAT device. For this example, therefore, linking to the Internet may be incorporated with one or more tunnel servers. Of course, in other embodiments, a NAT device to link to the Internet may be external to any tunnel servers, as described in more detail in the examples below.

[0066] Referring to FIG. **1**, LBDs **209**, **210** and **214** are illustrated, for example. A controller **206** and a tunnel server **260** are also illustrated, as described in more detail below. In one embodiment, independent logical broadcast domains may exist before a virtual broadcast domain is to be generated via linking LBDs, for example; although "pre-existing" BDs is not intended to be a requirement. Gateway devices (GDs) **215**, **211**, and **208** may be included within respective LBDs or may be generated or produced, such as, in one example embodiment, through installation of a software application on a device, such as a network device, for example, or through another mechanism. GDs **215** and **211** may communicate with controller **206** in one embodiment. Gateway devices **211** and **215** may, for example, transmit a broadcast domain configuration to controller **206**. Likewise, controller **206** may provision tunnel server **260** and may notify gateway devices **211** and/or **215** of a network address for tunnel server **260**. Likewise, tunnel server **260** may link logical broadcast domains **214** and **210**, in an embodiment. Tunnel server **260** may in another embodiment also link more than two independent logical broadcast domains, such as more than two pre-existing LBDs, for example. Again pre-existing BDs are discussed for illustration purposes, but being pre-existing is not intended as a requirement.

[0067] Gateway devices **211** and **215** may transmit signal packets comprising a broadcast domain configuration to tunnel server **260**. A tunnel server may forward signal packets, previously received, for example, that may comprise a broadcast domain configuration, such as via forwarding from gateway device **211** to gateway device **215**, for example. A tunnel server, such as **260**, may also forward signal packets, previously received, for example, that may comprise a broadcast domain configuration, such as forwarding to gateway device **211**, for example. A virtual broadcast domain (VBD), therefore, may be generated at least for a period of time by linking logical broadcast domain **214** and logical broadcast domain **210**, for example, to generate a private network.

[0068] Depending at least in part on particulars of an embodiment, gateway devices, such as **211** and **215**, for example, may, in an embodiment, emulate a received broadcast domain configuration, as shall be explained in more detail infra., and as may be discussed, for example, (along with related technology) in previously referenced U.S. patent application Ser. No. 13/543,729, titled "COMMUNICATION BETWEEN BROADCAST DOMAINS," filed on Jul. 6, 2012, by Hankins et al., which is assigned to the assignee of the presently claimed subject matter and is herein incorporated by reference in its entirety; however, these examples, including examples from U.S. patent application Ser. No. 13/543,729, of course, are simply provided as illustrative examples and are not intended to limit claimed subject matter in scope. Gateway devices **211** and **215** may,

for example, emulate a received broadcast domain configuration from other sources, such as, but not limited to, controllers, tunnel servers, other gateway devices, etc., for example. In a similar manner, more than two logical broadcast domains may be linked, such as previously mentioned. A gateway device may receive a broadcast domain configuration from a plurality of other gateway devices communicating entirely, primarily or at least partially via other logical broadcast domains, for example.

[0069] In one embodiment, as previously disclosed, responsive to initiated signal packets, a controller may initiate instructions for gateway devices, such as **208**, **211**, and **215**, for example, to communicate with and/or via a tunnel server, such as **260**, for example. Gateway devices **208**, **211**, and **215** may communicate with and/or via a tunnel server, such as **260**. Gateway device **211** may generate a broadcast domain configuration corresponding to logical broadcast domain **210**, for example. Gateway device **208** may generate a broadcast domain configuration corresponding to logical broadcast domain **209**, for example.

[0070] Gateway devices **208** and **211** may transmit respective generated broadcast domain configuration to controller **206**. Controller **206** may forward broadcast domain configurations, such as received from other gateway devices, for example, to gateway device **215**. Gateway device **215** may emulate multiple received broadcast domain configurations as part of logical broadcast domain **214**. For example, as an illustration, network device **216** may discover network device **223** communicating as part of logical broadcast domain **209** and/or network device **212** communicating as part of logical broadcast domain **210**. As mentioned, although not necessarily required, in an embodiment, software implemented applications may at least partially or primarily be employed to implement operations, such as these illustrations, for example.

[0071] Continuing with the embodiment of FIG. **1**, as an illustration of one possible scenario, network device **216** may communicate a request, such as by transmitting one or more signal packets, such as to network device **223**, for example. Thus, via gateway device **215**, for example, one or more signal packets comprising a request may be forwarded from network device **216** to tunnel server **260**. Tunnel server **260** may, as a result, forward one or more signal packets, such as to gateway device **208**, for example. Gateway device **208** may transmit signal packets via a logical broadcast domain, here **209**, for example. Since network device **223** comprises part of logical broadcast domain, it may therefore receive a request that may be viewed as an emulation of a request from network device **216** via the now local logical broadcast domain. Thus, network device **223** may accept the request and respond according to established network protocols in an embodiment, for example. In this illustrative example, a response may likewise be forwarded back via gateway device, **208**, and tunnel server **260**, to gateway device **215** for emulation as part of logical broadcast domain **214**. Gateway device **215** may transmit one or more signal packets via logical broadcast domain **214** indicating an accepted request from network device **223** to network device **216**. Thus, network devices **216** and **223** may communicate via a virtual broadcast domain comprising LBDs **209** and **214**, in this example, and by-passing NAT implemented by routers, for example. Thus, a private network managed by controller **206** has been illustrated by this example. In an implementation, network devices **216** and **223** may or may not recognize that their transmissions are forwarded via a tunnel server and/or to other logical broadcast domains. As mentioned, again, in an embodiment, although not necessarily required, software implemented applications may at least partially or primarily be employed to implement operations, such as these illustrations, for example.

[0072] In FIG. **1**, routers **202**, **203**, or **204**, for example, may route signal packets, such as between logical broadcast domains or to a controller, such as a master controller. Thus, a gateway device **215** may transmit a generated broadcast domain configuration to a controller or a master controller, such as **206**. Controller **206** may store a generated broadcast domain configuration received from a gateway device, such as device **215**, for example, using a memory device **207**. Memory device **207** may comprise a local storage device or a non-local memory device otherwise accessible by controller **206**, for example. In an embodiment, as previously described, likewise a database associating users, devices and other network-related traits may also be stored there.

[0073] In one embodiment, routers **202**, **203**, or **204** may employ network address translation (NAT). Typically, routers that employ NAT may modify a signal packet by altering a source address of a source device that may be part of a logical broadcast domain (likewise, a router employing NAT may also modify a destination address). Therefore, a signal packet transmission from a router employing NAT may appear as though the signal packet originated from the router rather than having originated elsewhere. Likewise, network devices on a logical broadcast domain may have an intervening router, or a similar device performing network address translation, for example, between the logical broadcast domain and other networks. Therefore, other portions of a network that have other logical broadcast domains, may not conventionally be accessible to devices operating as part of the other broadcast domains, at least not without some form of network address translation conventionally taking place. Likewise, routers employing NAT also may in some situations not necessarily allow signal packets to traverse a particular logical broadcast domain if the packets originate from outside the particular logical broadcast domain (e.g., not permit signal packets to reach a network device that may be part of the particular LBD). However, in an embodiment, for example, such as implementing a private network, NAT may be by-passed, such as previously described, for example. Thus, other devices may be accessible despite intervening routers without a significant change in infrastructure.

[0074] While, as described NAT implemented by routers are by-passed for signal packet transmissions within the private network, in this example; nonetheless, a NAT device may be included for connecting or linking the private network to the Internet, as previously suggested. Although claimed subject matter is not limited in scope in this respect, as mentioned, a feature of such an embodiment, for example, may include a unified networking policy being implemented across a private network as well as selected networking policies implemented for selected portions (e.g., selected sub-networks), as previously described. Thus, for example, referring to FIG. **1**, a NAT device **265** coupled to tunnel server **260** may be able to connect a private network to the Internet by implementing network address translation for signal packets outbound from TS **260** to the Internet. As shown in FIG. **1**, NAT device **265** may be in communication with controller **206**. Thus, controller **206**, in this example,

may exercise oversight of inbound and outbound communications between the private network and the Internet. Likewise, as previously described, a unified networking policy or selected networking policies may be implemented in this manner for a network or selected sub-networks.

[0075] As discussed previously, in an embodiment, a virtual broadcast domain may comprise logical broadcast domain **214**, and logical broadcast domain **210**. Therefore, network device **216**, communicating as part of logical broadcast domain **214**, may discover and/or request services from a messaging server **224**, communicating as part of logical broadcast domain **210**. Also, network device **212**, communicating as part of logical broadcast domain **210**, may discover and/or request services from a file server **220**, communicating as part of logical broadcast domain **214**. Of course, claimed subject matter is not limited in scope to example embodiments, such as the foregoing provided for illustrative purposes, for example.

[0076] Although claimed subject matter is not limited in scope in this respect, in an embodiment, as was mentioned, a potential feature may include centralized management, such as, for example, of a broadcast domain, and/or multiple broadcast domains, despite, for example, the distributed nature of devices in the respective BDs, such as with intervening independently managed network devices, as occurs in connection with the Internet, as one example. Additionally, in an embodiment, a secure, scalable, real-time, turnkey, web-related private network that is relatively simple and/or easy to maintain, modify and/or manage may be set up. As mentioned, again, in an embodiment, although not necessarily required, software implemented applications on or above infrastructure, such as computing and/or networking infrastructure, as well as network connectivity, may at least partially or primarily be employed to implement operations, such as these illustrations, for example.

[0077] As was discussed, in an embodiment, controller **206** may be accessed via a device, such as a network device. A controller, such as controller **206**, may receive broadcast domain configurations from other gateway devices communicating via other logical broadcast domains, whereby more than two logical broadcast domains may be similarly linked such that devices communicating via one of a plurality of logical broadcast domains, may discover and/or request services available via devices communicating via another of the plurality of logical broadcast domains. For example, controller **206** may also receive a broadcast domain configuration from gateway device **208**, communicating via logical broadcast domain **209**. Controller **206**, may also forward other received broadcast domain configurations from logical broadcast domains **214**, or **210**, for example, to logical broadcast domain **209**, for example, to be emulated via gateway device **208** or otherwise emulated.

[0078] Referring to FIG. **1**, as previously discussed, a broadcast domain configuration may include devices communicating via a virtual private network (VPN), for example. In this context, a VPN refers to a mechanism in which a remote host, such as a network device, communicates with a VPN server to encrypt a communication stream in a manner so that the remote host is able to reasonably securely communicate with other devices of the broadcast domain and in which an intervening router has a configuration that allows the remote host to initiate the VPN even with network address translation being implemented. A device communicating via a VPN, such as virtual device **222**, may connect to logical broadcast domain **214**, or disconnect from logical broadcast domain **214**. Likewise, as discussed with other examples, here, an example embodiment, such as this one, may be manageable from a device, such as a network device and/or a computing device.

[0079] Likewise, a tunnel server may be accessed and/or managed from a device, such as a network device and/or a computing device. In one embodiment, a tunnel server, such as tunnel server **260**, shown in FIG. **1**, for example, may be employed to also perform functions of a controller. For example, one or more software implemented applications may implement desired operations. Tunnel server **260** may, for example, receive a broadcast domain configuration. Tunnel server **260** may forward one or more broadcast domain configurations to one or more gateway devices. Tunnel server **260** may forward one or more broadcast domain configurations based at least in part on currently communicating devices, such as a network device, or otherwise, for example, such as stored BD configurations, as another example. Additionally, a linking table or other mechanism, for example, may specify forwarding rules or the like, to, for example, specify linking or additional functionality, such as between logical broadcast domains, for example, to form a virtual broadcast domain. In another embodiment, tunnel server **206** may transmit a portion (e.g., digest or subset) of a generated broadcast domain configuration. For example, in an embodiment, a generated broadcast domain configuration may comprise a selection of a set or subset of features of a logical broadcast domain **210** to be forwarded, such as to one or more gateway devices, for example, by tunnel server **260**, operating as a controller, in this illustrative example.

[0080] Similarly, virtual devices for a private network may also be managed from a network device, even a virtual network device or other virtual device. In an embodiment, emulation may comprise, for example, a first device simulating another device via a broadcast domain. Another device, in this example, may comprise a physical network device, or a virtual network device. Therefore, the emulated device may not exist as a physical piece of hardware, although may be executed or stored on a physical device, of course. An emulating device may, however, make services available via a broadcast domain by transmitting signal packets in which, for example, requests for services may be forwarded to the emulated device to perform advertised services, for example, if the emulated device comprises a physical device. In another embodiment, an emulating device may offer services via a logical broadcast domain without forwarding requests to another network device. Additionally, emulation, in an embodiment, may comprise imitating another device, such as a network device and/or a computing device. However, another device may exist virtually, and/or may comprise a set instructions being executed via another device. Although services may appear to be available via a device (e.g., physical device), the device may, therefore, in an embodiment, comprise a virtual device. Likewise, as suggested previously, the virtual device may be executing on a physical device owned by a third party making processing and/or memory capacity available for purchase, for example. Likewise, as indicated previously, for these various aspects, NAT **265** is able to provide a capability to connect a private network to the Internet, such as under direction or oversight of controller **206**, for example.

[0081] It is likewise noted that in an alternate embodiment, a NAT device may be incorporate into a tunnel server, such as **260**, for example. Likewise, as was described, a tunnel server may execute additional services. Again, although not necessarily, typically services may be implemented using one or more software applications, as was mentioned. For example, in an embodiment, a tunnel service may also include a capability implement a private network policy and inspection process, which may, for example, including a unified networking policy, despite potentially being physically or logically separate networks and/or physically or logically separate sub-networks, for example. A private network policy and inspection process may also include for selected networks and/or sub-networks employing selected policies or selected networks and/or sub-networks employing a unified policy. Selected networking policies or a unified networking policy may, for example, include particulars regarding implementing at least one of the following processes: virus scanning, authentication, filtering (for example, URL filtering), deep packet inspection, encryption, a firewall, or any combinations thereof, as an example. A NAT device, such as **260**, may be employed to maintain state of interactions between devices in the private network and devices outside the private network, such as Internet host devices, for example. As a result, some trade-offs may exist regarding whether to incorporate the NAT within the tunnel server in an embodiment. Since, if the NAT fails, state may be lost between the private network and the Internet, and a disruption of service may occur until connections may be re-established.

[0082] In one possible approach, NAT functionality may be included with a tunnel server, such as one tunnel server per NAT. If a server fails on which a TS is executed, the users on the private network are impacted, but not necessarily others. In another approach, the NAT may comprise a separate component, such as **265**, illustrated in FIG. **1**, and multiple tunnel servers may potentially connect to the Internet via **265**, for example. Thus, if a TS fails, but not the NAT, state is generally maintained with the Internet; however, if the NAT fails, more users may be impacted. In still another approach, a TS and a NAT may comprise separate components (such as software applications executing on separate physical devices, for example), but may still do so in one-to-one relationship. This approach has some partial fault tolerance benefits, but may increase cost and/or complexity. Likewise, an approach other than one-to-one, such as two-to-one, etc., may be employed in an embodiment.

[0083] In an embodiment, more than one tunnel server may be employed to link a plurality of logical broadcast domains to form a virtual broadcast domain, although, of course, claimed subject matter is not limited in scope in this respect. FIG. **2** is a schematic diagram showing an embodiment with more than one tunnel server in one illustrative non-limiting example. In one embodiment, for example, four logical broadcast domains may be in communication via more than one tunnel server. Gateway devices **311**, **321**, **331**, and **341** may generate a broadcast domain configuration for their respective logical broadcast domains, for example. Gateway devices **311**, **321**, **331**, and **341** may forward respective broadcast domain configurations to controller **350**. Controller **350** may provision tunnel server one, shown as **360**. Controller **350** may initiate instructions to gateway devices **311**, **321**, **331**, and **341** to communicate with tunnel server one **360**. Gateway devices **311**, **321**, **331**, and **341** may therefore initiate communications, such as via signal packet transmissions, for example.

[0084] In one embodiment, logical broadcast domain A **310**, and logical broadcast domain B **320** may be located within a similar geographic boundary, such as, the same building, the same city, the same state, the same country, the same continent, the same planet, or other, for example. In an embodiment, logical broadcast domain C **330**, and logical broadcast domain D **340**, may reside in another geographic region different from the geographic region where logical broadcast domain A **310** or logical broadcast domain B may reside. In one embodiment, for example, logical broadcast domain A **310** and logical broadcast domain B **320** may be physically located in Los Angeles, Calif., U.S.A, while logical broadcast domain C **330** and logical broadcast domain D **340** may be physically located in New York City, N.Y., U.S.A. Of course, these are simply examples for illustration and are not meant to be limiting in any way.

[0085] In this embodiment, tunnel server one **360**, may also be physically located in Los Angeles, Calif., U.S.A. so that transmissions (e.g., signal packets) between logical broadcast domain C **330** and logical broadcast domain D **340** (e.g., communicating via tunnel server one **360**, located in Los Angeles), may be transmitted to Los Angeles, and back to New York.

[0086] A path or channel for communications may potentially be enhanced by controller **350** provisioning an additional tunnel server located more physically proximate to logical broadcast domain C **330** and logical broadcast domain D **340**, for example. Controller **350** may provision tunnel server two **370**. For example, in an embodiment, provisioning a tunnel server may be accomplished via execution of one or more software applications. Controller **350** may therefore initiate instructions to gateway devices **311**, **321**, **331**, and **341** to additionally initiate communications with tunnel server two **370**, while also continuing to be in communication with tunnel server one **360**, for example. Gateway devices **311**, **321**, **331**, and **341** may thus initiate communications to tunnel server two **370** after being deployed. Furthermore, in an embodiment, although claimed subject matter is not limited in scope in this respect, transmissions, such as signal packet transmissions may take place between tunnel servers, such as **360** and **370**, in this example.

[0087] Provisioning an additional tunnel server may be based at least in part on a variety of factors or considerations. For example, signal packets communicated via tunnel server one **360** may be a factor or a consideration. Provisioning an additional tunnel server may likewise be based at least in part on signals from a controller, other than controller **350**, for example. Likewise, gateway devices may optionally communicate with other gateway devices, such as via tunnel server one or tunnel server two, for example, depending at least in part on a host of possible factors, such as, geography, latency, utilization, bandwidth (e.g., throughput), availability, efficiency, cost, etc. Furthermore, via a controller, such as **350**, a private network may be reconfigured without human intervention, for example, to improve performance and/or reduce cost. For example, if available bandwidth decreases, if latency increases, and/or if network utilization increases, controller **350** may provision additional tunnel servers or may provision tunnel servers in a manner to improve performance and/or reduce cost without human intervention. Examples of possible monitoring and/or mea-

surement of network performance and/or cost-related parameter were previously discussed.

[0088] As an example, gateway device **311** may transmit signal packets to gateway device **321**. Gateway device **311** may transmit signal packets via tunnel server one **360** since tunnel server one **360** is more proximate to both gateway device **311** and gateway device **321** in this example. In another embodiment, gateway device **311** may transmit signal packets via tunnel server two **370**, such as if tunnel server one may be unavailable, for a variety of reasons, such as, but not limited to one or more of the following situations: a software issue, a configuration issue, a power issue, scheduled maintenance, insufficient permissions, a security issue, other issues, or combinations thereof.

[0089] Likewise, a variety of factors or considerations may likewise affect signal packet transmissions between already provisioned tunnel servers, such as **360** and **370**, for example, in an embodiment. As a simple illustrative example, not meant to limit claimed subject matter, a tunnel server in Europe may communicate with a tunnel server in the United States to pass signal packet transmissions, such as from a broadcast domain in Europe to a broadcast domain in the United States; however, respective broadcast domains in Europe may communicate via the tunnel server in Europe while respective broadcast domains in the United States may communicate via the tunnel server in the United States. For example, again, without intending to limit claimed subject matter, it may be that latency is potentially reduced in comparison with using only either the tunnel server in Europe or only the tunnel server in the United States to pass signal packet transmissions from a broadcast domain in Europe to a broadcast domain in the United States. Of course, communications may also take place between more than two tunnel servers in an embodiment.

[0090] In still another example implementation involving more than two tunnel servers, for a stream of successive signal packets to be communicated between two broadcast domains, the signal packets may be communicated using more than one tunnel server in a manner so that immediately successive signal packets have a signal communication path that includes different tunnel servers. As one non-limiting example, a first broadcast domain may communicate signal packet transmissions to a second broadcast domain using a plurality of tunnel servers in a manner so that, for example, for N tunnel servers, where N is an integer greater than one, every Nth signal packet from the first broadcast domain may be transmitted to the second broadcast domain via the Nth tunnel server. Likewise, of course, every Nth signal packet from the second broadcast domain may be transmitted to the first broadcast domain via the Nth tunnel server; however, the Nth tunnel server from the first BD to the second BD may not necessarily correspond to the Nth tunnel server from second BD to the first BD. Of course, other approaches of distributing signal packet transmissions across multiple tunnel servers are also intended to be included. Implementations in which multiple tunnel servers are employed may offer a variety of potential benefits, although claimed subject matter is not necessarily limited in scope to implementations having these benefits. For example, security may be enhanced. Likewise, improved fault tolerance, redundancy and/or load balancing of tunnel servers may also be accomplished.

[0091] In one embodiment, tunnel server one **360**, may specialize in file serving, and tunnel server two **370** may specialize in message serving. In an embodiment, gateway device **331**, transmitting signal packets comprising file serving, may do so via tunnel server **360** or tunnel server **370**. In general, a plurality of gateway devices may communicate with a plurality of tunnel servers. For example, provisioning additional tunnel servers may as one possible consideration, potentially enhance communications by providing alternate paths between gateway devices communicating as part of other logical broadcast domains that may be linked via tunnel servers. Nonetheless, one or more networks of logical broadcast domains and tunnel servers may be generated based at least in part on a host of considerations, such as, for example, cost, capability, efficiency, compatibility, resources, proximity, latency, bandwidth (e.g., throughput), utilization, others or combinations thereof. In one embodiment, network device **312** may communicate with or access network device **322**, such as using gateway devices **311** and **321** communicating via tunnel server one **360**, for example. Again, typically, but not necessarily, one or more software implemented applications may be utilized. Network device **322** may communicate with or access network device **342**, such as using gateway devices **311** and **341** communicating via tunnel server two **370**, for example. Gateway device **311** may also communicate via tunnel server one **360** and via tunnel server two **370**, concurrently.

[0092] In an embodiment, a tunnel server may, for example, store one or more service requests, such as in local memory. In an embodiment, if multiple devices, such as a network device, request similar services, a tunnel server may provide service, or a response to a service request to a requesting device perhaps without forwarding the service request to a device able to initiate service, for example; however, this may vary at least in part on particulars of a situation and/or an embodiment, for example.

[0093] Additionally, in an embodiment, a tunnel server may acknowledge receipt of one or more signal packets before arrival at a destination device, such as a network device. For example, in one embodiment, network device **332** may transmit a file, or other large amount of stored information states (e.g., stored as physical states in memory), for example, to network device **322**, such as via tunnel server one **360**. In an embodiment, tunnel server one may acknowledge receipt of one or more signal packets before network device **322** acknowledges receipt of the one or more signal packets, for example. This may accelerate transmissions. For example, network device **322** may receive acknowledgement of one or more signal packets, and transmit subsequent signal packets with less delay as a result, for example, potentially improving wide area network communications, for example

[0094] A tunnel server may also replicate services available via other network devices. In this context, replication comprises reading and writing stored information states (e.g., stored as physical states in memory). Replication may be desirable for a variety of reasons, including, improved consistency between two or more redundant resources, such as software or hardware components, improved reliability, improved accessibility, improved fault tolerance, or combinations thereof. Replication may comprise storage replication, and/or replication of computational tasks, or may comprise active or passive replication as is known in the art. Again, an implementation may be in accordance with execution of one or more software applications.

[0095] In one embodiment, tunnel server two **370**, may store network communications. Network device **322** may comprise a file server, for example. A device, such as network device **312**, may request file services from file server **322** via tunnel server two **370**. Network device **312** may receive requested services. Subsequently, network device **332** may request similar file services from file server **322** via tunnel server two **370**. Tunnel server two **370**, having stored previous requests for file service, for example, may respond by providing a requested file service, without necessarily communicating a request to file server **322**. A tunnel server may, for example, in an embodiment, potentially provide a faster response by storing previous service requests, referred to here as caching the previous service requests. In another example embodiment, a device such as network device **342** may comprise a database server. Tunnel server **370** may replicate the database (or a portion thereof) of database server **342**. In an embodiment, if a device, for example, were to request database services from database server **342**, via tunnel server two **370**, tunnel server two **370** may respond, for example, without necessarily communicating with database server **342**.

[0096] FIG. **2** also illustrates an embodiment in which, as previously described, separate NAT devices may be employed in a one-to-one relationship with tunnel servers; although, claimed subject matter is not limited to a one-to-one relationship, as previously explained. Thus, as illustrated, NAT **365** corresponds with TS **360** and NAT **375** corresponds with TS **370**. Likewise, NATs **365** and **375** also may communicate with controller **350** in the embodiment illustrated. Therefore, benefits, such as previously described, may be available, although claimed subject matter is not limited in this respect. As one example, a unified networking policy or selected networking policies may be implemented, such as previously described. Again, software may execute or be executable on or above infrastructure to implement such policies, for example

[0097] FIG. **4** is a flowchart illustrating an embodiment of a method of communication between broadcast domains. Of course, claimed subject matter is not limited in scope to the particular order or arrangement of blocks shown. Likewise, additional or replacement blocks may be included in an embodiment, such as blocks depicting one or more operations in place of those shown may be used in an embodiment, for example.

[0098] Referring to FIG. **4**, gateway devices A and B may be included as part of separate logical broadcast domains in an example embodiment. As shown by block **401**, gateway device A may discover and generate a broadcast domain configuration without human intervention, as part of a logical broadcast domain, for example. As shown by block **410**, gateway device B may likewise discover and generate a broadcast domain configuration as part of a logical broadcast domain, for example. At block **402**, gateway device A may initiate transmission of a generated broadcast domain configuration, such as in the form of signal packets, for example, to a controller or a master controller. At block **411**, gateway device B may initiate transmission of a generated broadcast domain configuration, such as in the form of signal packets, for example, to a controller or a master controller. At block **420**, a controller may receive one or more generated broadcast domain configurations from one or more gateway devices, such as A and/or B, for example.

[0099] FIG. **4** shows an embodiment including the blocks described above as well as the blocks described immediate below, starting with block **421**. However, likewise, in an embodiment, a flowchart of provisioning a tunnel server may begin with block **421**. Of course, as indicated above, claimed subject matter is not limited in scope to the particular order or arrangement of blocks shown. Likewise, additional or replacement blocks may be included in an embodiment, such as blocks depicting one or more operations in place of those shown may be used in an embodiment.

[0100] Referring to block **421**, for example, a controller may initiate provisioning of one or more tunnel servers, such as for device A and/or device B, for example. At block **422**, a controller may initiate transmission of one or more network addresses for one or more tunnel servers to gateway device A and/or gateway device B, for example. At block **423**, gateway devices A and/or B may initiate communication with one or more tunnel servers, for example, via one or more network addresses for the respective one or more tunnel servers, for example. Likewise, the gateway devices may therefore forward broadcast domain and/or Internet signal packet transmissions to the one or more tunnel servers. At block **424**, one or more tunnel servers may receive signal packets and may initiate services. Services may include, for example, a private network policy and inspection process, which may include, as examples, virus scanning, filtering (for example, URL filtering), deep packet inspection, a firewall, and others, in connection with processing of the received signal packets. Likewise, as shown at block **425**, the one or more tunnel servers may initiate forwarding of signal packets, such as between gateway devices, such as A and/or B, for example. At block **426**, one or more tunnel servers may determine if any of the received signal packet transmissions are between a gateway device and the Internet (e.g., one or more devices accessible via the Internet) and, if so, may initiate forwarding of signal packets to one or more NAT devices, for example. At block **427**, the one or more NAT devices may initiate transmission of signal packets to the Internet (e.g., to one or more devices accessible via the Internet to which the signal packets are directed). It is noted, that in an embodiment in which a NAT device is incorporated into a tunnel server, although this operation may occur, it may take place as part of tunnel server operation. Therefore, again, benefits, such as previously described, may be available, although claimed subject matter is not limited in this respect. For example, a unified networking policy or selected networking policies may be implemented.

[0101] FIG. **3** is a schematic diagram illustrating still another embodiment **590** of a virtual broadcast domain comprising a plurality of logical broadcast domains. In one embodiment, respective gateway devices (e.g., **511**, **515**) may generate respective broadcast domain configurations and may, for example, initiate transmission to a controller, such as **506**, for example, via a router. That is, it is not necessarily required that a tunnel server always be employed, such as, for example, if network devices are network addressable, such as via an IP address, for example.

[0102] Respective gateway devices (e.g., **511**, **515**) may request from a controller, such as **506**, broadcast domain configurations of other logical broadcast domains and may emulate the generated broadcast domain configurations via the respective logical broadcast domains of which the

respective gateway devices may be a part. Likewise, a gateway device may, instead, request that a controller, for example, instruct a gateway device to initiate transmission of a generated broadcast domain configuration to a requesting gateway device. In one embodiment, gateway device **515** may, for example, request a generated broadcast domain configuration from controller **506** corresponding to non-virtual broadcast domain **510**, for example. Likewise, gateway device **511** may request a generated broadcast domain configuration from controller **506** corresponding to virtual broadcast domain **580**.

[0103] In one embodiment, devices communicating as part of virtual broadcast domain **514** may communicate with devices operating as part of non-virtual broadcast domain **510**. In one illustrative embodiment, this may be accomplished via a tunnel server, such as **560**. Tunnel server **560** may, for example, execute software capable of receiving and sending signal packets from network devices in different logical broadcast domains that may otherwise use separate routers, for example. If, for example, the separate routers include a routing table or similar mechanism such that signal packets intended to reach another logical broadcast domain are routed to a tunnel server, such as **560**, then, in this example embodiment, as a result, network address translation may be by-passed. Thus, devices, such as network devices, may communicate with tunnel server **560** and tunnel server **560** may forward traffic between devices, such as on different logical broadcast domains.

[0104] Thus, for example, if virtual broadcast domain **514** provides a signal packet A to tunnel server **560**, it may be encapsulated. Likewise, if non-virtual broadcast domain **510** provides a signal packet B to tunnel server **560**, it may be encapsulated. However, in an embodiment, a tunnel server may remove encapsulation (e.g., referred to as termination) to determine where to forward a signal packet and re-encapsulate it for forwarding so that it may be routed via intermediate network devices. Likewise, in an embodiment, as a few non-limiting illustrative examples, encapsulation may include encryption as well, or may separate encapsulation from termination.

[0105] In an embodiment, tunnel server **560** may be controlled at least in part by a controller **506**. For example, tunnel server **560** may be instructed to forward network transmission signal packets from gateway device **515** to gateway device **511**, and forward network transmission signal packets from gateway device **511** to gateway device **515**, for an embodiment, for example. For an embodiment, gateway device **515** in virtual broadcast domain **514** and gateway device **511** in non-virtual broadcast domain **510** may be linked for at least a period of time, in this example, by tunnel server **560**, resulting in a path for signal packet network communications between gateway device **515** and gateway device **511** and thereby forming a virtual BD, at least for a period of time, so as to forming a secure, private network, for example.

[0106] Signal packets from gateway device **515** may comprise network communication signal packets transmitted via virtual broadcast domain **514** from network device **516**, and signal packets from gateway device **511** may comprise network communication signal packets transmitted via non-virtual broadcast domain **510** from network device **512**. Gateway devices forwarding signal packets, or variations thereof, as part of respective logical broadcast domains, for example, may allow other devices, such as network devices, communicating as part of the respective logical broadcast domain to communicate with network devices in different, other logical broadcast domains as if part of a single logical broadcast domain but without a significant change in configuration etc. for the participating logical broadcast domains, referred to here as forming a virtual broadcast domain.

[0107] In an embodiment, network device **516** may access and/or communicate with messaging server **524**, and network device **512** may access and/or communicate with file server **520**. Additionally, a virtual device **522**, via a traditional VPN in this example in communication with virtual broadcast domain **514**, may access and/or communicate with network devices communicating as part of non-virtual broadcast domain **510**, such as network device **512**, or messaging server **524**, for example. No additional substantial configuration changes or modifications are necessarily involved to accomplish such as result beyond those to communicate with virtual broadcast domain **514**. In an embodiment, such as this example, a virtual broadcast domain **580**, may be generated at least for a period of time by linking virtual broadcast domain (e.g., a logical broadcast domain) **514** with non-virtual broadcast domain (e.g., a logical broadcast domain) **510**.

[0108] Tunnel server **560** may likewise receive signal packets from devices communicating as part of other logical broadcast domains. For example, tunnel server **560** may receive network communication signal packets from gateway device **515** communicating as part of virtual broadcast domain **514**, and also from gateway device **511** communicating as part of non-virtual broadcast domain **510**. Tunnel server **560** may receive network communication signal packets from gateway device **515** and forward network communication signal packets to gateway device **511**, for example. Tunnel server **560** may also receive signal packets from gateway device **511** and forward signal packets to gateway device **515**, for example. In an embodiment, this may allow gateway device **515** and gateway device **511** to communicate, in this example, bypassing for the respective broadcast domains execution or implementation of NAT by routers, or another or similar address modification technique, for example.

[0109] In another embodiment, virtual broadcast domain **514** may employ a different network protocol than non-virtual broadcast domain **510**, such as a different network discovery protocol, for example. In one embodiment, a controller, such as controller **506**, may translate a generated broadcast domain configuration, such as by modifying network transmission signal packets comprising the generated broadcast domain configuration for virtual broadcast domain **514** so as to be substantially compatible with or substantially complaint with non-virtual broadcast domain **510**, such as, for example, its particular network discovery protocol. In another embodiment, a controller may initiate a gateway device to modify a generated broadcast domain configuration, such as for virtual broadcast domain **514**, for example, so as to be substantially compatible with or substantially compliant with non-virtual broadcast domain **510**, such as, for example, its particular network discovery protocol. Likewise, rather than being initiated, such as by a controller, perhaps a difference in protocol, such as a network discovery protocol, may be detected, such as by a gateway device and, with or without being initiated, a gateway device may translate features, such as discovery related features, of the

generated broadcast domain configuration in an embodiment. For example, in one illustrative embodiment, devices communicating as part of virtual broadcast domain **514** may perform discovery via WS-Discovery, previously referenced, and devices communicating as part of non-virtual broadcast domain **510** may do so via Bonjour, available from Apple Inc., Cupertino, Calif., see, for example, https://developer.apple.com/bonjour/. Thus, a gateway device may, for example, convert a generated broadcast domain configuration from WS-Discovery to Bonjour for substantial compliance or substantial compatibility within logical broadcast domain including gateway device. Of course, this is merely an illustrative embodiment and claimed subject matter is not limited in scope to illustrative embodiments.

[0110] In this context, 'IPv4' refers to using signal packets substantially compatible or substantially compliant with Internet Protocol version 4, also referred to as IPv4 signal packets in this context. IPv4 is described in IETF publication RFC 791 (September 1981), replacing an earlier definition (RFC 760, January 1980). IPv6 refers to using signal packets substantially compatible or substantially compliant with Internet Protocol version 6, also referred to as IPv6 signal packets. IPv6 is described in IETF publication RFC 2460, published in December 1998. Gateway device **511** in an embodiment, for example, may communicate using IPv4 signal packets or IPv6 signal packets. It is noted, of course, that claimed subject matter is not limited in scope to IPv4 and/or IPv6 signal packets. Any one of a host of known or to be developed signal packets, such as network communication signal packets, may be employed. Nonetheless, in this illustrative example, network communications between gateway device **511** and tunnel server **560** may, for example, comprise IPv6 signal packets. Network communications between gateway device **511** and network device **512** may, for example, comprise IPv4 signal packets.

[0111] In an embodiment, gateway device **511**, for example, may assign IPv6 addresses to IPv4 network devices communicating as part of non-virtual broadcast domain **510**, without transmitting the IPv6 addresses to the IPv4 devices. In this embodiment, a device, such as a network device **512**, may communicate using IPv4 signal packets whereas file server **520** may communicate using IPv6 signal packets. For example, network device **512** may request services from file server **520**. In an embodiment, gateway device **511** may translate IPv4 signal packets from network device **512** to IPv6 signal packets to be forwarded via tunnel server **560** to file server **520**. Response signal packets transmitted to gateway device **511** may be translated from IPv6 signal packets to IPv4 signal packets, such that they may be readily understood and/or processed by network device **512**, communicating using IPv4 signal packets. In this context, a gateway device may, for example, perform translate services so that devices of a logical broadcast domain that communicate using IPv4 signal packets may be able to communicate with devices of a logical broadcast domain that communicate using IPv6 signal packets, for example. In another embodiment, tunnel server **560** may provide translation between IPv4 and IPv6 signal packets, such that gateway device **511** communicates using IPv4 signal packets without necessarily performing translation.

[0112] In one embodiment, gateway device **515**, may assign IPv6 addresses to other devices communicating as part of virtual broadcast domain **514**, such as, network device **516**, file server **520**, or virtual device **522**, in addition to already assigned IPv4 addresses. Gateway device **515** may also provide updated routing tables to other devices communicating as part of virtual broadcast domain **514**, such as, network device **516**, file server **520**, or virtual device **522**.

[0113] In another embodiment, linking with another logical broadcast domain may potentially result in a multi-layered collection or nesting of logical broadcast domains. For example, in one embodiment, a virtual broadcast domain **580** may comprise virtual broadcast domain **514** and non-virtual broadcast domain **510**, linked as previously discussed. Gateway device **515** may generate and forward a broadcast domain configuration to controller **506**. Gateway device **515**, may also forward signal packets, or derivatives thereof, from devices communicating as part of virtual broadcast domain **514**, to tunnel server **560**.

[0114] Virtual broadcast domain **590** may comprise linking virtual broadcast domain **580** and non-virtual broadcast domain **509**. Gateway device **515**, operating as a gateway device for virtual broadcast domain **580**, may transmit a broadcast domain configuration for virtual broadcast domain **580** to master controller **507**. Master controller **507** may request and/or receive a broadcast domain configuration from another controller, such as controller **506**, for example. In an embodiment, therefore, gateway device **515** may in effect concurrently operate as a gateway device for different virtual broadcast domains. Of course, as previously described, an alternate approach may employ signal packet transmissions between tunnel servers, such as between **560** and **561** of FIG. **3**, or another approach.

[0115] As discussed previously, NAT implemented by routers are by-passed for signal packet transmissions within a private network, such as in this example; nonetheless, one or more NAT devices may be included for connecting or linking a private network to the Internet, as previously suggested. As mentioned, a feature may include implementing a private network policy and inspection process, which may, for example, include a unified networking policy being implemented across a private network, such as, for example, implementing virus scanning, authentication, filtering, (for example, URL filtering) deep packet inspection, encryption, a firewall, any combinations thereof, etc. Likewise, as previously described, selected networking policies for selected portions of a private network may be implemented as a private network policy and inspection process. Thus, for example, referring to FIG. **3**, a NAT device **662** coupled to tunnel server **561** is able to connect the private network to the Internet by implementing network address translation for signal packets outbound from TS **561** to the Internet. As shown in FIG. **3**, NAT device **563** provides a similar capability for TS **560**. Likewise, the NATs may also receive inbound signal packet transmissions which may be forwarded as appropriate.

[0116] For purposes of illustration, FIG. **5** is an illustration of an embodiment of a computing platform **1150** that may be employed in a client-server type interaction, such as described infra. in connection with rendering a GUI via a device, such as a network device and/or a computing device, for example. In FIG. **5**, computing platform **1130** may interface with client **1120**, which may comprise features of a conventional client device, for example. Communications interface **1140**, processor (e.g., processing unit) **1160**, and memory **1170**, which may comprise primary memory **1174** and secondary memory **1176**, may communicate by way of

communication bus **1180**, for example. In FIG. **5**, client **1120** may represent one or more or more sources of analog, uncompressed digital, lossless compressed digital, or lossy compressed digital formats for content of various types, such as video, imaging, text, audio, etc. in the form physical states or signals, for example. Client **1120** may communicate with computing platform **1130** by way of an Internet connection via network **1125**, for example. Although the computing platform of FIG. **5** shows the above-identified components, claimed subject matter is not limited to computing platforms having only these components as other implementations may include alternative arrangements that may comprise additional components, fewer components, or components that function differently while achieving similar results. Rather, examples are provided merely as illustrations. It is not intended that claimed subject matter to limited in scope to illustrative examples.

[0117] Processor **1160** may be representative of one or more circuits, such as digital circuits, to perform at least a portion of a computing procedure or process. By way of example, but not limitation, processor **1160** may comprise one or more processors, such as controllers, microprocessors, microcontrollers, application specific integrated circuits, digital signal processors, programmable logic devices, field programmable gate arrays, and the like, or any combination thereof. In implementations, processor **360** may perform signal processing to manipulate signals or states and/or to construct signals or states, for example.

[0118] Memory **1170** may be representative of any storage mechanism. Memory **1170** may comprise, for example, primary memory **1174** and secondary memory **1176**, additional memory circuits, mechanisms, or combinations thereof may be used. Memory **370** may comprise, for example, random access memory, read only memory, or one or more data storage devices or systems, such as, for example, a disk drive, an optical disc drive, a tape drive, a solid-state memory drive, just to name a few examples. Memory **1170** may be utilized to store a program. Memory **1170** may also comprise a memory controller for accessing computer readable-medium **1175** that may carry and/or make accessible content, code, and/or instructions, for example, executable by processor **1160** or some other controller or processor capable of executing instructions, for example.

[0119] Under the direction of processor **1160**, memory, such as memory cells storing physical states, representing for example, a program, may be executed by processor **1160** and generated signals may be transmitted via the Internet, for example. Processor **1160** may also receive digitally-encoded signals from client **1120**.

[0120] Network **1125** may comprise one or more network communication links, processes, services, applications and/or resources to support exchanging communication signals between a client, such as **1120** and computing platform **1130**, which may, for example, comprise one or more servers (not shown). By way of example, but not limitation, network **1125** may comprise wireless and/or wired communication links, telephone or telecommunications systems, Wi-Fi networks, Wi-MAX networks, the Internet, a local area network (LAN), a wide area network (WAN), or any combinations thereof.

[0121] The term "computing platform," as used herein, refers to a system and/or a device, such as a computing device, that includes a capability to process (e.g., perform computations) and/or store data in the form of signals and/or states. Thus, a computing platform, in this context, may comprise hardware, software, firmware, or any combination thereof (other than software per se). Computing platform **1130**, as depicted in FIG. **5**, is merely one such example, and the scope of claimed subject matter is not limited to this particular example. For one or more embodiments, a computing platform may comprise any of a wide range of digital electronic devices, including, but not limited to, personal desktop or notebook computers, high-definition televisions, digital versatile disc (DVD) players and/or recorders, game consoles, satellite television receivers, cellular telephones, personal digital assistants, mobile audio and/or video playback and/or recording devices, or any combination of the above. Further, unless specifically stated otherwise, a process as described herein, with reference to flow diagrams and/or otherwise, may also be executed and/or affected, in whole or in part, by a computing platform.

[0122] Memory **1170** may store cookies relating to one or more users and may also comprise a computer-readable medium that may carry and/or make accessible content, code and/or instructions, for example, executable by processor **1160** or some other controller or processor capable of executing instructions, for example. A user may make use of an input device, such as a computer mouse, stylus, track ball, keyboard, or any other similar device capable of receiving user actions and/or motions as input signals. Likewise, a user may make use of an output device, such as a display, a printer, etc., or any other device capable of providing signals, generating visual or audio stimuli or other similar output stimuli for a user.

[0123] Regarding aspects related to a communications or computing network, a wireless network may couple client devices with a network. A wireless network may employ stand-alone ad-hoc networks, mesh networks, Wireless LAN (WLAN) networks, cellular networks, and/or the like. A wireless network may further include a system of terminals, gateways, routers, or the like coupled by wireless radio links, and/or the like, which may move freely, randomly or organize themselves arbitrarily, such that network topology may change, at times even rapidly. Wireless network may further employ a plurality of network access technologies, including Long Term Evolution (LTE), WLAN, Wireless Router (WR) mesh, 2nd, 3rd, or 4th generation (2G, 3G, or 4G) cellular technology, other technologies, and/or the like. Network access technologies may enable wide area coverage for devices, such as client devices with varying degrees of mobility, for example.

[0124] A network may enable radio frequency or other wireless type communications via a network access technology, such as Global System for Mobile communication (GSM), Universal Mobile Telecommunications System (UMTS), General Packet Radio Services (GPRS), Enhanced Data GSM Environment (EDGE), 3GPP Long Term Evolution (LTE), LTE Advanced, Wideband Code Division Multiple Access (WCDMA), Bluetooth, 802.11b/g/n, or other, or the like. A wireless network may include virtually any type of now known, or to be developed, wireless communication mechanism by which signals may be communicated between devices, such as a client device, such as a computing device and/or a network device, between or within a network, or the like.

[0125] Communications between a computing device and/or a network device and a wireless network may be in

accordance with known, or to be developed cellular telephone communication network protocols including, for example, global system for mobile communications (GSM), enhanced data rate for GSM evolution (EDGE), and worldwide interoperability for microwave access (WiMAX). A computing device and/or a networking device may also have a subscriber identity module (SIM) card, which, for example, may comprise a detachable smart card that is able to store subscription information of a user, and/or is also able to store a contact list of the user. A user may own the computing device and/or networking device or may otherwise be a user, such as a primary user, for example. A computing device may be assigned an address by a wireless or wired telephony network operator, or an Internet Service Provider (ISP). For example, an address may comprise a domestic or international telephone number, an Internet Protocol (IP) address, and/or one or more other identifiers. In other embodiments, a communication network may be embodied as a wired network, wireless network, or any combinations thereof.

[0126] A device, such as a computing and/or networking device, may vary in terms of capabilities and/or features. Claimed subject matter is intended to cover a wide range of potential variations. For example, a device may include a numeric keypad or other display of limited functionality, such as a monochrome liquid crystal display (LCD) for displaying text, for example. In contrast, however, as another example, a web-enabled device may include a physical or a virtual keyboard, mass storage, one or more accelerometers, one or more gyroscopes, global positioning system (GPS) or other location-identifying type capability, and/or a display with a higher degree of functionality, such as a touch-sensitive color 2D or 3D display, for example.

[0127] A computing and/or network device may include or may execute a variety of now known, or to be developed operating systems, derivatives and/or versions thereof, including personal computer operating systems, such as a Windows, iOS, Linux, a mobile operating system, such as iOS, Android, Windows Mobile, and/or the like. A computing device and/or network device may include or may execute a variety of possible applications, such as a client software application enabling communication with other devices, such as communicating one or more messages, such as via email, short message service (SMS), and/or multimedia message service (MMS), including via a network, such as a social network including, but not limited to, Facebook, LinkedIn, Twitter, Flickr, and/or Google+, to provide only a few examples. A computing and/or network device may also include or execute a software application to communicate content, such as, for example, textual content, multimedia content, and/or the like. A computing and/or network device may also include or execute a software application to perform a variety of possible tasks, such as browsing, searching, playing various forms of content, including locally stored or streamed video, or games such as, but not limited to, fantasy sports leagues. The foregoing is provided merely to illustrate that claimed subject matter is intended to include a wide range of possible features or capabilities.

[0128] A logical broadcast domain may also be extended to another device communicating as part of another network, such as via a virtual private network (VPN). To support a VPN, logical broadcast domain transmissions may be forwarded to the VPN device via another network. For example, a software tunnel may be created between a logical broadcast domain, and a VPN device. Tunneled traffic may, or may not be encrypted, and a tunneling protocol may be substantially compliant with and/or substantially compatible with any past, present or future versions of any of the following protocols: IPSec, Transport Layer Security, Datagram Transport Layer Security, Microsoft Point-to-Point Encryption, Microsoft's Secure Socket Tunneling Protocol, Multipath Virtual Private Network, Secure Shell VPN, another existing protocol, and/or another protocol that may be developed.

[0129] A logical broadcast domain may communicate via signal packets, such as in a network of participating digital communications, A logical broadcast domain may be compatible with now known, or to be developed, past, present, or future versions of any, but not limited to the following network protocol stacks: ARCNET, AppleTalk, ATM, Bluetooth, DECnet, Ethernet, FDDI, Frame Relay, HIPPI, IEEE 1394, IEEE 802.11, IEEE-488, Internet Protocol Suite, IPX, Myrinet, OSI Protocol Suite, QsNet, RS-232, SPX, System Network Architecture, Token Ring, USB, and/or X.25. A logical broadcast domain may employ, for example, TCP/IP, UDP, DECnet, NetBEUI, IPX, Appletalk, other, and/or the like. Versions of the Internet Protocol (IP) may include IPv4, IPv6, other, and/or the like.

[0130] It will, of course, be understood that, although particular embodiments will be described, claimed subject matter is not limited in scope to a particular embodiment or implementation. For example, one embodiment may be in hardware, such as implemented to operate on a device or combination of devices, for example, whereas another embodiment may be in software. Likewise, an embodiment may be implemented in firmware, or as any combination of hardware, software, and/or firmware, for example (other than software per se). Likewise, although claimed subject matter is not limited in scope in this respect, one embodiment may comprise one or more articles, such as a storage medium or storage media. Storage media, such as, one or more CD-ROMs and/or disks, for example, may have stored thereon instructions, executable by a system, such as a computer system, computing platform, and/or other system, such as a computing device and/or a network device, for example, that may result in an embodiment of a method in accordance with claimed subject matter being executed, such as a previously described embodiment, for example; although, of course, claimed subject matter is not limited to previously described embodiments. As one potential example, a computing platform may include one or more processing units or processors, one or more devices capable of inputting/outputting, such as a display, a keyboard and/or a mouse, and/or one or more memories, such as static random access memory, dynamic random access memory, flash memory, and/or a hard drive.

[0131] Algorithmic descriptions and/or symbolic representations are examples of techniques used by those of ordinary skill in the signal processing and/or related arts to convey the substance of their work to others skilled in the art. An algorithm is here, and generally, is considered to be a self-consistent sequence of operations and/or similar signal processing leading to a desired result. In this context, operations and/or processing involves physical manipulation of physical quantities. Typically, although not necessarily, such quantities may take the form of electrical and/or magnetic signals and/or states capable of being stored, transferred, combined, compared, processed or otherwise

manipulated as electronic signals and/or states representing information. It has proven convenient at times, principally for reasons of common usage, to refer to such physical signals and/or physical states as bits, data, values, elements, symbols, characters, terms, numbers, numerals, information, and/or the like. It should be understood, however, that all of these or similar terms are to be associated with appropriate physical quantities and are merely convenient labels. Unless specifically stated otherwise, as apparent from the preceding discussion, it is appreciated that throughout this specification discussions utilizing terms such as "processing," "computing," "calculating," "determining", "establishing", "obtaining", "identifying", "selecting", "generating", and/or the like may refer to actions and/or processes of a specific apparatus, such as a special purpose computer and/or a similar special purpose computing and/or network device. In the context of this specification, therefore, a special purpose computer and/or a similar special purpose computing and/or network device is capable of processing, manipulating and/or transforming signals and/or states, typically represented as physical electronic and/or magnetic quantities within memories, registers, and/or other information storage devices, transmission devices, and/or display devices of the special purpose computer and/or similar special purpose computing and/or network device. In the context of this particular patent application, as mentioned, the term "specific apparatus" may include a general purpose computing and/or network device, such as a general purpose computer, once it is programmed to perform particular functions pursuant to instructions from program software.

[0132] In some circumstances, operation of a memory device, such as a change in state from a binary one to a binary zero or vice-versa, for example, may comprise a transformation, such as a physical transformation. With particular types of memory devices, such a physical transformation may comprise a physical transformation of an article to a different state or thing. For example, but without limitation, for some types of memory devices, a change in state may involve an accumulation and/or storage of charge or a release of stored charge. Likewise, in other memory devices, a change of state may comprise a physical change, such as a transformation in magnetic orientation and/or a physical change or transformation in molecular structure, such as from crystalline to amorphous or vice-versa. In still other memory devices, a change in physical state may involve quantum mechanical phenomena, such as, superposition, entanglement, and/or the like, which may involve quantum bits (qubits), for example. The foregoing is not intended to be an exhaustive list of all examples in which a change in state form a binary one to a binary zero or vice-versa in a memory device may comprise a transformation, such as a physical transformation. Rather, the foregoing is intended as illustrative examples.

[0133] While there has been illustrated and/or described what are presently considered to be example features, it will be understood by those skilled in the relevant art that various other modifications may be made and/or equivalents may be substituted, without departing from claimed subject matter. Additionally, many modifications may be made to adapt a particular situation to the teachings of claimed subject matter. Therefore, it is intended that claimed subject matter not be limited to the particular examples disclosed, but that such claimed subject matter may also include all aspects falling within appended claims and/or equivalents thereof.

1.-73. (canceled)

74. A method comprising: managing without human intervention a private network that includes a logical broadcast domain and a remote network device, wherein signal packets between the logical broadcast domain and the remote network device are transmitted via a tunnel server; wherein the managing the private network comprises managing the network device remote with respect to the logical broadcast domain, including managing signal packet communications to and/or from the network device remote with respect to the logical broadcast domain.

75. The method of claim **74**, and further comprising a controller, wherein the controller provisions at least another tunnel server at least for a period of time, wherein the managing the network device remote with respect to the logical broadcast domain includes managing paths of signal packet communications to and/or from the network device remote with respect to the logical broadcast domain via the tunnel servers.

76. The method of claim **75**, wherein the paths of signal packet communications to and/or from the network device remote with respect to the logical broadcast domain via the tunnel servers are managed based at least in part on one or more of the following: cost, capability, efficiency, compatibility, resources, proximity, security, load balancing, fault tolerance, redundancy or any combinations thereof.

77. The method of claim **74** and further comprising multiple additional network devices remote with respect to the logical broadcast domain, wherein at least some of the multiple additional network devices remote with respect to the logical broadcast domain are included in the private network and wherein remaining devices of the multiple additional network devices remote with respect to the logical broadcast domain are included in other networks; wherein the at least some of the multiple additional network devices remote with respect to the logical broadcast domain are managed along with the network device remote with respect to the logical broadcast domain as part of the private network and wherein the remaining devices are managed as part of other networks.

78. The method of claim **77**, wherein the managing the multiple additional network devices remote with respect to the logical broadcast domain includes managing the paths of signal packet communications to and/or from the multiple additional network devices remote with respect to the logical broadcast domain via the tunnel server.

79. The method of claim **78**, and further comprising a controller, wherein the controller provisions at least another tunnel server at least for a period of time, wherein the managing the multiple additional network devices remote with respect to the logical broadcast domain includes managing the paths of signal packet communications to and/or from the multiple additional network devices remote with respect to the logical broadcast domain via the tunnel servers.

80. The method of claim **79**, wherein the paths of signal packet communications to and/or from the multiple additional network devices remote with respect to the logical broadcast domain via the tunnel servers are managed based at least in part on one or more of the following: cost, capability, efficiency, compatibility, resources, proximity, security, load balancing, fault tolerance, redundancy or any combinations thereof.

81. The method of claim **80**, wherein the managing the paths of signal packet communications to and/or from the multiple additional network devices remote with respect to the logical broadcast domain via the tunnel servers includes employing more than one tunnel server for signal packet communications between any one of the multiple additional network devices remote with respect to the logical broadcast domain and another network device based at least in part on one or more of the following: cost, capability, efficiency, compatibility, resources, proximity, security, load balancing, fault tolerance, redundancy or any combinations thereof.

82. The method of claim **81**, wherein the employing more than one tunnel server for signal packet communications between any one of the multiple additional network devices remote with respect to the logical broadcast domain and another network device includes concurrently employing more than one tunnel server for signal packet communications between any one of the multiple additional network devices remote with respect to the logical broadcast domain and another network device based at least in part on one or more of the following: cost, capability, efficiency, compatibility, resources, proximity, security, load balancing, fault tolerance, redundancy or any combinations thereof.

83. The method of claim **77**, wherein each of the network devices remote with respect to the logical broadcast domain comprises a separate logical broadcast domain.

84. The method of claim **77**, wherein at least one of the other networks comprises another private network managed without human intervention.

85. The method of claim **77**, wherein at least one of the other networks is managed by a different controller.

86. The method of claim **74**, wherein the remote network device comprises a separate logical broadcast domain, wherein the logical broadcast domain comprises a network device remote with respect to the separate logical broadcast domain and wherein managing comprises managing the remote network device and managing the network device remote with respect to the separate logical broadcast domain.

87. The method of claim **86**, wherein the logical broadcast domain comprises another network device remote with respect to the separate logical broadcast domain; and wherein managing further includes also managing the another network device remote with respect to the separate logical broadcast domain.

88. A system comprising: one or more servers; the one or more servers to manage without human intervention a private network that includes a logical broadcast domain and a remote network device, including a capability to manage signal packet transmissions via a tunnel server to and/or from the network device remote with respect to the logical broadcast domain.

89. The system of claim **88**, and further comprising multiple additional network devices remote with respect to the logical broadcast domain, wherein at least some of the multiple additional network devices remote with respect to the logical broadcast domain are included in the private network; wherein the one or more servers further include the capability to manage the at least some of the multiple additional network devices remote with respect to the logical broadcast domain along with the network device remote with respect to the logical broadcast domain as part of the private network.

90. The system of claim **89**, and further comprising a controller, wherein the controller is capable of provisioning at least another tunnel server at least for a period of time, wherein the one or more servers further include the capability to manage paths of signal packet communications to and/or from the multiple additional network devices remote with respect to the logical broadcast domain via the tunnel servers.

91. The system of claim **90**, wherein the one or more servers further include the capability to manage the paths of signal packet communications to and/or from the multiple additional network devices remote with respect to the logical broadcast domain via the tunnel servers based at least in part on one or more of the following: cost, capability, efficiency, compatibility, resources, proximity, security, load balancing, fault tolerance, redundancy or any combinations thereof.

92. The system of claim **91**, wherein the one or more servers further include the capability to manage the paths of signal packet communications to and/or from the multiple additional network devices remote with respect to the logical broadcast domain via more than one tunnel server, including at times concurrently, between any one of the multiple additional network devices remote with respect to the logical broadcast domain and another network device based at least in part on one or more of the following: cost, capability, efficiency, compatibility, resources, proximity, security, load balancing, fault tolerance, redundancy or any combinations thereof.

93. An article comprising: a non-transitory storage medium having stored thereon instructions executable by a computing device to manage without human intervention a private network that includes a logical broadcast domain and a remote network device, wherein the executable instructions further include a capability to manage signal packet transmissions via a tunnel server to and/or from the network device remote with respect to the logical broadcast domain.

94. The article of claim **93**, wherein the executable instructions further include the capability to manage at least some multiple additional network devices remote with respect to the logical broadcast domain along with the network device remote with respect to the logical broadcast domain as part of the private network.

95. The article of claim **94**, wherein the executable instructions further include the capability to manage the paths of signal packet communications to and/or from the at least some multiple additional network devices remote with respect to the logical broadcast domain via one or more tunnel servers.

96. The article of claim **95**, wherein the executable instructions further include the capability to manage the paths of signal packet communications to and/or from the at least some multiple additional network devices remote with respect to the logical broadcast domain via the one or more tunnel servers based at least in part on one or more of the following: cost, capability, efficiency, compatibility, resources, proximity, security, load balancing, fault tolerance, redundancy or any combinations thereof.

97. The article of claim **96**, wherein the executable instructions further include the capability to manage the paths of signal packet communications to and/or from the multiple additional network devices remote with respect to the logical broadcast domain via more than one tunnel server, including at times concurrently, between any one of the multiple additional network devices remote with respect

to the logical broadcast domain and another network device based at least in part on one or more of the following: cost, capability, efficiency, compatibility, resources, proximity, security, load balancing, fault tolerance, redundancy or any combinations thereof.

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