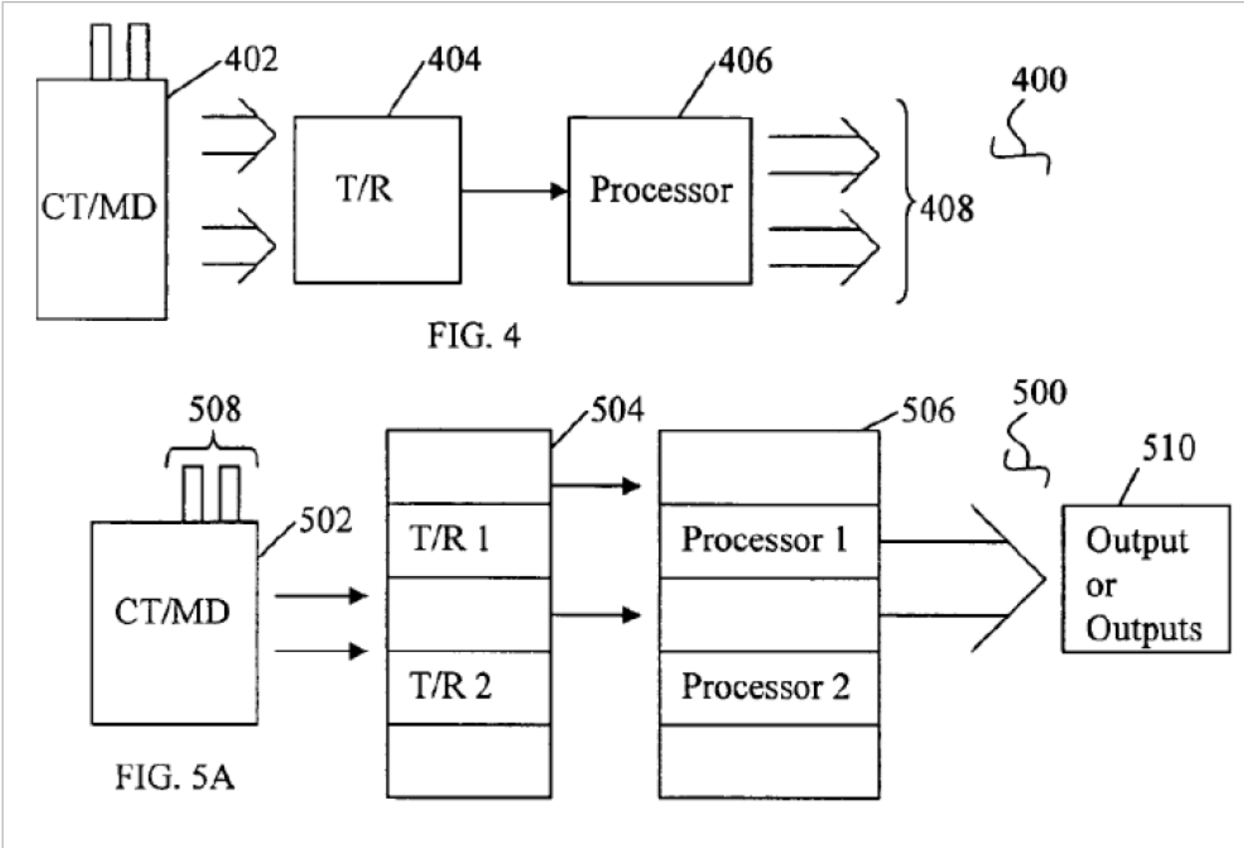
Inter Partes Review
U.S. Patent No. 8,982,863

Apple Inc. v. Smart Mobile Tech. LLC, Case IPR2022-01222

Andrew Ehmke and Adam Fowles,
Haynes and Boone, LLP

The '863 Patent



Ex.1001, Figs. 4 and 5a; Petition, 8.

’863 Patent, Claims 1 and 14

1. A system for controlling Internet Protocol (IP) based wireless devices, IP based cellular phones, networks or network switches by servers comprising:

an IP enabled wireless device including a portable device or a cellular phone, said IP enabled wireless device comprising a plurality of antennas and ports, wherein the IP enabled wireless device is configured for voice and data communication and comprises a plurality of transmit and receive units;

a first server connected to at least one internet protocol enabled network, said server configured with a controller in communication with a plurality of network devices; and

a network switch box, wherein the network switch box is configured with a plurality of ports, wherein the network switch box is connected to at least two networks, wherein the network switch box is configured to transmit and receive one or more data packets between the at least two networks.

Ex.1001, Claim 1.

14. A system comprising internet enabled communication devices and servers, including an Internet Protocol (IP) enabled wireless mobile device for voice and data using a plurality of antennas, said system comprising:

a mobile device for voice and data communication;

a first network switch box and a second network switch box, and wherein the first network switch box and the second network switch box are configured to operate on a plurality of networks, wherein the first network switch box and the second network switch box are configured with a wired and/or wireless interface; wherein the first network switch box and the second network switch box are configured to transmit and receive a plurality of data streams;

a server, wherein the server is configured for communication with the first network switch box and the second network switch box, and a communication protocol to control the network path of the first network switch box and the second network switch box using a controller.

Ex.1001, Claim 14.

Ahopelto's Different System Functions Render Obvious the "Server" and "Network Switch Box" Limitations

Ahopelto's System Includes a "Server" and "Network Switch Box"

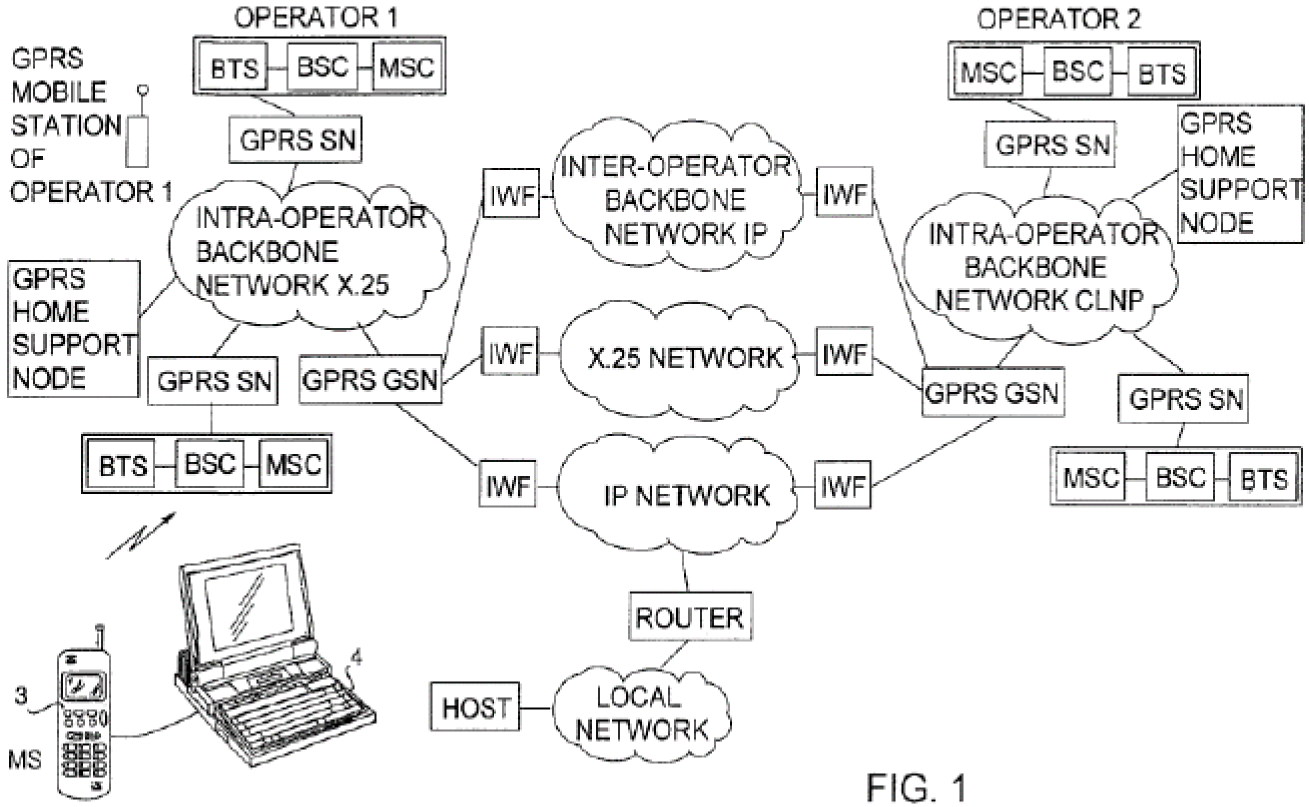


FIG. 1

Ex.1005, FIG. 1; Ex.1003, ¶¶ 58-59 Petition, 18.

POSITAs Understood That Ahopelto's GGSNs Included Multiple Logical Functions

Ahopelto teaches integrating multiple logical node functions into one computer:

The intra-operator backbone network, which interconnects the equipments GPRS HSN, GPRS SN and GPRS GSN of the operator, may be implemented, for instance, with a local network. It should be noticed that it is also possible to implement a GPRS network of an operator without an intra-operator backbone network, for instance, by implementing all aspects in a single computer, but this modification does not cause any changes in the manner the routing protocols of the invention behave.

Ex.1005, 6:7-15; Petition, 35,36.

GGSNs were known to include multiple logical functions in one node:

The GPRS support nodes (GSN) are based on Ericsson's AXB 250 platform, a new, general-purpose, high-performance, packet-switching platform. The AXB 250 combines features usually associated with data communication (compactness and high functionality) with features from telecommunications (robustness and scalability). Designed for nonstop operation, the platform incorporates duplicated hardware and modular software. Thus, individual modules of the platform can be upgraded without disturbing traffic. The AXB 250 plat-

Ex.1010, p. 84; Ex.1003, ¶123; Petition, 39.

A router function has been integrated into the GSN. Intranetwork routing protocols

interface to external IP-based networks. The access-server functionality in the GGSN is defined according to standards from the Internet Engineering Task Force (IETF). The

- to function as a border gateway between the PLMN and external networks;

- to generate charging data.

Ex.1010, pp. 85, 87; Ex.1003, ¶¶111, 122; Petition, 34-36, 39; Pet. Reply, 8.

Ahopelto's GGSN Server Functionality Teaches a "Server"

Ahopelto teaches a server function that determines the protocol type of the data packet:

Petition, 24.

will be described in more detail below. (PPP) also contains an identification field, which can be used for determining the protocol type of the encapsulated data packet (IPX, in this case). The GPRS GSN forwards the X.25 packet to the home

Ex.1005, 7:37-40; Petition, 33.

3. The GPRS GSN receives the X.25 data packet and checks the protocol of the encapsulated IPX packet. Since

Ex.1005, 8:40-41; Petition, 33.

Ahopelto's GGSN Server Functionality Teaches a "Server"

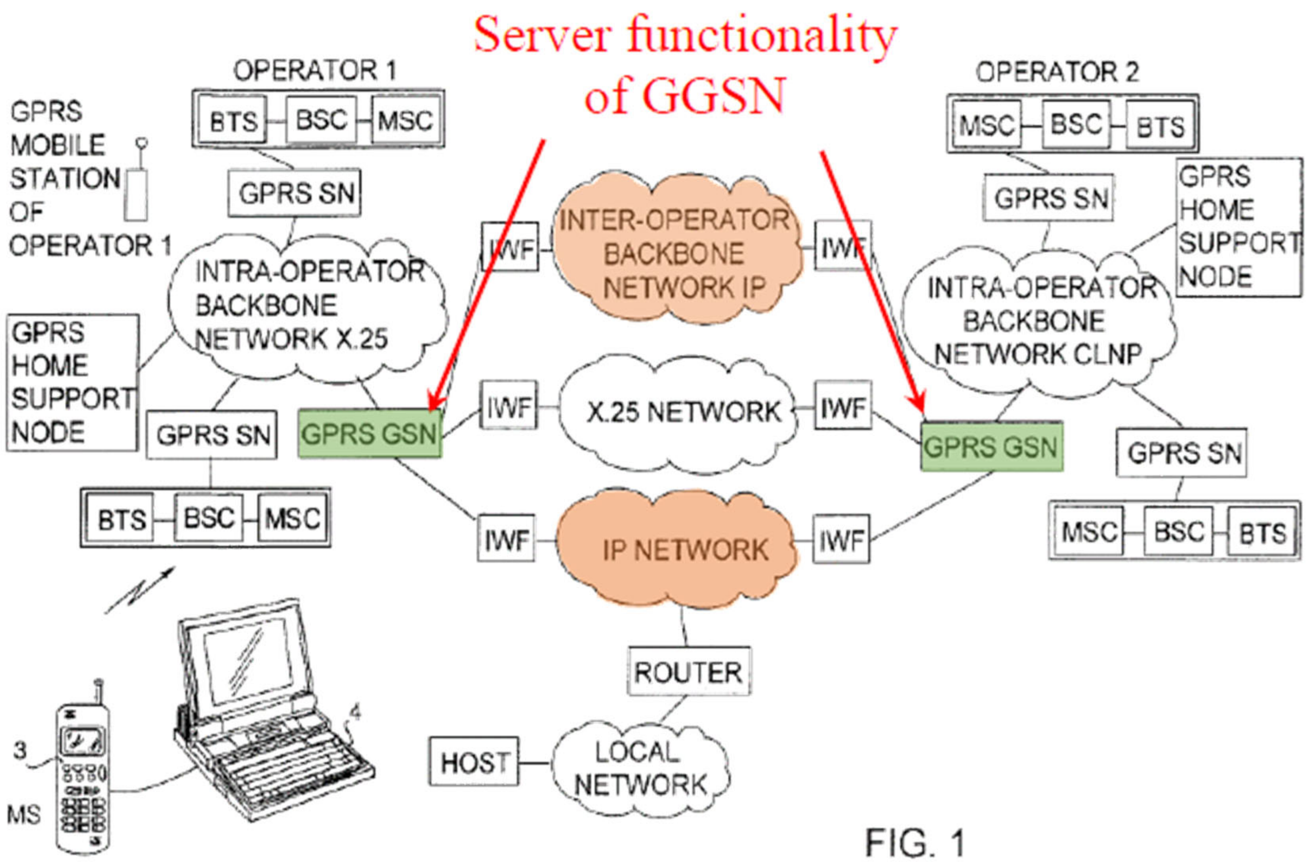


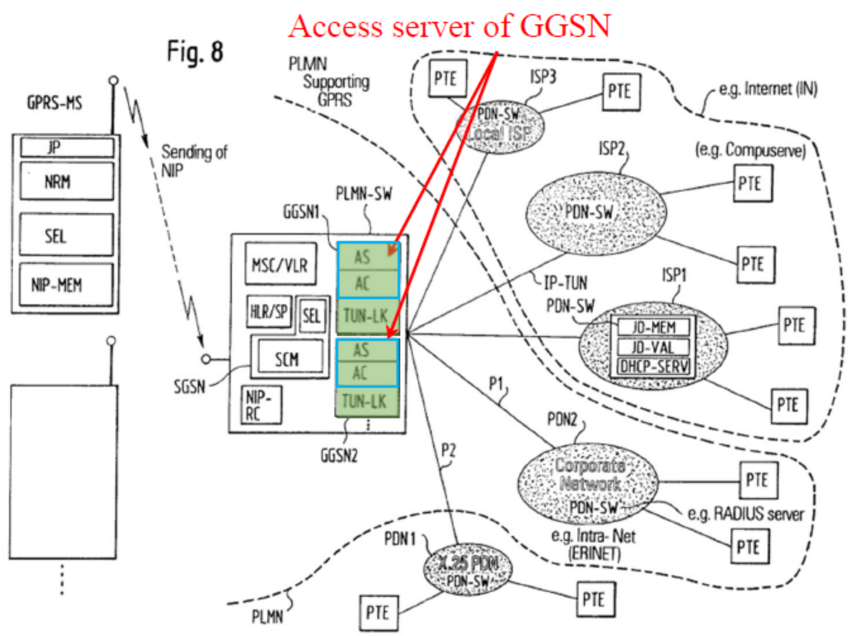
FIG. 1

Ex.1005, FIG. 1 (annotated); Ex.1003, ¶77

Petition, 24.

Ahopelto's GGSN Access Server Also Teaches a "Server"

Ahopelto's GGSN includes an access server which also renders obvious the "server":



Ex.1006, FIG. 8 (annotated)

Ex.1003, ¶106; Petition, 33-34.

packet data network PDN1. For example the interconnection point (the interface) Gi for an IP-based packet data communication network PDN1 is the Access Server AS within the gateway GPRS support node GGSN (within the respective access means of the switching device PLMN-SW) .

Ex.1006, 11:51-55; Ex.1003, ¶106; Petition, 33-34.

interface to external IP-based networks. The access-server functionality in the GGSN is defined according to standards from the Internet Engineering Task Force (IETF). The

Ex.1010, p. 87; Ex.1003, ¶79; Petition, 25.

Ahopelto's GGSN Routing Functionality Teaches a "Network Switch Box"

Ahopelto teaches the GGSN transmitting a packet with its routing function:

3. The GPRS GSN receives the X.25 data packet and checks the protocol of the encapsulated IPX packet. Since the GPRS GSN supports the IPX protocol itself (towards the data networks), it strips the X.25 encapsulation away and sends the IPX packet via IPX remote networks to the host computer Host by using normal IPX routing mechanisms.

Ex.1005, 8:40-45; Petition, 42.

queues towards the output ports of the system. In addition, the GGSN routing process decides to which output port a packet will be sent based on destination address, etc. The

Ex.1013, 14:1-3; Ex.1003, ¶125; Petition, 40.

A router function has been integrated into the GSN. Intranetwork routing protocols

Ex.1010, p. 85; Ex.1003, ¶122; Petition, 39.

Ahopelto's GGSN Routing Functionality Teaches a "Network Switch Box"

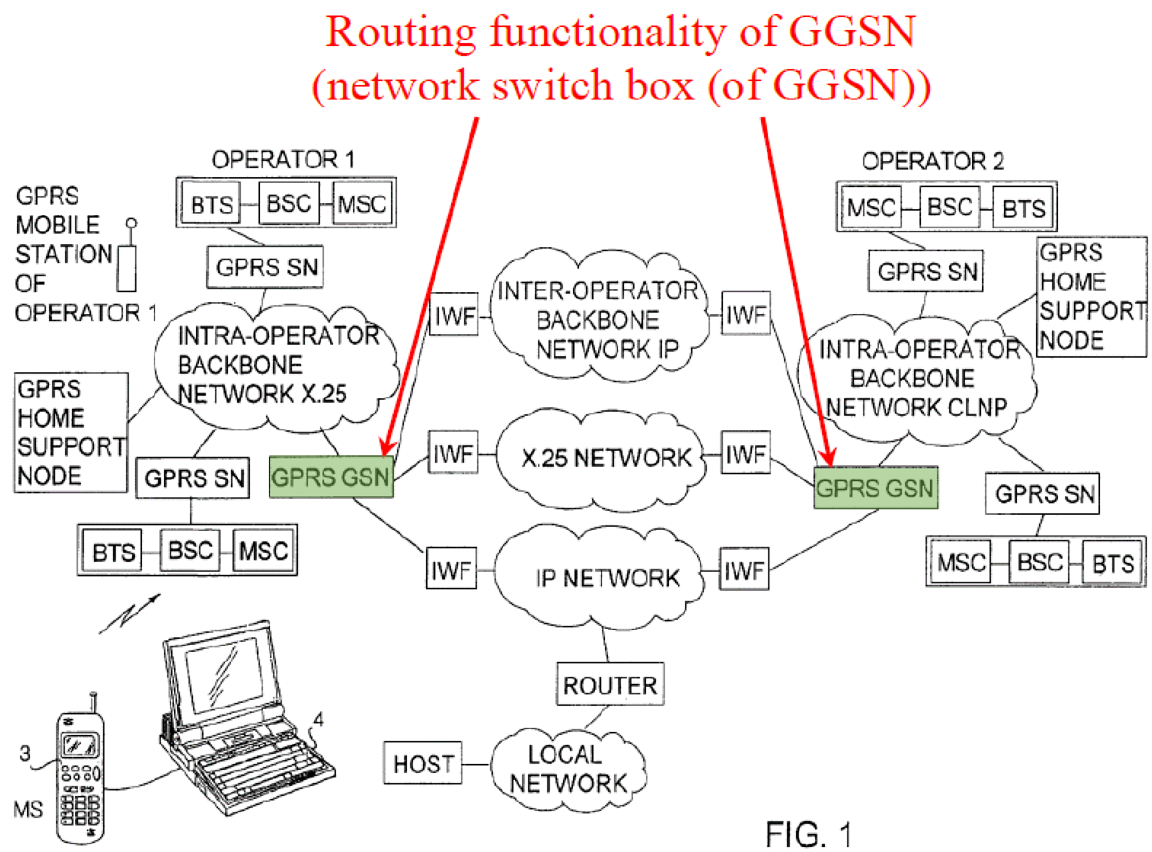


FIG. 1

Ex.1005, FIG. 1 (annotated); Ex.1003, ¶124 Petition, 40.

PO Acknowledges That Different Hardware is Not Required for the "Server" and "Network Switch Box" Limitations

This is a red herring. PO does not contend that the claimed "server" and "network switch box" must be ***physically*** separate. But, to prove obviousness, Petitioner still must establish the "server" and "network switch box" "as distinct components, regardless of whether [they] are on a single or multiple physical machines." *Workspot, Inc. v. Citrix Sys., Inc.*, IPR2019-01002, Paper 39, 18 (PTAB Nov. 17, 2020).

POR, 2.

The GGSN Server/Routing Functions are Logically Distinct

Server Function of GGSN:

will be described in more detail below. (PPP) also contains an identification field, which can be used for determining the protocol type of the encapsulated data packet (IPX, in this case). The GPRS GSN forwards the X.25 packet to the home

Ex.1005, 7:37-40; Petition, 24, 33.

3. The GPRS GSN receives the X.25 data packet and checks the protocol of the encapsulated IPX packet. Since

Ex.1005, 8:40-41; Petition, 24, 33.

3. The GPRS GSN receives the CLNP packet and checks the protocol of the IPX packet. Since the GPRS GSN does

Ex.1005, 10:22-23; Petition, 24.

3. The GPRS GSN of the operator **2** receives the CLNP packet and checks the protocol of the encapsulated IPX packet. Since the GPRS GSN does not support the IPX

Ex.1005, 10:48-50; Petition, 24.

4. The GPRS GSN of the operator **3** receives the IPX packet encapsulated in the IP packet via the inter-operator backbone network and checks the protocol of the encapsulated IPX packet. Since this GPRS GSN supports the IPX

Ex.1005, 10:56-59; Petition, 24.

Routing Function of GGSN:

3. The GPRS GSN receives the X.25 data packet and checks the protocol of the encapsulated IPX packet. Since the GPRS GSN supports the IPX protocol itself (towards the data networks), it strips the X.25 encapsulation away and sends the IPX packet via IPX remote networks to the host computer Host by using normal IPX routing mechanisms.

Ex.1005, 8:40-45; Petition, 42.

3. The GPRS GSN receives the CLNP packet and checks the protocol of the IPX packet. Since the GPRS GSN does not support the IPX protocol towards the data networks itself, it encapsulates the original IPX packet in an IP packet, which is sent to the gateway support node GPRS GSN of the operator **1**.

Ex.1005, 10:22-27; Petition, 42.

packet. Since the GPRS GSN does not support the IPX protocol towards the data networks itself, it encapsulates the original IPX packet in an IP packet and sends the IP packet to the gateway support node GPRS GSN of the operator **3**, since the operator **2** has made an agreement with the operator **3** to forward IPX packets.

Ex.1005, 10:50-55; Petition, 42.

lated IPX packet. Since this GPRS GSN supports the IPX protocol towards the data networks itself, it strips the encapsulation away and sends the original IPX packet via IPX networks to the host computer Host.

Ex.1005, 10:59-62; Petition, 42.

What are the Claim Requirements for the "Server"?

1. A system for controlling Internet Protocol (IP) based wireless devices, IP based cellular phones, networks or network switches by servers comprising:

an IP enabled wireless device including a portable device or a cellular phone, said IP enabled wireless device comprising a plurality of antennas and ports, wherein the IP enabled wireless device is configured for voice and data communication and comprises a plurality of transmit and receive units;

a first server connected to at least one internet protocol enabled network, said server configured with a controller in communication with a plurality of network devices; and

a network switch box, wherein the network switch box is configured with a plurality of ports, wherein the network switch box is connected to at least two networks, wherein the network switch box is configured to transmit and receive one or more data packets between the at least two networks.

Ex.1001, Claim 1.

14. A system comprising internet enabled communication devices and servers, including an Internet Protocol (IP) enabled wireless mobile device for voice and data using a plurality of antennas, said system comprising:

a mobile device for voice and data communication;

a first network switch box and a second network switch box, and wherein the first network switch box and the second network switch box are configured to operate on a plurality of networks, wherein the first network switch box and the second network switch box are configured with a wired and/or wireless interface; wherein the first network switch box and the second network switch box are configured to transmit and receive a plurality of data streams;

a server, wherein the server is configured for communication with the first network switch box and the second network switch box, and a communication protocol to control the network path of the first network switch box and the second network switch box using a controller.

Ex.1001, Claim 14.

Ahopelto Teaches the "Server" Requirements – Part 1 (Server Functionality)

Claim 1: "controlling [IP] based wireless devices, IP based cellular phones, networks or network switches …"

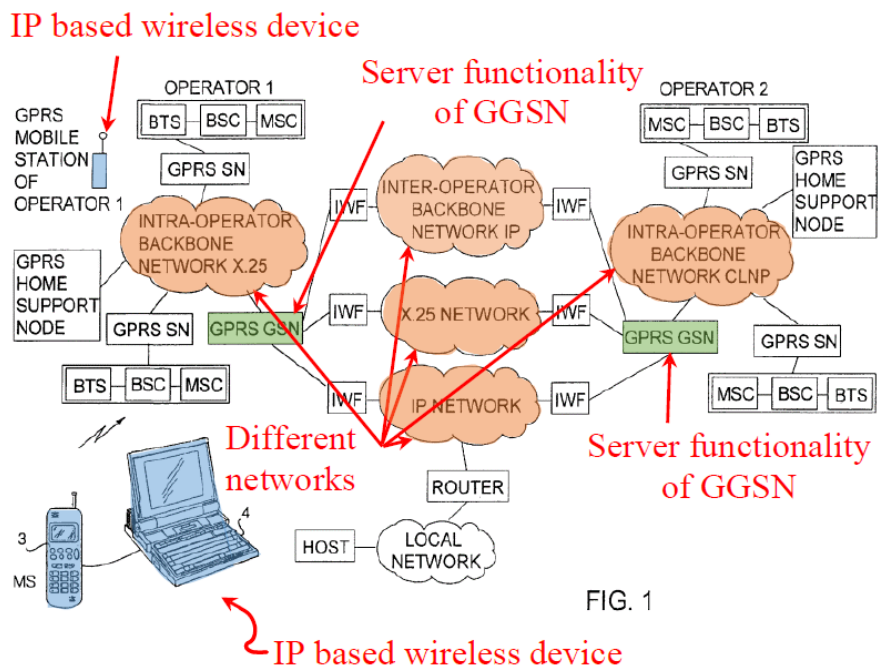


FIG. 1

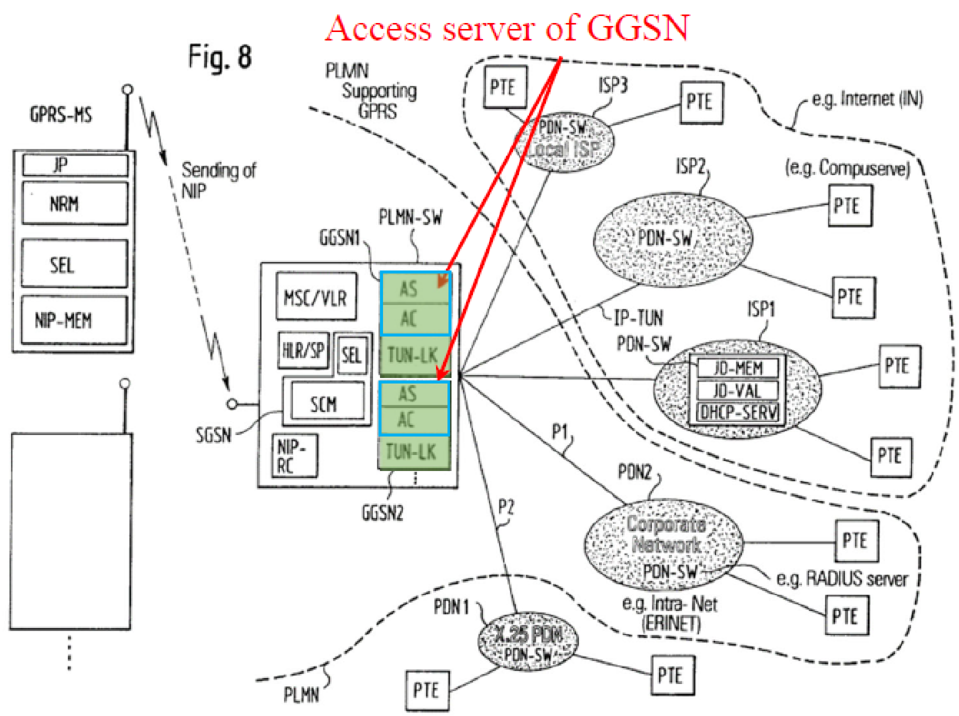
Ex.1005, FIG. 1 (annotated); Ex.1003, ¶¶89-90 Petition, 28.

> 3. The GPRS GSN receives the X.25 data packet and checks the protocol of the encapsulated IPX packet. Since

Ex.1005, 8:40-41; Petition, 33.

Ahopelto Teaches the “Server” Requirements – Part 1 (Access Server)

<u>Claim 1</u>: “controlling [IP] based wireless devices, IP based cellular phones, networks or network switches …”

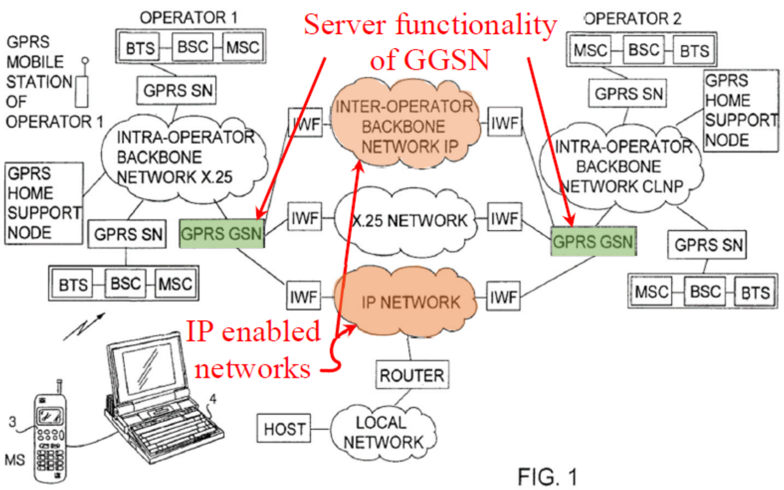


Ex.1006, FIG. 8 (annotated) Ex.1003, ¶106; Petition, 33-34.

Ahopelto Teaches the "Server" Requirements – Part 2

<u>Claim 1</u>: "a first server connected to at least one internet protocol enabled network …"

<u>Server Functionality</u>

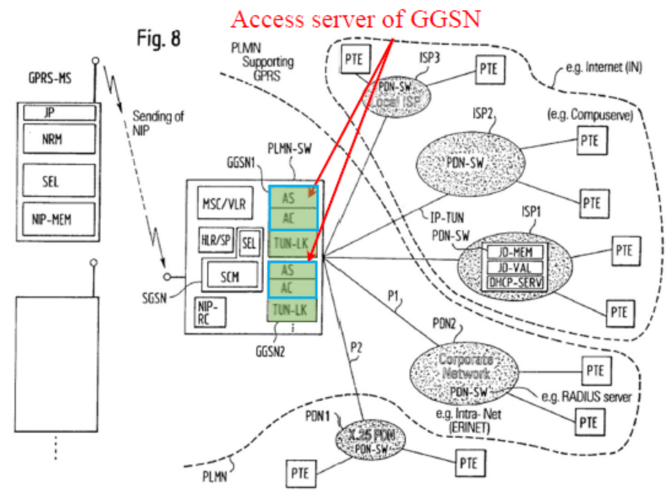


Ex.1005, FIG. 1 (annotated) Petition, 35.

> A GPRS gateway support node GPRS GSN connects the operator to the GPRS systems of the other operators of the GPRS network and to data networks, such as an inter-operator backbone network, IP network, or X.25 network.

Ex.1005, 6:16-19; Petition, 34.

<u>Access Server</u>



Ex.1006, FIG. 8 (annotated)

Ex.1003, ¶106; Petition, 33-34.

> interface to external IP-based networks. The access-server functionality in the GGSN is defined according to standards from the Internet Engineering Task Force (IETF). The

Ex.1010, p. 87; Ex.1003, ¶106; Petition, 33-34.

Ahopelto Teaches the "Server" Requirements – Part 3

<u>Claim 1</u>: "said server configured with a controller in communication with a plurality of network devices …"

<u>Server Functionality</u>

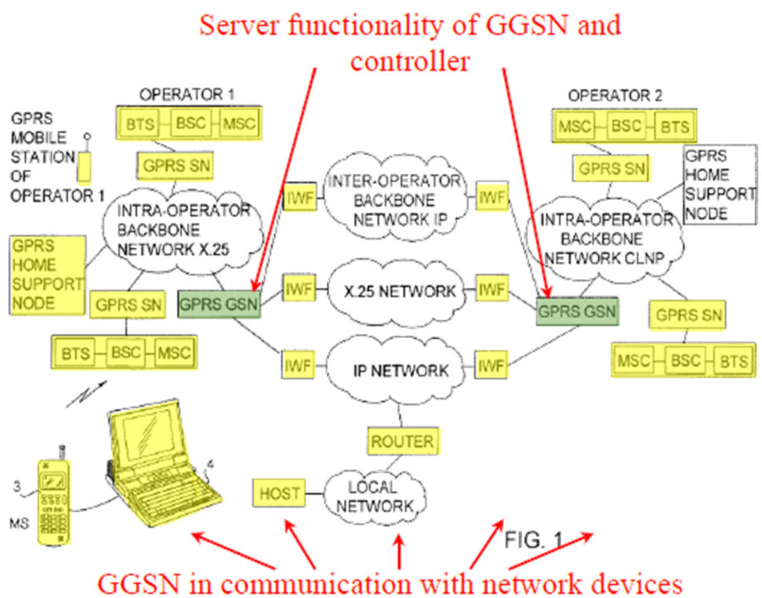
telecom applications. It is entirely scalable, from low-end, PC-based testing and administrative applications to very large, multiprocessor, *n+m* redundant systems.

Ex.1010, p. 84; Petition, 35-36.

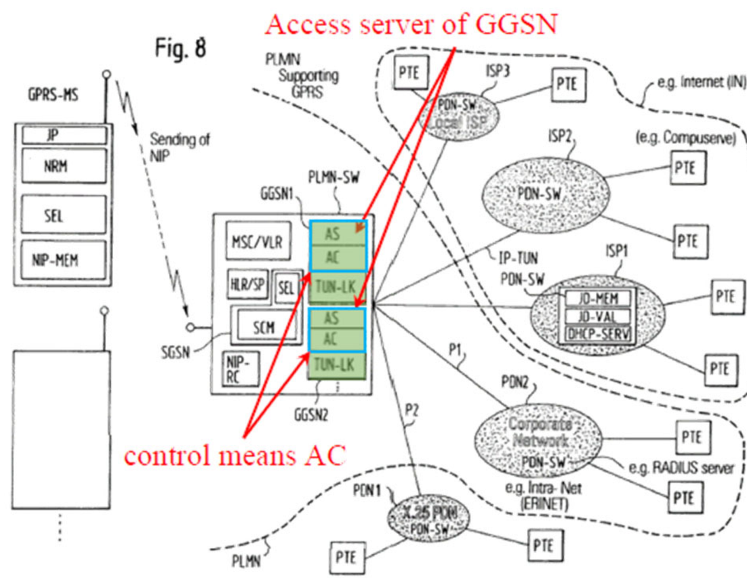
<u>Access Server</u>

GGSN in step ST3. A control means AC in the selected GGSN (the access means) selects an appropriate access server AS for building up a connection to the desired switching device PDN-SW of the packet data communication network.

Ex.1006, 14:1-5; Petition, 36.



Ex.1005, FIG. 1 (annotated) Petition, 38.

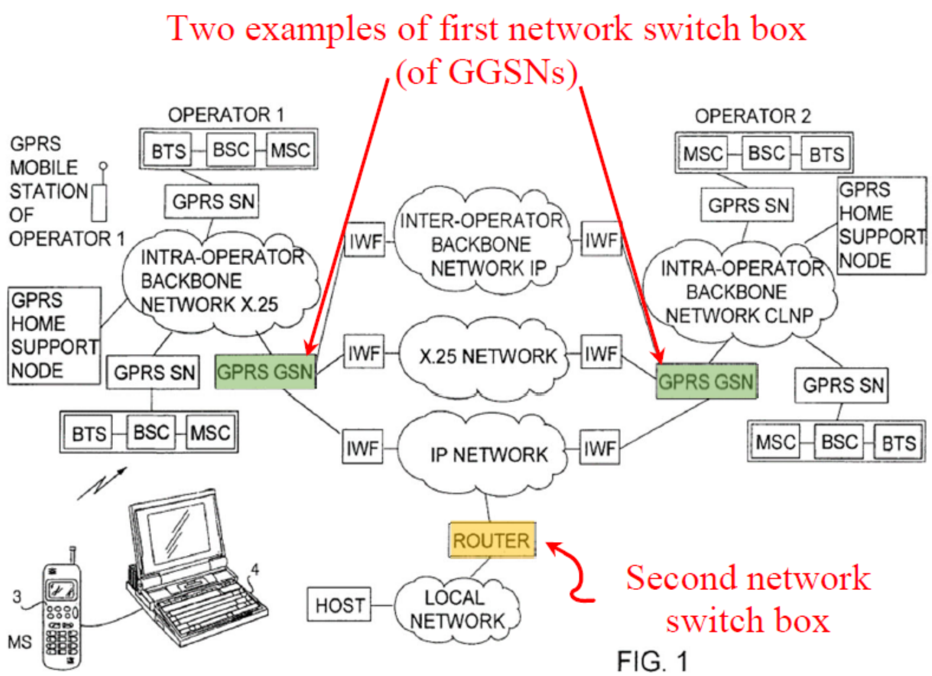


Ex.1006, FIG. 8 (annotated)

Ex.1003, ¶112; Petition, 36.

Ahopelto Teaches the "Server" Requirements – Part 4

<u>Claim 14</u>: "a server … configured for communication with the first network switch box and the second network switch box, and a communication protocol …"



Ex.1005, FIG. 1 (annotated) Petition, 46, 69.

> using normal IPX message structures. The data packet contains the IPX address of the mobile station. The data packet is forwarded via the local network, router, IPX data network, and interworking function IWF to the gateway support node GPRS GSN of the operator 1 by using normal IPX routing methods and the IPX address of the mobile station.

Ex.1005, 7:21-26; Petition, 69.

> entities are user application programs, file transfer packages, data-base management systems, electronic mail facilities, and terminals. Examples of systems are computers, terminals, and remote sensors. Note that in some cases the entity and the system in which it resides are coextensive (e.g., terminals). In general, an entity is anything capable of sending or receiving information, and a system is a physically distinct object that contains one or more entities. For two entities to communicate successfully, they must "speak the same language." What is communicated, how it is communicated, and when it is communicated must conform to some mutually acceptable conventions between the entities involved. The conventions are referred to as a protocol, which may be defined as a set of rules governing the exchange of data between two entities. The key elements of a protocol are

Ex.1022, p.12; Ex.1003, ¶187; Petition, 59, 69.

> When the appropriate access server included in the GGSN has been selected and activated, the GGSN establishes a connection to the switching device PDN-SW (e.g. the internet service provider IPS) in step ST4, e.g. the GGSN will use a RADIUS server towards the ISP1. The ISP or the respec-

Ex.1006, 14:6-10; Ex.1003, ¶189; Petition, 59-60, 69.

Ahopelto's System Renders Obvious a "First Network Switch Box"

A GPRS gateway support node GPRS GSN connects the operator to the GPRS systems of the other operators of the GPRS network and to data networks, such as an inter-operator backbone network, IP network, or X.25 network.

Ex.1005, 6:16-19; Petition, 38-39.

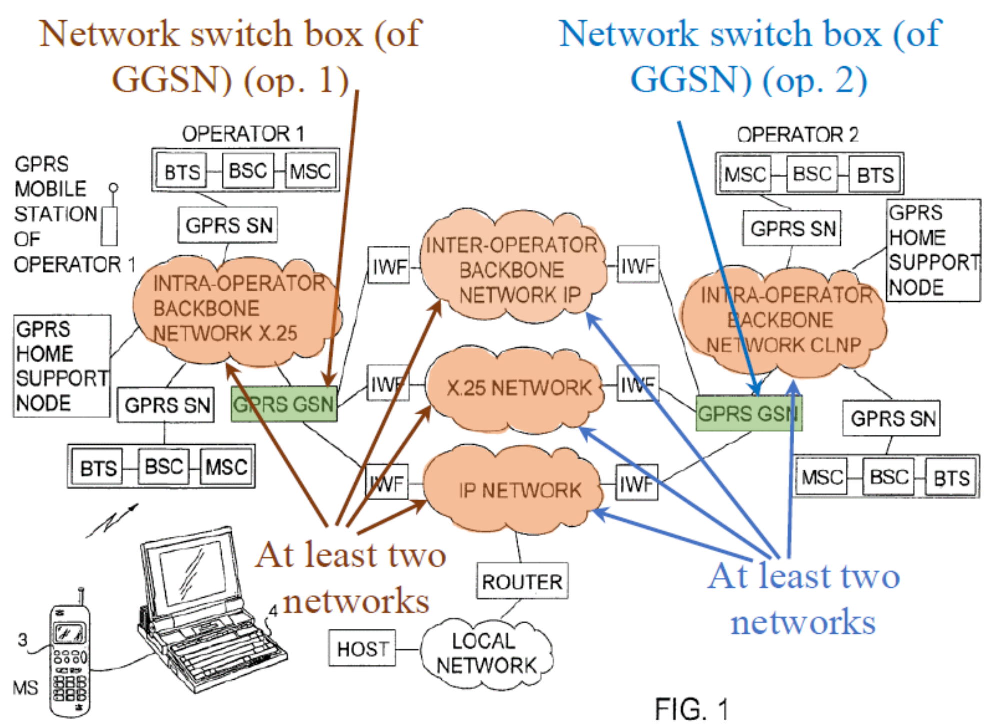


FIG. 1

Ex.1005, FIG. 1 (annotated) Petition, 41.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ahopelto's System Renders Obvious a "Second Network Switch Box"

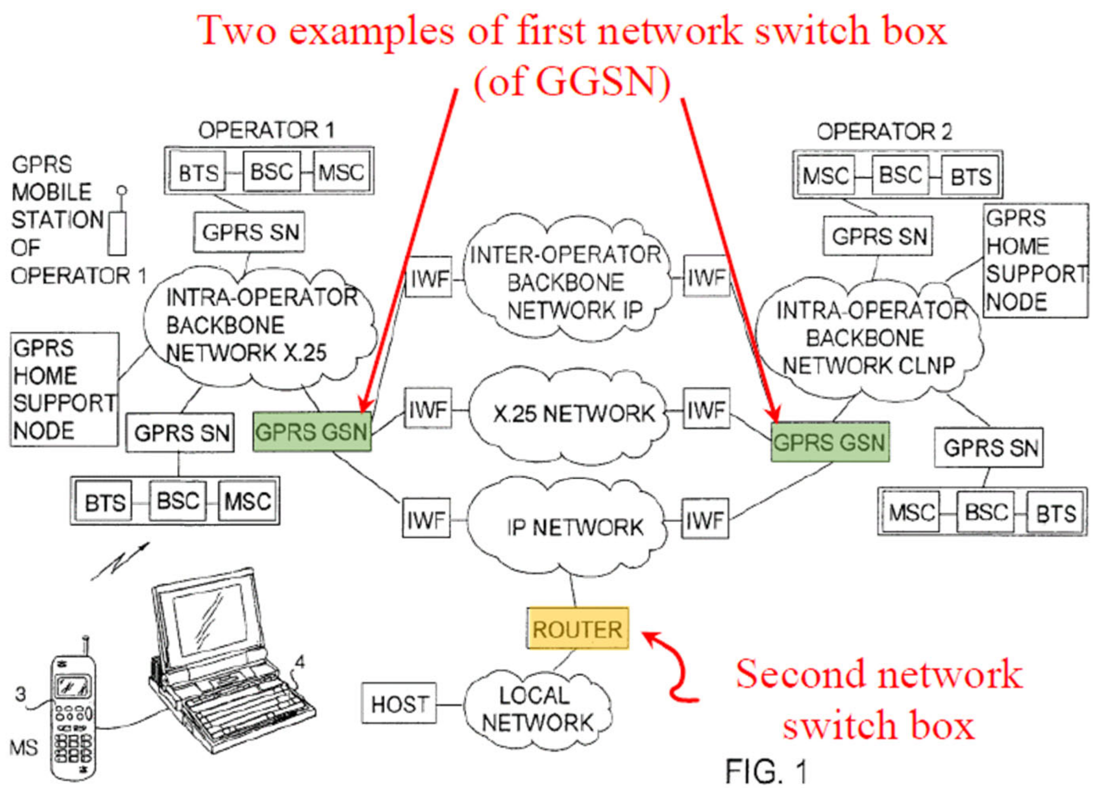


FIG. 1

Ex.1005, FIG. 1 (annotated); Ex.1003, ¶¶198-99 Petition, 62.

What are the Claim Requirements for the "Network Switch Box"?

1. A system for controlling Internet Protocol (IP) based wireless devices, IP based cellular phones, networks or network switches by servers comprising:

an IP enabled wireless device including a portable device or a cellular phone, said IP enabled wireless device comprising a plurality of antennas and ports, wherein the IP enabled wireless device is configured for voice and data communication and comprises a plurality of transmit and receive units;

a first server connected to at least one internet protocol enabled network, said server configured with a controller in communication with a plurality of network devices; and

a network switch box, wherein the network switch box is configured with a plurality of ports, wherein the network switch box is connected to at least two networks, wherein the network switch box is configured to transmit and receive one or more data packets between the at least two networks.

Ex.1001, Claim 1.

14. A system comprising internet enabled communication devices and servers, including an Internet Protocol (IP) enabled wireless mobile device for voice and data using a plurality of antennas, said system comprising:

a mobile device for voice and data communication;

a first network switch box and a second network switch box, and wherein the first network switch box and the second network switch box are configured to operate on a plurality of networks, wherein the first network switch box and the second network switch box are configured with a wired and/or wireless interface; wherein the first network switch box and the second network switch box are configured to transmit and receive a plurality of data streams;

a server, wherein the server is configured for communication with the first network switch box and the second network switch box, and a communication protocol to control the network path of the first network switch box and the second network switch box using a controller.

Ex.1001, Claim 14.

Ahopelto Teaches the "Network Switch Box" Requirements – Part 1

<u>Claim 1</u>: "the network switch box is configured with a plurality of ports"

Routing functionality of GGSN
(network switch box (of GGSN))

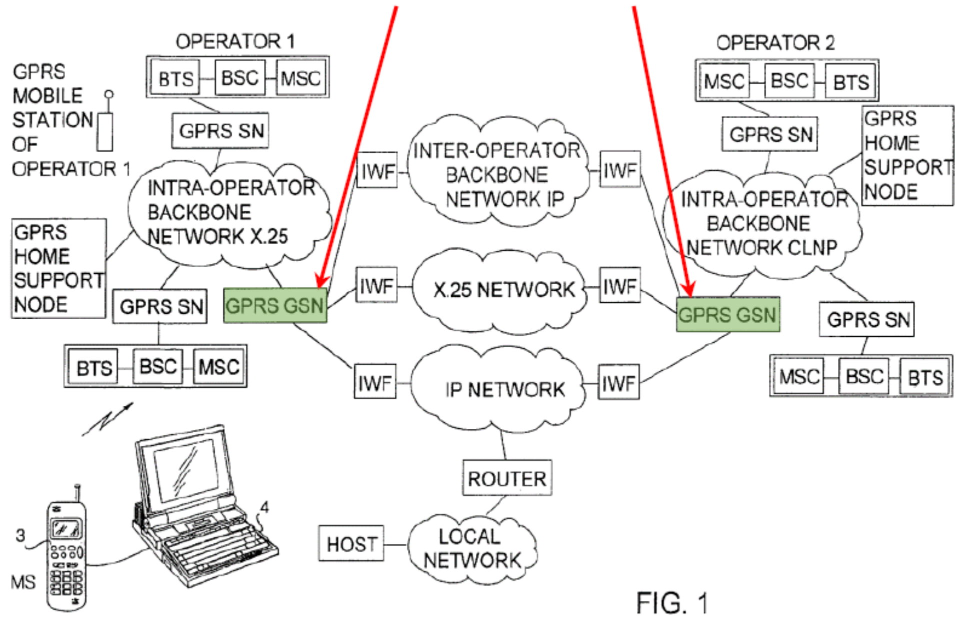


FIG. 1

Ex.1005, FIG. 1 (annotated); Ex.1003, ¶124 Petition, 40.

queues towards the output ports of the system. In addition, the GGSN routing process decides to which output port a packet will be sent based on destination address, etc. The

Ex.1013, 14:1-3; Ex.1003, ¶125; Petition, 40.

Ahopelto Teaches the "Network Switch Box" Requirements – Part 2

<u>Claim 1</u>: "the network switch box is connected to at least two networks"

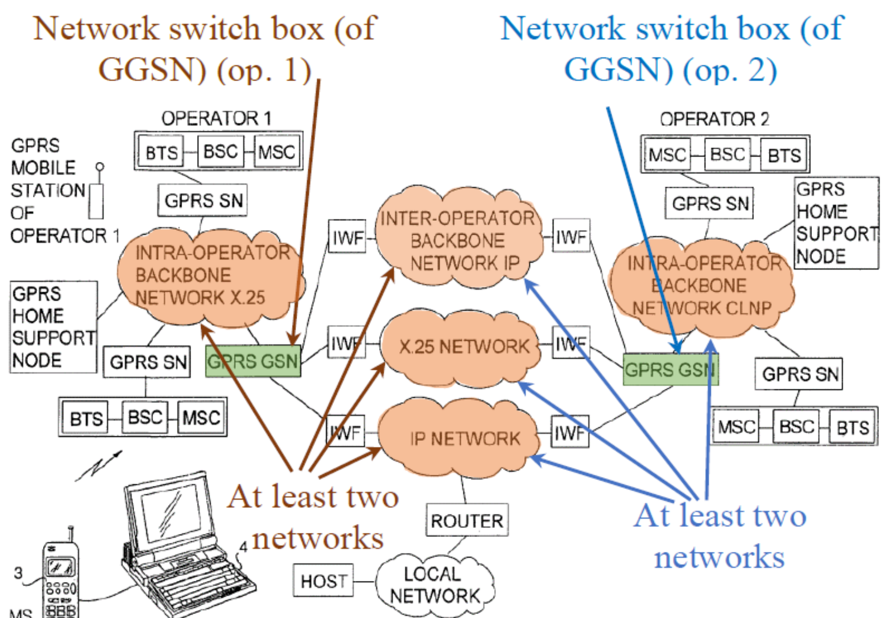


FIG. 1

Ex.1005, FIG. 1 (annotated) Petition, 41.

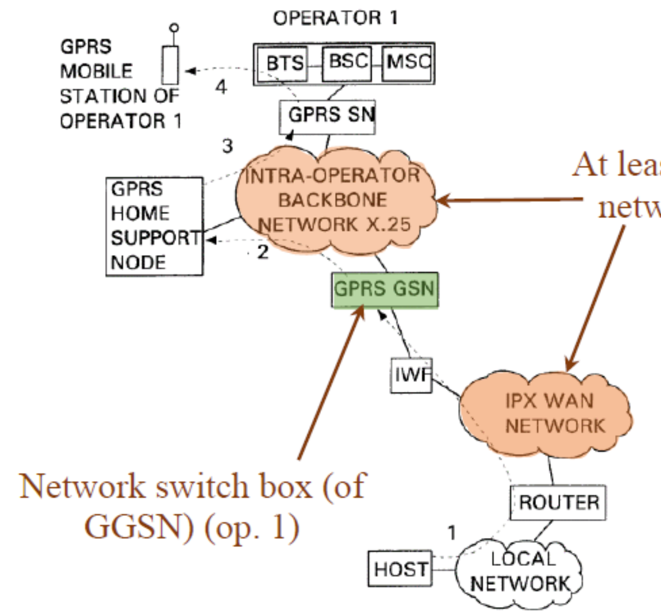


FIG. 2

Ex.1005, FIG. 2 (annotated) Petition, 42.

> A router function has been integrated into the GSN. Intranetwork routing protocols

Ex.1010, p. 85; Ex.1003, ¶122; Petition, 39.

> The two new support nodes—the SGSN and GGSN—can be combined into one physical node and deployed at a central point in the network.

Ex.1010, p. 84; Ex.1003, ¶123; Petition, 39.

Ahopelto Teaches the "Network Switch Box" Requirements – Part 3

<u>Claim 1</u>: "the network switch box is configured to transmit and receive one or more data packets between the two networks"

<u>Mobile Originated</u>

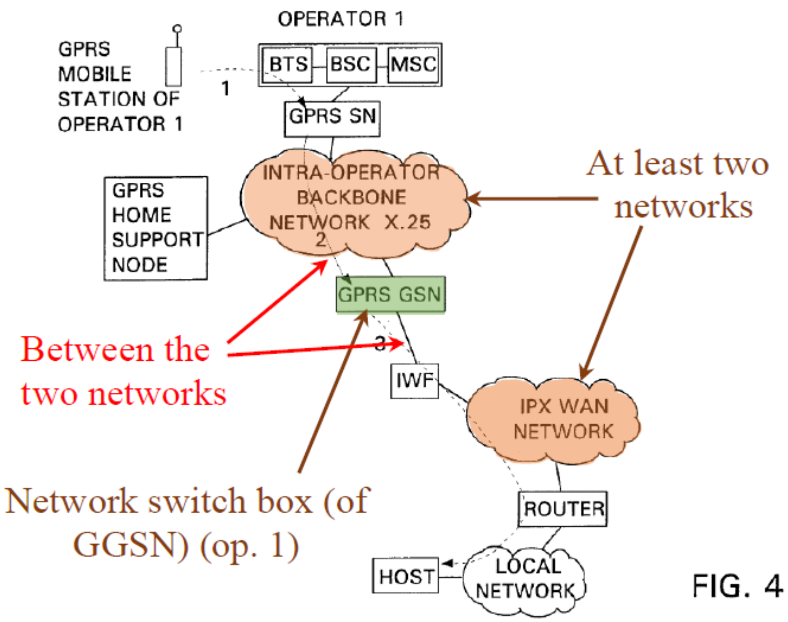


FIG. 4

Ex.1005, FIG. 4 (annotated) Petition, 44.

> 3. The GPRS GSN receives the X.25 data packet and checks the protocol of the encapsulated IPX packet. Since

Ex.1005, 8:40-41; Petition, 44.

<u>Mobile Terminated</u>

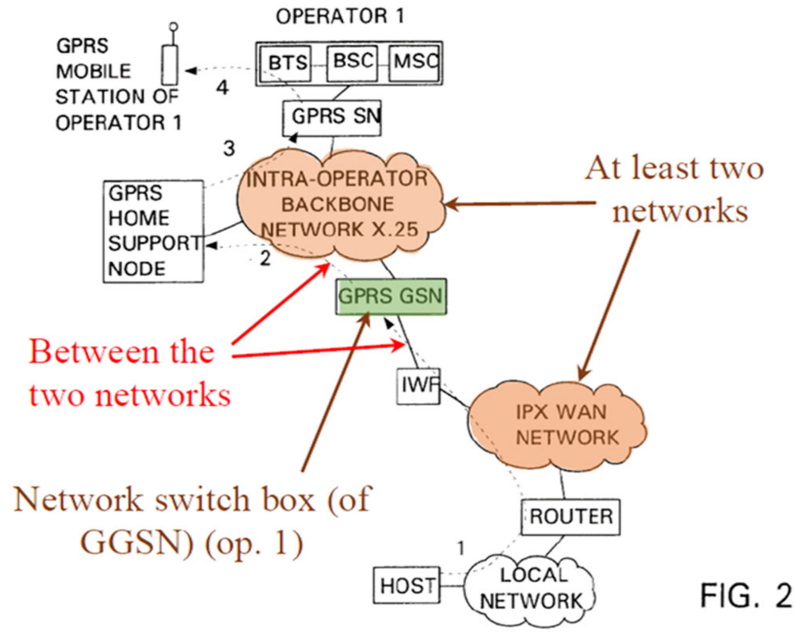


FIG. 2

Ex.1005, FIG. 2 (annotated) Petition, 43.

> contains the IPX address of the mobile station. The data packet is forwarded via the local network, router, IPX data network, and interworking function IWF to the gateway support node GPRS GSN of the operator 1 by using normal IPX routing methods and the IPX address of the mobile station.

Ex.1005, 7:21-26; Petition, 43.

Ahopelto Teaches the "Network Switch Box" Requirements – Part 4

Claim 14: "configured with a wired and/or wireless interface" and "configured to transmit and receive a plurality of data streams"

A GGSN routing functionality (first network switch box) interfaces between two networks:

interpret the content of the data packet. A data packet network is connected to other packet radio networks, data networks or the backbone network between packet data networks via a gateway node(GPRS GSN), which uses the network-internal protocol towards the dedicated packet network and the protocol of each network towards other networks. When a data packet is transferred via a gateway

Ex.1005, Abstract; Petition, 63-64.

A host router (second network switch box) interfaces between two networks:

FIG. 1 also shows a host computer Host, which is connected to a local network, which is further connected via a router to an IPX network. A similar connection can also be

Ex.1005, 6:50-52; Petition, 64.

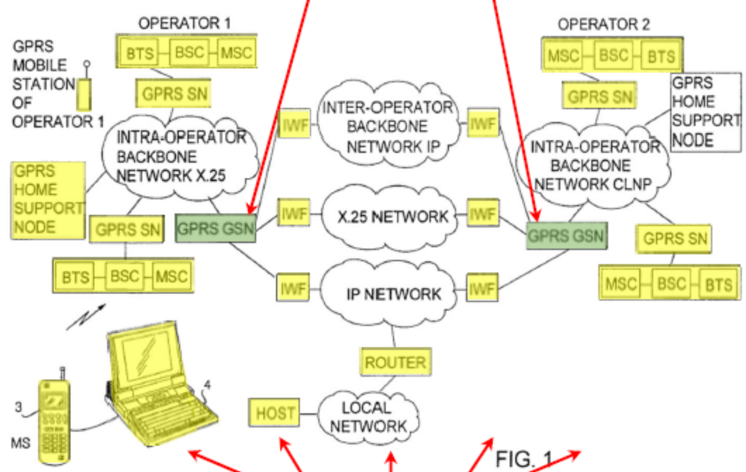
POSITAs understood that packet networks had wired/wireless interfaces:

Communications network 20 can be any electronic distribution system suitable for transporting information objects 26 including wired and wireless common carriers such as telephone networks, cable television systems or networks and mobile telecommunications or data communications networks and extends also to emerging and future systems of providing electronic communication between users of diversified equipment. The term "common carrier"

Ex.1027, 11:1-8; Ex.1003, ¶204; Petition, 63-64.

Ahopelto Renders Obvious the “in Communication With”/ “Configured for Communication With” Limitations

Ahopelto's GGSN Server Functionality is "in Communication With a Plurality of Network Devices" (Claim 1)



Ex.1005, FIG. 1 (annotated) Petition, 38.

In Communication With SGSN:

The intra-operator backbone network, which interconnects the equipments GPRS HSN, GPRS SN and GPRS GSN of the operator, may be implemented, for instance, with a local network. It should be noticed that it is also possible to implement a GPRS network of an operator without an intra-operator backbone network, for instance, by implementing all aspects in a single computer, but this modification does not cause any changes in the manner the routing protocols of the invention behave.

Ex.1005, 6:7-15; Petition, 36-37.

In Communication With Network/Router/Host:

using normal IPX message structures. The data packet contains the IPX address of the mobile station. The data packet is forwarded via the local network, router, IPX data network, and interworking function IWF to the gateway support node GPRS GSN of the operator 1 by using normal IPX routing methods and the IPX address of the mobile station.

Ex.1005, 7:20-26; Petition, 37.

Ahopelto's GGSN Server Functionality is "in Communication With a Plurality of Network Devices" (Claim 1)

Server Functionality of GGSN accesses every packet to analyze:

> 3. The GPRS GSN receives the X.25 data packet and checks the protocol of the encapsulated IPX packet. Since the GPRS GSN supports the IPX protocol itself (towards the data networks), it strips the X.25 encapsulation away and sends the IPX packet via IPX remote networks to the host computer Host by using normal IPX routing mechanisms.

Ex.1005, 8:40-45; Petition, 24; Pet. Reply, 16-17.

> Q Server C? That's the question: Server C and Computer 902 are they still in communication with each other if there are any intervening routers between them?

Ex.1029, 81:18-21; Pet. Reply, 16.

> A In the context of Figure 9 and Server C, if there is a router between Server C and Computer 902, Server C would be in communication with -- I mean, would be in communication with Computer 902.

Ex.1029, 81:22-82:3; Pet. Reply, 16.

Ahopelto's GGSN Server Functionality is "Configured for Communication With" the First and Second Network Switch Boxes (Claim 14)

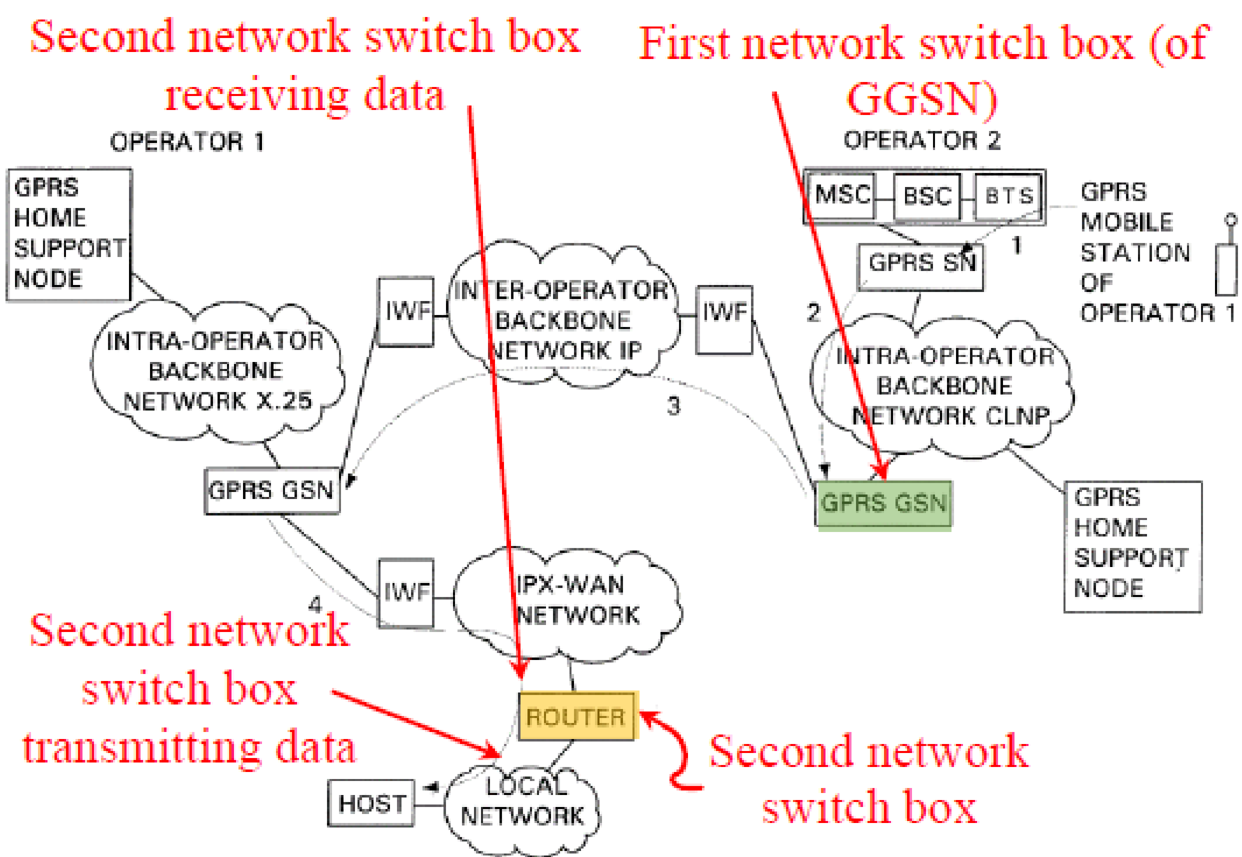


FIG. 10

Ex.1005, FIG. 10 (annotated)

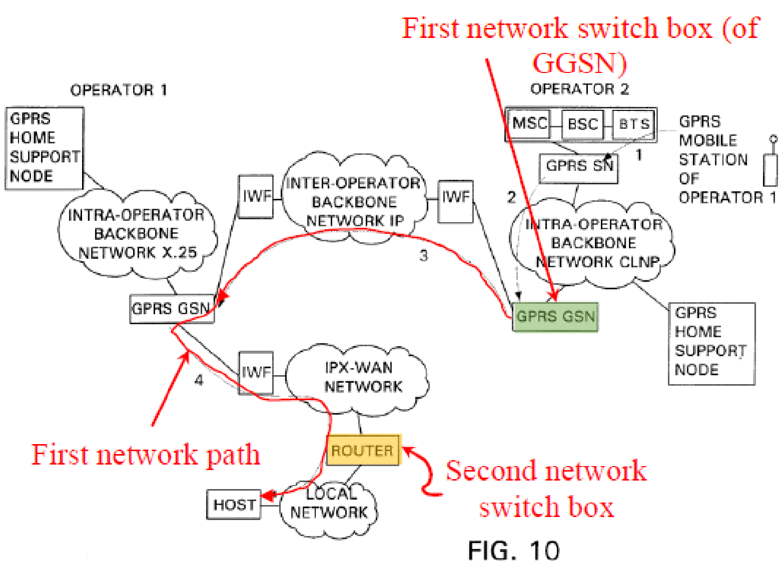
Petition, 66.

Ahopelto Renders Obvious Dependent Claim 4

4. The system of claim **2**, wherein the server is configured to dynamically control and change the network flow between the first network switch box and second network switch box such that the first network switch box and second network switch box transmit and receive data packets using dynamically changing network paths.

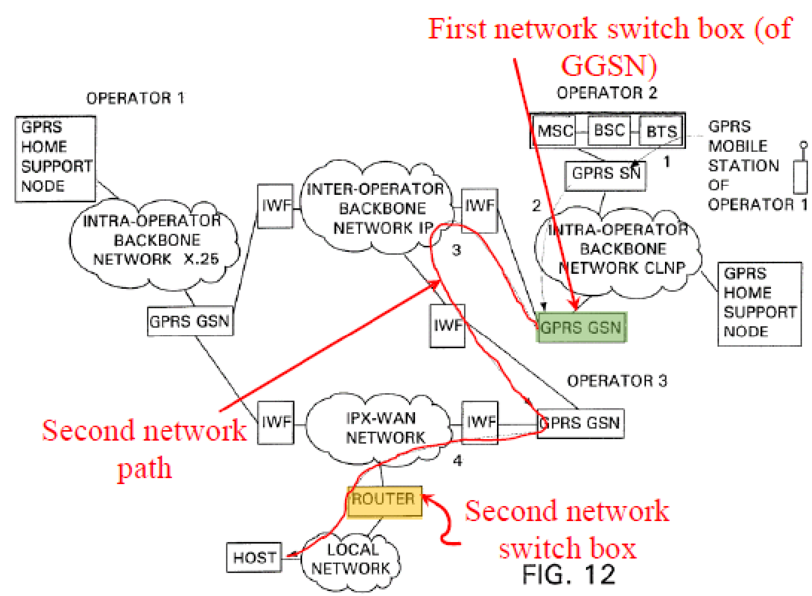
Ex.1001, Claim 4.

Ahopelto's GGSN Server Functionality Dynamically Changes Paths Based on the Protocol of the Packet



Ex.1005, FIG. 10 (annotated)

Petition, 50, 52.



Ex.1005, FIG. 12 (annotated)

Petition, 51, 52.

Ahopelto's First "Network Switch Box"

GGSN (first network switch box) receiving packets (first path):

> 3. The GPRS GSN receives the CLNP packet and checks the protocol of the IPX packet. Since the GPRS GSN does

Ex.1005, 10:22-23; Petition, 49; Pet. Reply, 23.

GGSN (first network switch box) receiving packets (second path):

> 3. The GPRS GSN of the operator 2 receives the CLNP packet and checks the protocol of the encapsulated IPX packet. Since the GPRS GSN does not support the IPX

Ex.1005, 10:48-50; Petition, 51; Pet. Reply, 23.

GGSN (first network switch box) transmitting packets (first path):

> the protocol of the IPX packet. Since the GPRS GSN does not support the IPX protocol towards the data networks itself, it encapsulates the original IPX packet in an IP packet, which is sent to the gateway support node GPRS GSN of the operator 1.

Ex.1005, 10:23-27; Petition, 49; Pet. Reply, 23.

GGSN (first network switch box) transmitting packets (second path):

> packet. Since the GPRS GSN does not support the IPX protocol towards the data networks itself, it encapsulates the original IPX packet in an IP packet and sends the IP packet to the gateway support node GPRS GSN of the operator 3,

Ex.1005, 10:50-53; Petition, 51; Pet. Reply, 23.

Ahopelto's Second "Network Switch Box"

Mobile originated (second network switch box transmitting/receiving)

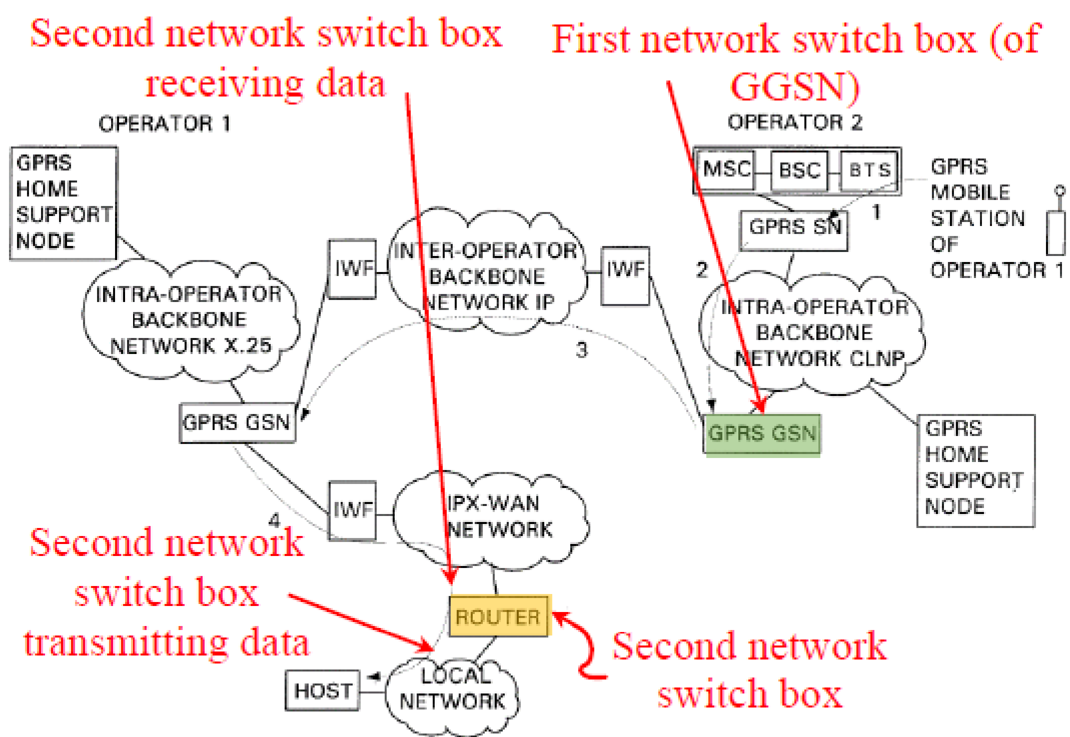


FIG. 10

Ex.1005, FIG. 10 (annotated)

Petition, 66.

Ahopelto Renders Obvious Dependent Claim 6

6. The system of claim **2**, wherein the server is configured to control the first network switch box to switch between a first network path and a second network path in response to an application.

Ex.1001, Claim 6.

Ahopelto's GGSN Server Functionality Switches Between Paths in Response to an Application

Ahopelto's server functionality switches in response to protocol used by an application (whether the network supports the protocol):

> The mobile station receives an IPX packet from the application associated with it.

Ex.1005, 9:56-57; Petition, 54; Pet. Reply, 24-25.

> The following is a description of MO packet routing with reference to FIGS. **8** and **9** when a mobile station is located outside its home network, and the visited network understands the protocol of the mobile station. In the example, the mobile station sends an IPX packet to the host computer Host.

Ex.1005, 9:50-54; Petition, 54.

> The following is a description of MO packet routing with reference to FIGS. **10** and **11** when a mobile station is located outside its own home network, and the visited network does not support the protocol of the mobile station, as a result of which the packet must be routed via the operator 1. In the example, the mobile station sends an IPX packet to the host computer.

Ex.1005, 10:13-21; Petition, 54.

> The following is a description of MO packet routing with reference to FIGS. **12** and **13** when a mobile station is located outside its home network, and the visited network does not understand the protocol of the mobile station, as a result of which the packet is routed via the GPRS network of a third party. In the example, the mobile station sends an IPX packet to the host computer.

Ex.1005, 10:39-45; Petition, 54.

PO Ignores the Ahopelto Teachings Showing Switching "in Response to an Application"

PO assertion

single application "may use different protocols." *Id.*, 53–54. Ahopelto thus cannot rely on the identity of an application to determine when to make an alleged switch. Ex. 2008, ¶62. The protocol of the packet would determine the alleged switch, not the application where the packet originated. *Id.* A POSITA would understand that a

PO Response, 28.

associated with any particular protocol. Ex-2008, ¶60 n.1. So, there is no evidence of any mapping between an application and a protocol. Nor is there any evidence that Ahopelto's GGSN considers the application when determining where to forward a packet. POR 28. In fact, "[a] POSITA would understand that a GGSN need not

PO Sur-Reply, 19-20.

Actual claim language

6. The system of claim **2**, wherein the server is configured to control the first network switch box to switch between a first network path and a second network path in response to an application.

Ex.1001, Claim 6.

Actual teaching

as PO succinctly states, Ahopelto teaches "[t]he protocol of the packet would determine the alleged switch" and "the application where the packet originated." POR, 28. Together, this is consistent with Dr. Jensen's testimony that the switching is "*in response to an application*," e.g., in response to receiving a packet from an application. *See* Ex.1003, ¶¶168-70; *accord* Ex.2005, 95:9-12.

Pet. Reply, 25 (Petition, 54-55).

Ahopelto also Renders Obvious "in Response to an Application" With the "Billing or Security Reasons"

Ahopelto's server functionality switches in response to a billing or security reason requiring routing packets a specific way:

The packet can also be routed via the network of the operator **1** in a forced manner, for instance, for billing or security reasons.

Ex.1005, 10:34-36; Petition, 55; Pet. Reply, 26.

(11) The CT/MD and the network switch box may be used for communication, control, command, compute, entertainment, gaming, or other applications that may be defined in the future for both wireless and wired equipment.

Ex.1005, 10:13-21; Petition, 54.

Ahopelto Render Obvious Dependent Claim 19

19. The system of claim **14**, wherein the server is configured with software stored in a non transitory computer readable medium to be executed by a processor on the server, wherein the software defines the optimal data path between at least two or more network switch boxes for a specific data stream flow.

Ex.1001, Claim 19.

Ahopelto's Optimal Data Path is Defined From the Server Functionality

"As further shown at claim 3" (Petition, 72):

First path via operator 1:

3. The GPRS GSN receives the CLNP packet and checks the protocol of the IPX packet. Since the GPRS GSN does not support the IPX protocol towards the data networks itself, it encapsulates the original IPX packet in an IP packet, which is sent to the gateway support node GPRS GSN of the operator **1**.

Ex.1005, 10:22-27; Petition, 49.

Since the GPRS GSN of the operator **1** supports the IPX protocol towards the data networks itself, it strips the encapsulation away and sends the original IPX packet via IPX networks to the host computer Host.

Ex.1005, 10:30-33; Petition, 49.

Second path via operator 3:

3. The GPRS GSN of the operator **2** receives the CLNP packet and checks the protocol of the encapsulated IPX packet. Since the GPRS GSN does not support the IPX protocol towards the data networks itself, it encapsulates the original IPX packet in an IP packet and sends the IP packet to the gateway support node GPRS GSN of the operator **3**, since the operator **2** has made an agreement with the operator **3** to forward IPX packets.

Ex.1005, 10:48-55; Petition, 51.

Ex.1003, ¶236; Petition, 73; Pet. Reply, 27.

Ahopelto's Optimal Data Path is Between two "Network Switch Boxes"

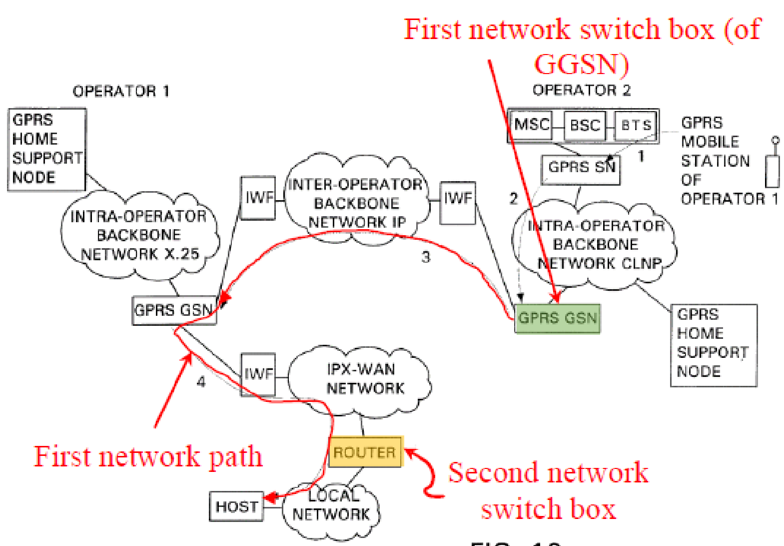


FIG. 10

Ex.1005, FIG. 10 (annotated)

Petition, 50, 54, 72.

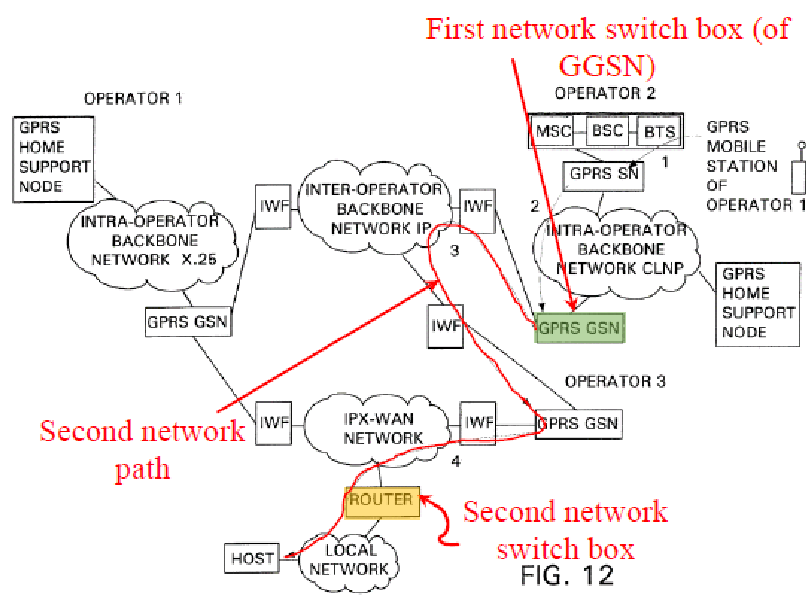


FIG. 12

Ex.1005, FIG. 12 (annotated)

Petition, 51, 54, 72.

Ahopelto's Optimal Data Path is for a "Specific Data Stream Flow"

The method described above may simplify packet routing, for instance, in the following situation. If a mobile station of a Finnish operator is visiting Germany and communicating with a German host computer Host, and the visited GPRS network does not support the protocol of the mobile station, it is possible, by the method of the invention, to avoid back and forth traffic between Germany and Finland in the inter-operator backbone network in the case of mobile originated packets, since the packets can be routed to the host computer via another German GPRS operator, which supports the IPX protocol.

Ex.1005, 10:63-11:6; Petition, 56 (claim 8, "data stream"); Pet. Reply, 27.

Q I'm just talking about two IP-based device end points, a general knowledge of a POSITA, isn't it true that a data flow between those IP-based devices would be made up of one or more packets?

A Well, I just wanted to ask. It seems to me that if that's -- that's also a hypothetical regardless what -- what -- I mean, you represented that it's not, but, anyway, I think that -- I'm thinking that, yeah, it would be in the sense of packets in -- excuse me. It would be using packets.

Ex.1029, 91:5-14; Pet. Reply, 28.

Ahopelto's Optimal Data Path is for a "Specific Data Stream Flow"

Packets between endpoints – new argument? (PO Sur-Reply, 22)

Cited and quoted in the original Petition:

> The method described above may simplify packet routing, for instance, in the following situation. If a mobile station of a Finnish operator is visiting Germany and communicating with a German host computer Host, and the visited GPRS network does not support the protocol of the mobile station,

Ex.1005, 10:63-66; Petition, 56; Pet. Reply, 27.

What is the "method described above" that allows visiting of networks that don't support the protocol?:

> 3. The GPRS GSN of the operator **2** receives the CLNP packet and checks the protocol of the encapsulated IPX packet. Since the GPRS GSN does not support the IPX protocol towards the data networks itself, it encapsulates the original IPX packet in an IP packet and sends the IP packet to the gateway support node GPRS GSN of the operator **3**, since the operator **2** has made an agreement with the operator **3** to forward IPX packets.

Ex.1005, 10:48-55; Petition, 51, 72.

Hardwick is Analogous Art

Hardwick is in the Same Field of Endeavor to the ’863 Patent

’863 Field of Endeavor: Wireless Networking

(54) **CONTROLLER AND SERVER SYSTEM FOR NETWORKING**

Ex.1001, Title; Ex.1003, ¶45; Petition, 7; Pet. Reply, 30.

FIG. **4** illustrates a dual antenna, dual T/R unit in the CT/MD of the present invention in a dual band system **400**. In

Ex.1001, 4:14-15; Ex.1003, ¶46; Petition, 8; Pet. Reply, 30.

FIG. **5**B illustrates a wide band network switch box system **550** that is capable of operating in a number of network environments sequentially or simultaneously. The network switch box is configured with multiple processors, multiple antennas and multiple T/R units that can be multiplexed to process incoming and outgoing wireless signals. In addition

Ex.1001, 5:6-11; Ex.1003, ¶47; Petition, 8; Pet. Reply, 30.

Hardwick is in the Wireless Networking Field

> A physical switching device for use in a communication network to switch Open Systems Interconnection (OSI) network layer packets and method of use therefor is provided. The physical switching device includes at least a first and a second virtual switch. Each virtual switch includes a

Ex.1008, Abstract; Ex.1003, ¶66; Petition, 75; Pet. Reply, 30.

> The present invention provides a packet processing system which contains virtual switches within physical switching systems that direct the flow of protocol data units in a data communication network. The present invention

Ex.1008, 6:38-41; Ex.1003, ¶245; Petition, 76; Pet. Reply, 30.

> (c) the communication network is selected from the group consisting of local area network, wide area network, metropolitan area network, and wireless network; and

Ex.1008, 51:19-21; Pet. Reply, 30.

<u>’863 Pertinent Problem</u>: how to further integrate components for connections between networks

> a network switch box, wherein the network switch box is configured with a plurality of ports, wherein the network switch box is connected to at least two networks, wherein the network switch box is configured to transmit and receive one or more data packets between the at least two networks.

Ex.1001, claim 1; Pet. Reply, 31.

> multiple antennas. The present invention is possible due to advances in the art which allow the necessary components to be integrated, with the size shrunk to achieve the package, performance, and cost desired. The multiple T/R capability

Ex.1001, 1:51-54; Pet. Reply, 31.

Hardwick is Reasonably Pertinent to the '863 Patent's Problem

Hardwick reduces the cost of providing packet switching services and integrates virtual switches into the same physical switching system:

> The present invention provides a packet processing system which contains virtual switches within physical switching systems that direct the flow of protocol data units in a data communication network. The present invention

Ex.1008, 6:38-41; Petition, 76; Pet. Reply, 32.

> security measures. By using all of these principles, the present invention reduces the cost of providing these packet switching services by enabling a single physical data switch to be divided into two or more virtual switches which individually process packets from different Closed User Groups. With reference to the postal delivery analogy, the

Ex.1008, 6:47-52; Petition, 76; Pet. Reply, 32.

Sood is Analogous Art

Sood is in the Wireless Networking Field

nously presenting information. The present invention is useful in multi-media, e-mail, and wireless communications. Step **10** provides a wireless communication systems including at least one base station, the present method permits a mobile station to synchronize the presentation of a first communication stream to the presentation of at least a second communication stream. In some aspects of the

Ex.1009, 3:46-52; Petition, 79-80; Pet. Reply, 323.

provided by base station, e-mail sender, and memory. The wireless communication system is selected from the group consisting of IS-95, W-CDMA, IS-136, and GSM.

Ex.1009, 3:54-56; Petition, 80; Pet. Reply, 32.

<u>’863 Pertinent Problem</u>: having different channels for voice and other data

> plexed for different uses. As an example one processor may be specifically designed to handle voice, another for data, another for high quality audio and yet another for streaming video.

Ex.1001, 9:17-20; Pet. Reply, 33.

> may be multiplexed for different uses. As an example one processor may be specifically designed to handle voice, another for data, another for high quality audio and yet another for streaming video.

Ex.1001, 9:44-47; Pet. Reply, 33.

Sood is Reasonably Pertinent to the ’863 Patent’s Problem

Sood teaches how to receive one stream of information synchronized with another stream of information in real time, including audio, video, images, data:

> mation by first receiver channel **102**. In this manner, two streams of information are synchronized for real-time presentation. As is well known in the art, even in real-time communication systems, information is not presented at exactly the same time that it is received, as there is some processing delay. However, the presentation is substantially simultaneous, and appears to be exact realtime to the user.

Ex.1009, 9:26-32; Petition, 81; Pet. Reply, 33.

> In this manner, the synchronization method is able to integrate different types of communication medium. Typically, the first and second communication medium types are selected from the group consisting of audio, audio/video, video, text, images, and data. For example, Step d) may

Ex.1009, 2:35-38; Petition, 81-82; Pet. Reply, 33.

Inter Partes Review
U.S. Patent No. 8,982,863

Apple Inc. v. Smart Mobile Tech. LLC, Case IPR2022-01222

Andrew Ehmke and Adam Fowles,
Haynes and Boone, LLP

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE