

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNIFIED PATENTS, LLC,
Petitioner,

v.

OZMO LICENSING LLC,
Patent Owner.

U.S. Patent 9,264,991
Issue Date: February 16, 2016

Title: APPARATUS AND METHOD FOR INTEGRATING SHORT-RANGE
WIRELESS PERSONAL AREA NETWORKS FOR A WIRELESS LOCAL
AREA NETWORK INFRASTRUCTURE

Inter Partes Review No.: IPR2023-00193

PETITIONER'S DEMONSTRATIVES

Pursuant to the Parties' Joint Stipulation and Request for Modification of Schedule for Demonstrative Exhibits and Request in Alternative to Remove Hearing Date from Calendar (Paper 30), attached are Petitioner's Demonstratives, a prior version of which was served on counsel for Patent Owner on March 14, 2024.

Dated: March 15, 2024

Respectfully submitted,

DUANE MORRIS LLP

BY: /John M. Baird/
John M. Baird
USPTO Reg. No. 57,585
DUANE MORRIS LLP
901 New York Ave., NW
Suite 700 East
Washington, D.C. 20001
P: (202) 776-7819
F: (202) 379-9850
JMBaird@duanemorris.com

*LEAD COUNSEL FOR PETITIONER
UNIFIED PATENTS, LLC*

CERTIFICATION OF SERVICE ON PATENT OWNER

Pursuant to 37 C.F.R. §§42.6(e) and 42.8(b)(4), the undersigned certifies that on the 14th of March, 2024, a complete and entire copy of Petitioner's Demonstratives were served:

Lawrence P. Cogswell III, Ph.D. (lawrence.cogswell@hbsr.com)
Timothy J. Meagher (timothy.meagher@hbsr.com)
Ronald R. Demsher (ronald.demsher@hbsr.com)
Keith J. Wood (keith.wood@hbsr.com)
Daniel A. Fleisher (daniel.fleisher@hbsr.com)
Hamilton, Brook, Smith & Reynolds, P.C.

Dated: March 15, 2024

Respectfully submitted,

DUANE MORRIS LLP

BY: /John M. Baird/
John M. Baird
USPTO Reg. No. 57,585

*LEAD COUNSEL FOR PETITIONER
UNIFIED PATENTS, LLC*

PETITIONER'S
TRIAL HEARING DEMONSTRATIVES

Unified Patents, LLC,
v.
Ozmo Licensing LLC.

IPR2023-00193
US 9,264,991

TRIAL HEARING
MARCH 19, 2024

DUANE MORRIS, LLP

Overview of Grounds

Ground	Basis	Art	'991 Claims
1	103	<i>Cromer</i> (Ex-1004) in view of <i>Ganu</i> (Ex-1005)	1, 3-4, 6-7, 14, and 16-17
2	103	Ground 1 further in view of <i>Sinivaara</i> (Ex-1006)	1, 3-4, 6-7, 14, and 16-17
3	103	Ground 1 further in view of <i>Judd</i> (Ex-1019)	15, 18
4	103	Ground 2 further in view of <i>Judd</i>	15, 18

Pet. 1.

Overview of Disputes

No.	Dispute	Grounds
1	Whether Patent Owner's construction of " <i>partially consistent</i> " is proper.	1-4
2	Whether <i>Ganu</i> modifies the 802.11 ad-hoc protocol.	1-4
3	Whether <i>Cromer</i> and <i>Ganu</i> can be successfully combined.	1-4
4	Whether the <i>Cromer-Ganu</i> protocols reduce interference.	1-4

Overview of Ground 1

'991 Patent

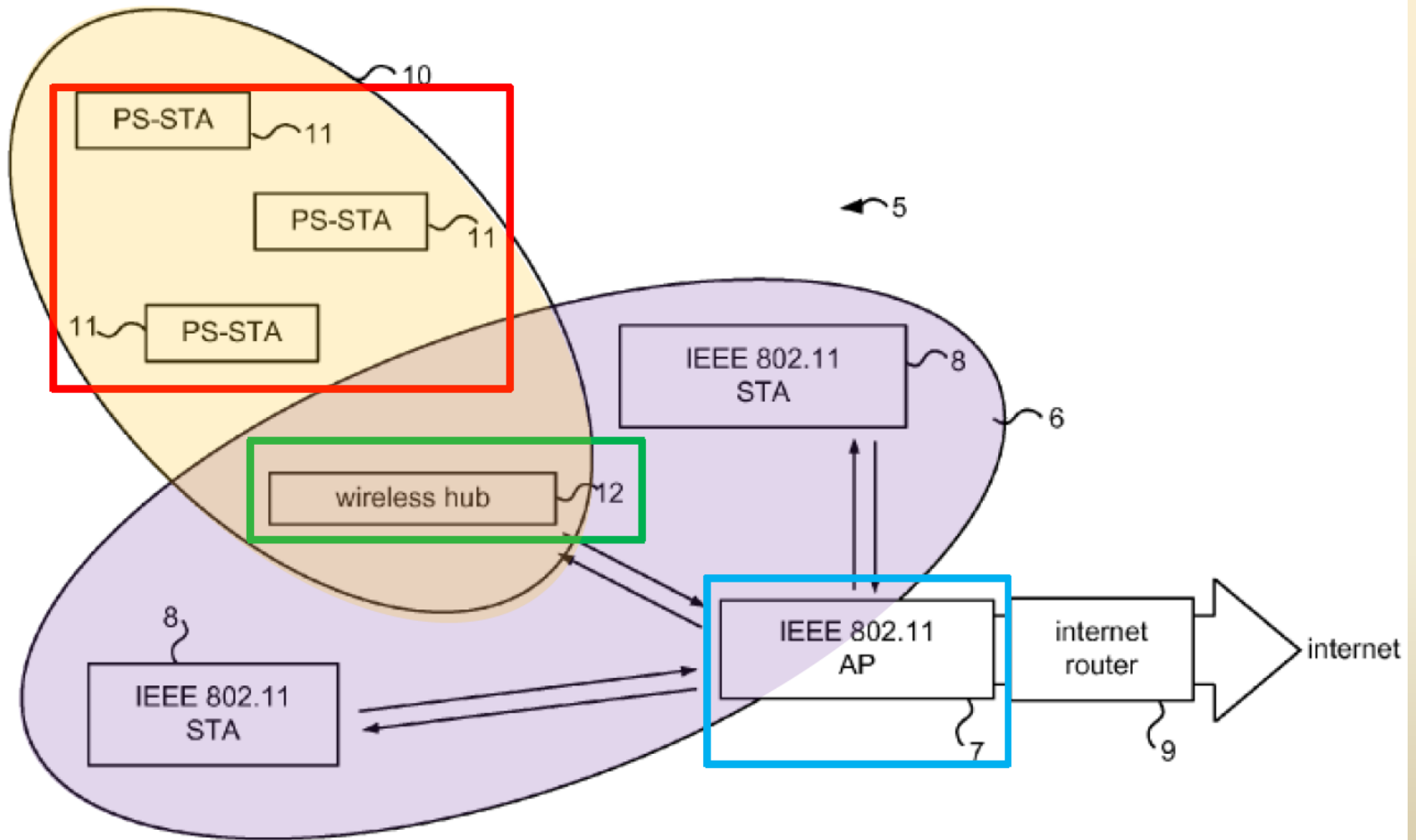
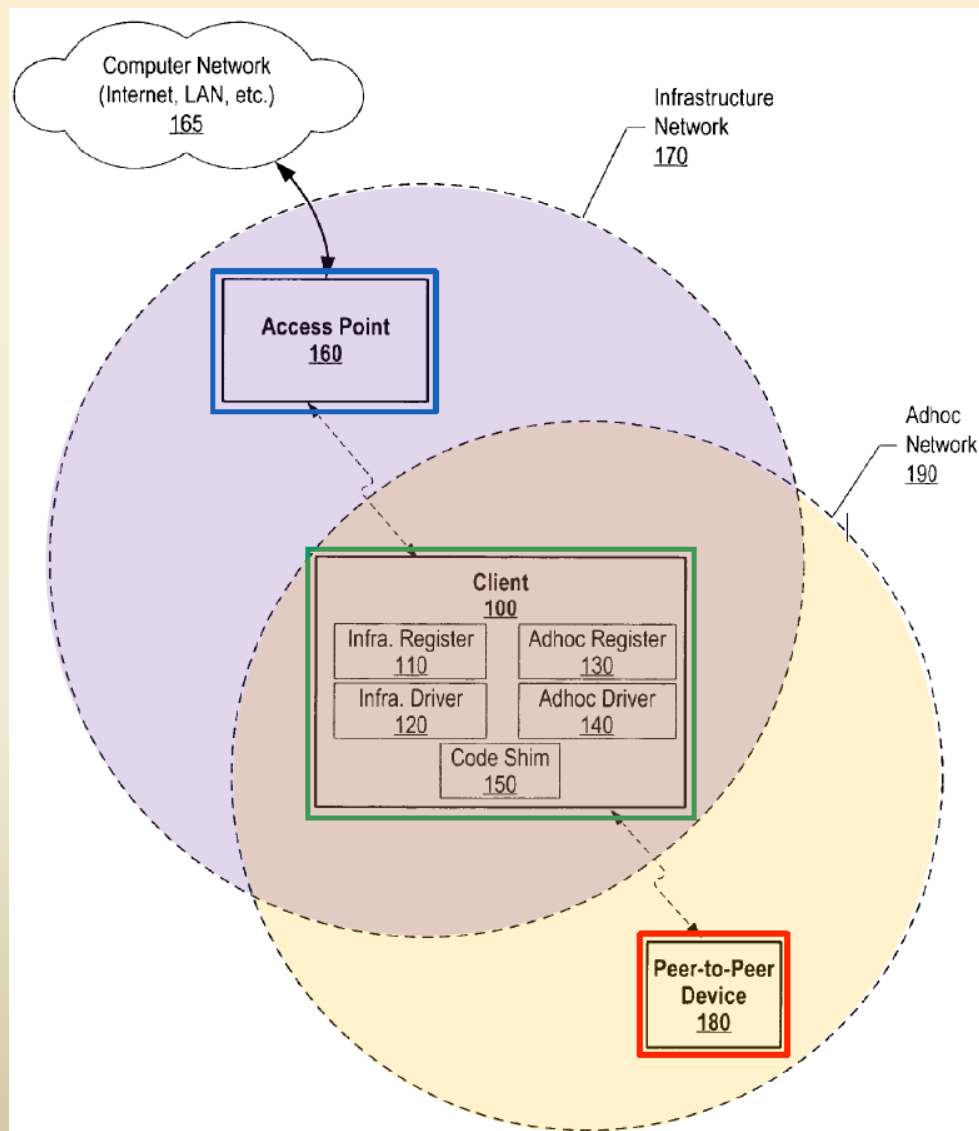


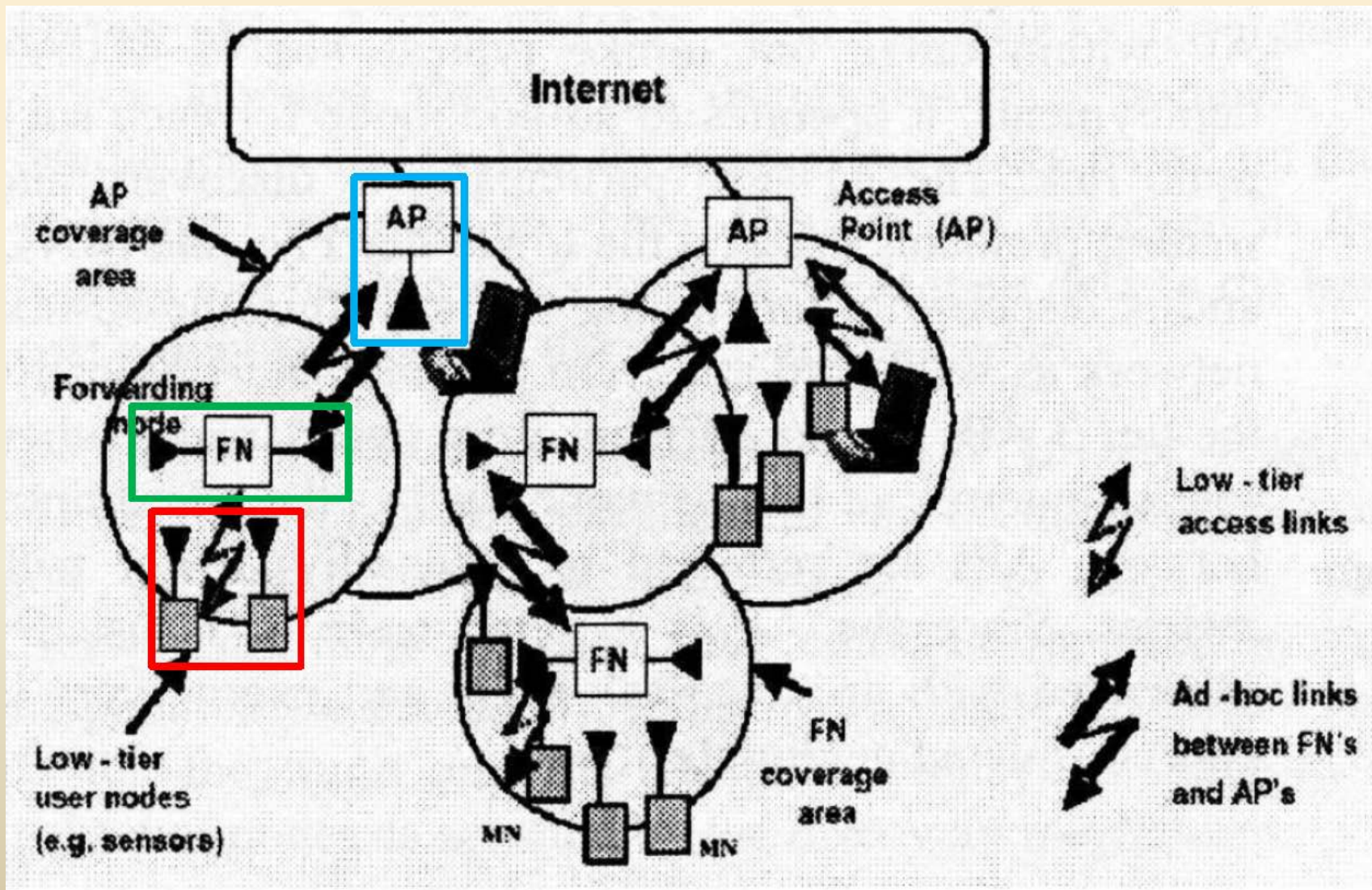
FIG. 3

Cromer



Ex-1004 FIG. 1 (Pet. annotations); Pet. 11-15.

Ganu



Dispute 1:
Whether Patent Owner's
Construction of “*partially*
***consistent*” is Proper**

“partially consistent”

[1f] wherein the second network protocol is an overlay protocol with respect to the first network protocol in that communications using the second network protocol are **partially consistent** with the first network protocol and

“partially consistent”

Claim Construction Positions

No construction required because the art meets terms under any reasonable construction and Patent Owner’s construction.

Pet. 5-6, Reply 3-5.

Petitioner	Patent Owner in IPR	Court’s <u>&</u> PO in Litigation
Plain and Ordinary (Pet. 5-6)	(1) “inherently includes the notion of protocol ‘rule breaking’ or violation” (Resp. 15) (2) “[protocols] must be of the same type”* (Sur-Reply 3-5)	“conforms to a part, but not the entirety of” (Ex-1010 27-31, 36; Ex-2002 2)

No Support in Specification for Patent Owner's IPR-only Construction

No Mention of:

- “*partially consistent*”
- “*second network protocol*”
- “rule breaking” or “violation”
- OSI Layers Reply 2-3, 5-6.

Sur-Reply's “same type” Sur-Reply 3-5.

Because the dual-net device may be a regular STA in the first WLAN, it can power-down as needed without problems, unlike an access point. However, since it is also the COORD, peripheral communication could be lost if the peripheral is powered up but the dual-net device/COORD is not. This can be dealt with using mutually agreeable inactivity periods.

Specification Support for *“partially consistent”*

Coordination [of the usage of wireless devices on a WLAN that may be active in the same space] is achieved by the use of a secondary network (WPAN) protocol that is an overlay protocol that is partially compatible with the WLAN protocol, but not entirely, in terms of power, frame contents and sequences, timing, etc. The secondary network (WPAN) protocols might be 802.11x frames with new frame arrangements adapted for WPAN needs, such as reduced latency, power, etc.

DI 7-8 (citing Ex-1001 9:60-66) (Pet. highlighting);
Ex-1010 30-31 (*Acer* Court citing equivalent).

Ganu Discloses Rule Breaking & Violations

Ganu modifies 802.11 ad-hoc:

- Beacon frames (appends Tx/Rx Power)
- Association messages
- Ad-hoc discovery phase
- Formation of a hierarchy of ad-hoc nodes

These modifications “violate” or “break” the rules of 802.11.

Ganu Discloses a “Same Type” Protocol

Sur-Reply asserts modified device driver is Layer 2:

- “logic ... includes an ‘802.11x device driver’ ... implementing the ‘modified’ portions of the 802.11 protocols ... these implementations are Layer 2”
- “If the *communication protocol* ... is *modified* ... the 802.11x device driver may also require ... modification” Sur-Reply 7-8 (citing Ex-1001 7:9-17, FIG. 6) (PO’s emphasis).

But, *Ganu* discloses.

- “We modified the device drivers to *append transmit power to each outgoing beacon*” Ex-1005 003; Pet. 20, 48; Reply 3, 8

Dispute 2: Whether *Ganu* Modifies the 802.11 Ad-hoc Protocol

Ganu's Modified 802.11 Ad-Hoc Protocol

Ganu modifies 802.11 with:

- Augmented beacon frames (appends Tx/Rx Power)
- Association messages
- Ad-hoc discovery phase
- Formation of a hierarchy of ad-hoc nodes

Ex-1005 001, 003;
Pet. 9-10; 41-56; Reply 3-5, 7-10.

Ganu's “Proof-of-Concept Prototype”

Ganu:

“[F]or ease of implementation, the beacons used in [*Ganu's* proof-of-concept] prototype are application-level packets.”

Ex-1005 003 (emphasis added), *see also* 001-002, 004-005.

Dr. Haas:

Ganu's prototype proved the feasibility of its 802.11-modified protocol. Ex-2006 92:9-18.

Reply 8-10.

Ganu's Express Modification of 802.11

Ganu:

- “802.11 beacons are generated in 802.11 firmware in most ... 802.11b network adapters” Ex-1005 003.
- “[I]mplementing the discovery protocol in firmware will result in better network performance” Ex-1005 005.

Dr. Haas:

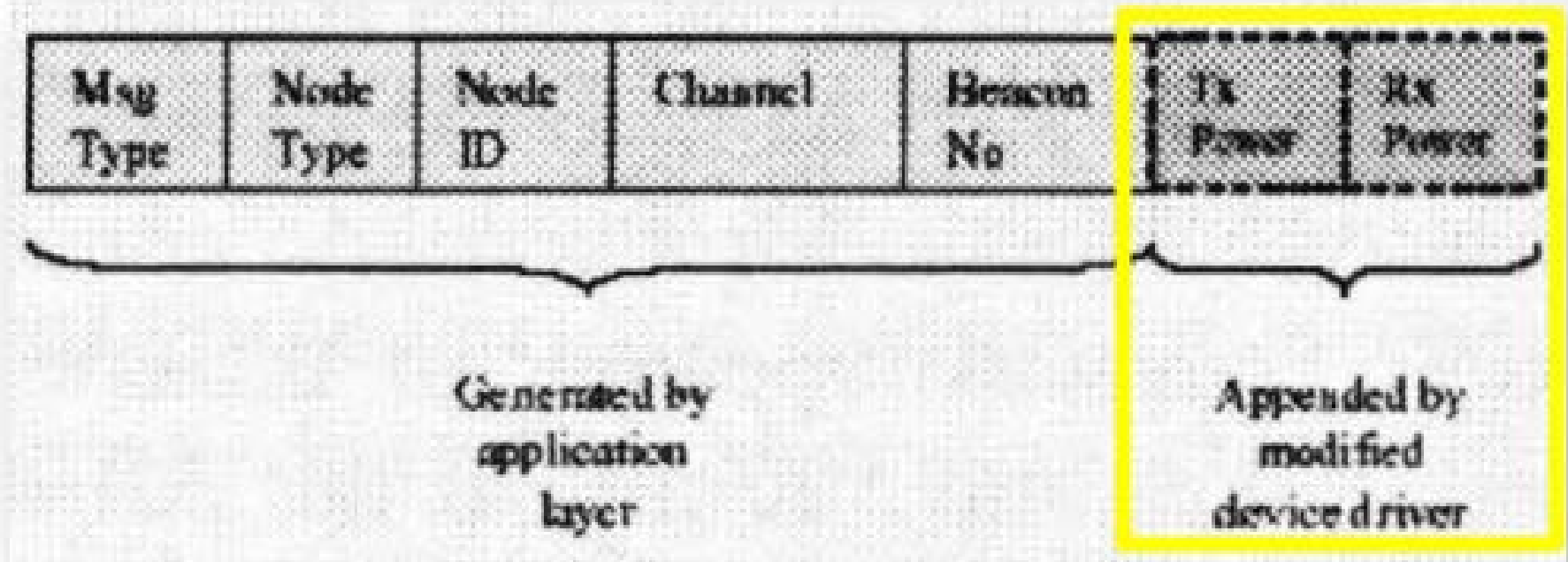
- *Ganu* clearly states that a POSITA could implement its 802.11-modified protocol in firmware Ex-2006 91:7-12, 93:1-10, *see also* 90:1-94:7; Ex-1035 ¶13-14.

Patent Owner Admits: Ganu Discloses Modifying 802.11

Patent Owner:

- “It is true that Ganu contemplates a Layer 2 discovery protocol” Sur-Reply 11.
- “Ganu ... contemplates a firmware/Layer 2 implementation of its modified protocol” Sur-Reply 9.
- “Ganu ... contemplat[es] an 802.11 protocol” Sur-Reply 9.

Ganu Teaches Implementing Modified 802.11



Ex-1005 001, 003;
Pet. 9-10, 41-56; Reply 4-5, 7-10.

Dispute 3:
**Whether *Cromer* and *Ganu* can be
Successfully Combined**

Cromer – Ganu: Combined Features

- *Ganu*’s FN’s data forwarding so *Cromer*’s client 100 forwarded data Pet. 26, *see also* 21-28 ([1pre]).
 - PO: “forward[ing] traffic” was “simple” and “already widely known” Resp. 16-18 (citing Ex-2008); Pet. 21-28, 58-59; Reply 14.
- *Cromer*’s client device 100 transmits *Ganu*’s 802.11 beacons with modified power fields Pet. 49, *see also* 47-51 ([1e.2]).
- *Cromer*’s client device 100 uses *Ganu*’s 802.11-like “association” for WPAN sent by peer-to-peer devices 180 Pet. 45, 49, *see also* 42-51 ([1e.1]-[1e.2]).

Cromer – Ganu: Combination Benefits

- Scale network throughput
- Reduce delay
- Lower power consumption at end-user devices
- Relay internet traffic (e.g., printing, displaying or storing data), *inter alia*

Ex-1005 001, 003; Ex-1003 ¶87; Ex-1035 ¶11; Pet. 18-21, 21-28, 41-54, 50, 58-60; Reply 7, 13.

Cromer – Ganu: Reasonable Expectation of Success

- Forwarding was widely known (PO agrees) Resp. 16-18.
 - *Ganu* expressly taught 802.11 modifications
 - Well-developed state of the art
 - Needs only routine skill
- Pet 7-11, 26-28, 50-51, 55-56; Reply 14-15, 18-22.

Dispute 4:
**Whether the *Cromer-Ganu* Protocols
Reduce Interference**

“overlay protocol”

[1f] wherein the second network protocol is an **overlay protocol** with respect to the first network protocol in that communications using the second network protocol are partially consistent with the first network protocol

Court’s Construction: “A protocol governing a second network, which protocol has **aspects in common** with a first network protocol to **reduce interference** such that the second and first networks can co-exist.” Ex-1010 23-26, 36; Ex-2002 6-7.

The *Cromer-Ganu* Protocols Reduce Interference

Common Aspects Reducing Interference:

- physical layer formatting
- MAC frame formatting
- operating on different channels
- CSMA-CA techniques

Pet. 55-56 (citing Ex-1003 ¶¶ 143-44; Ex-1029 1); Reply 16-18; Resp. 19-20 (channels, CSMA-CA).

Allowing Co-Existence:

- 802.11 “permits” “multiple overlapping” WLANs to “co-exist.” Ex-1029 1; Pet. 55-56; Reply 16-18.

PO Admission on Reducing Interference

PO :

802.11 specified “many ways of reducing interference between two 802.11 networks.” Resp. 19 (emphasis added); Reply 17.

Sur Reply's Errant Requirements for Reducing Interference

Sur-Reply errs in looking for:

- “unique features,”
- “not part of the 802.11”

for an “*overlay protocol*.” Sur-Reply 23-24.

Conclusion

Questions?

Backup Slides

'991 Patent

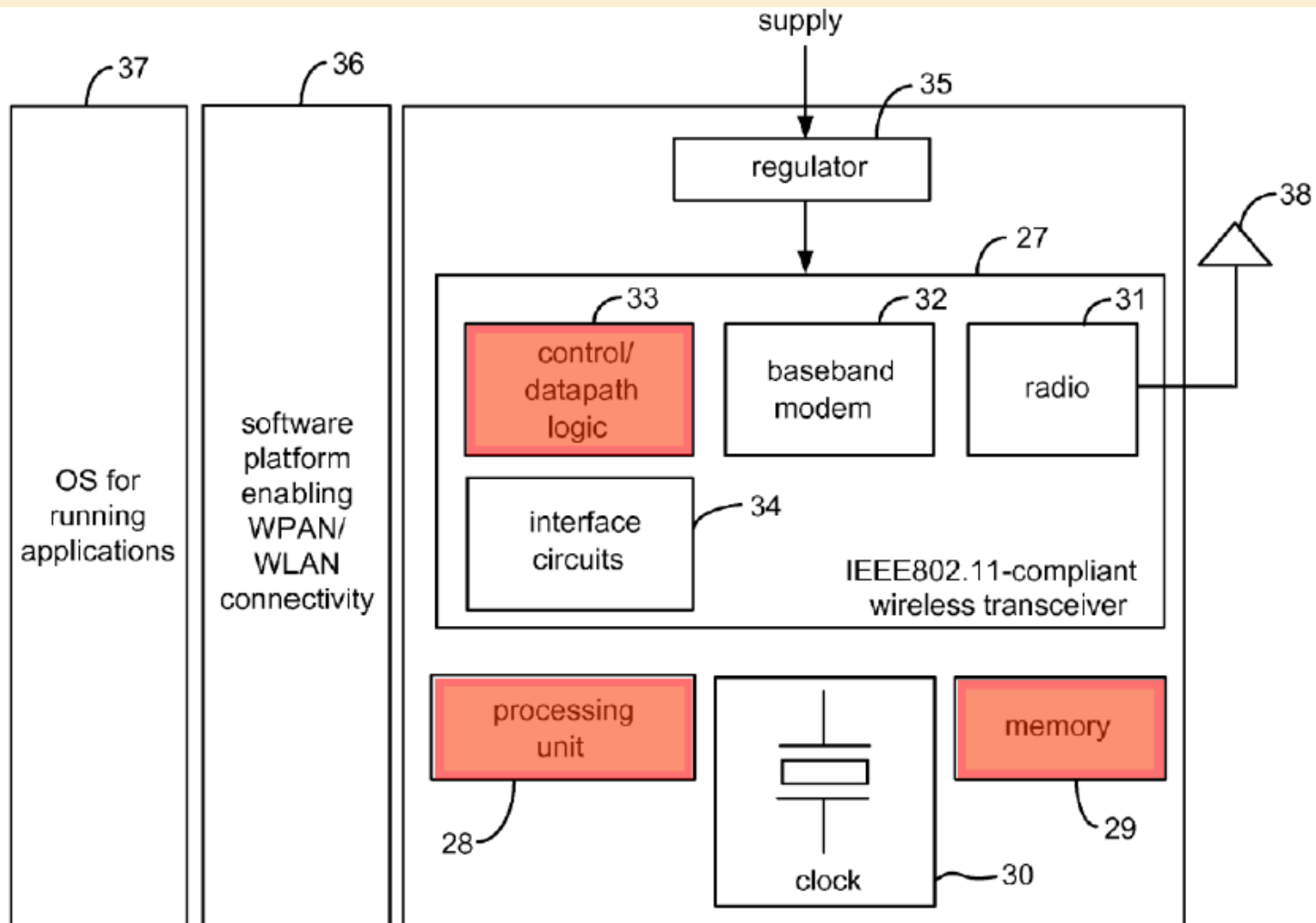
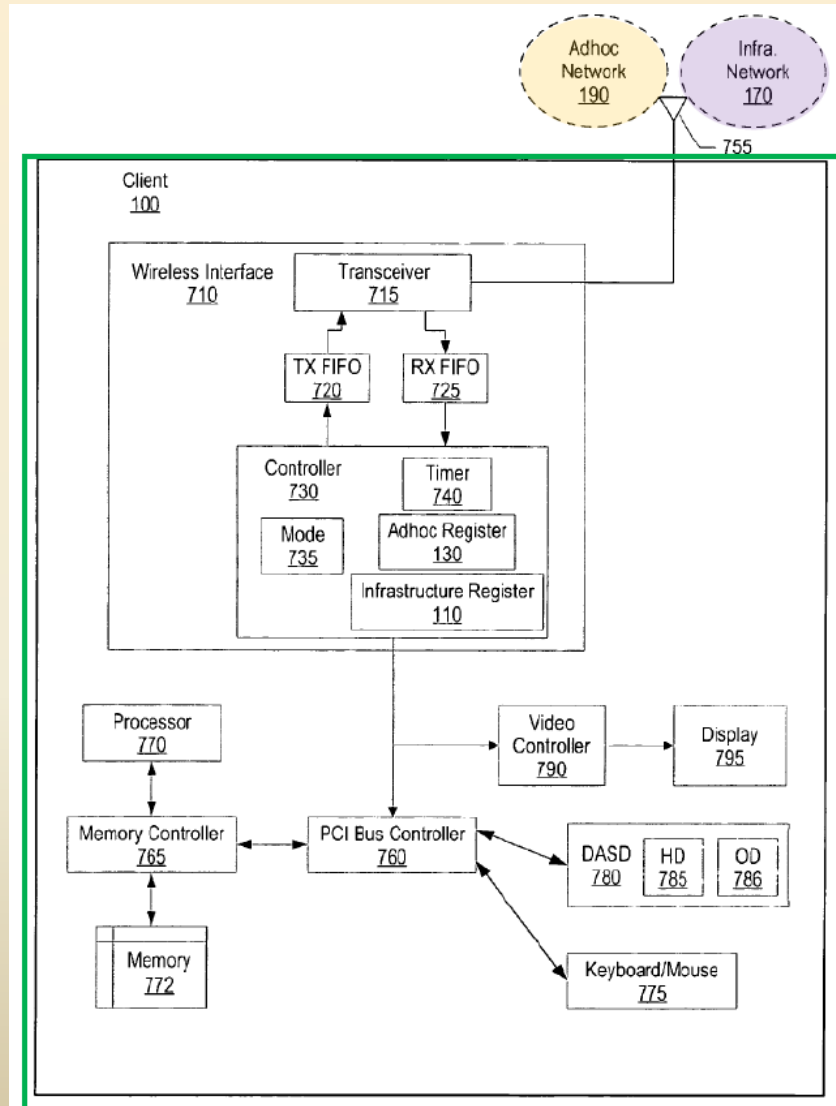


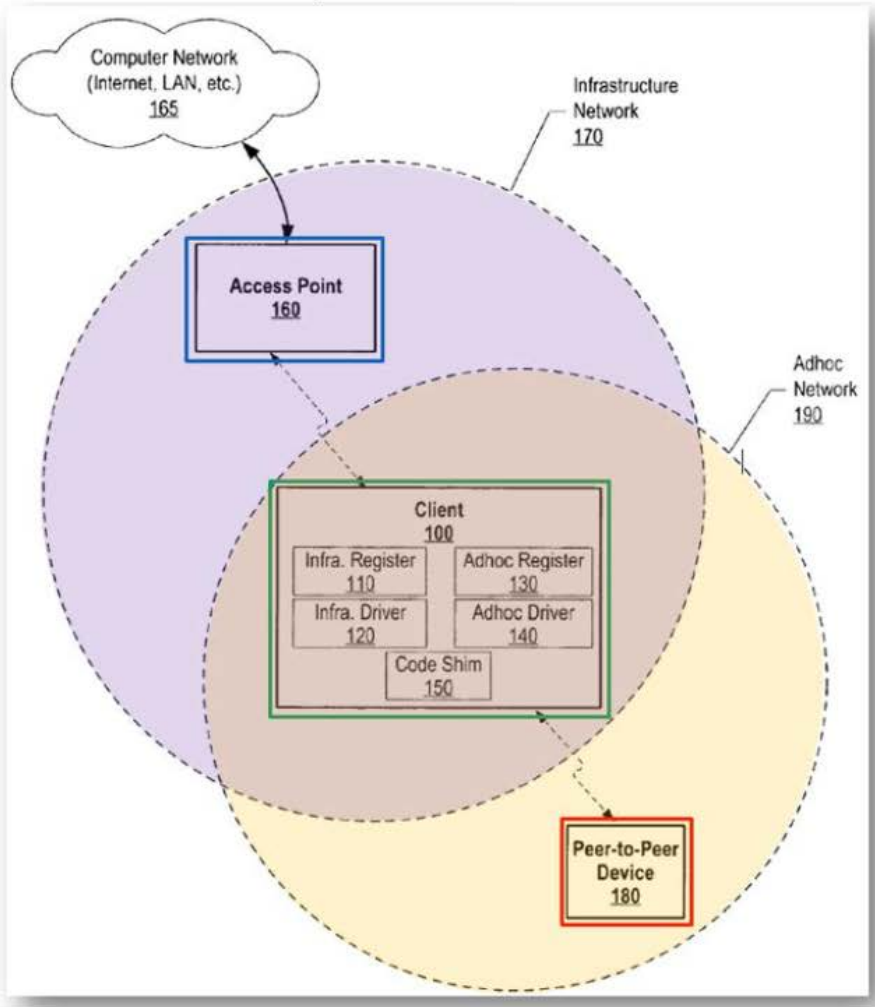
FIG. 6

Cromer

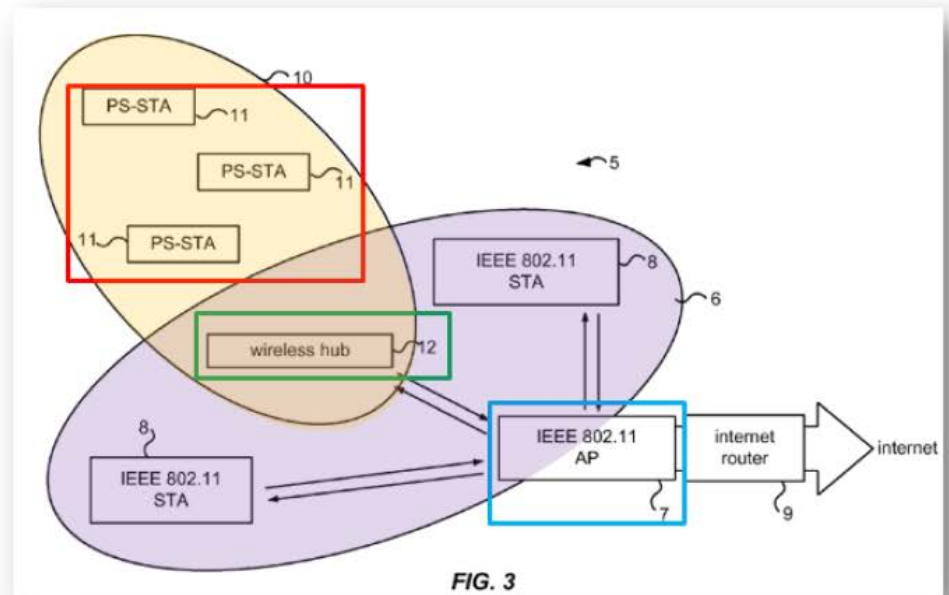


'991 Patent & Cromer

Cromer



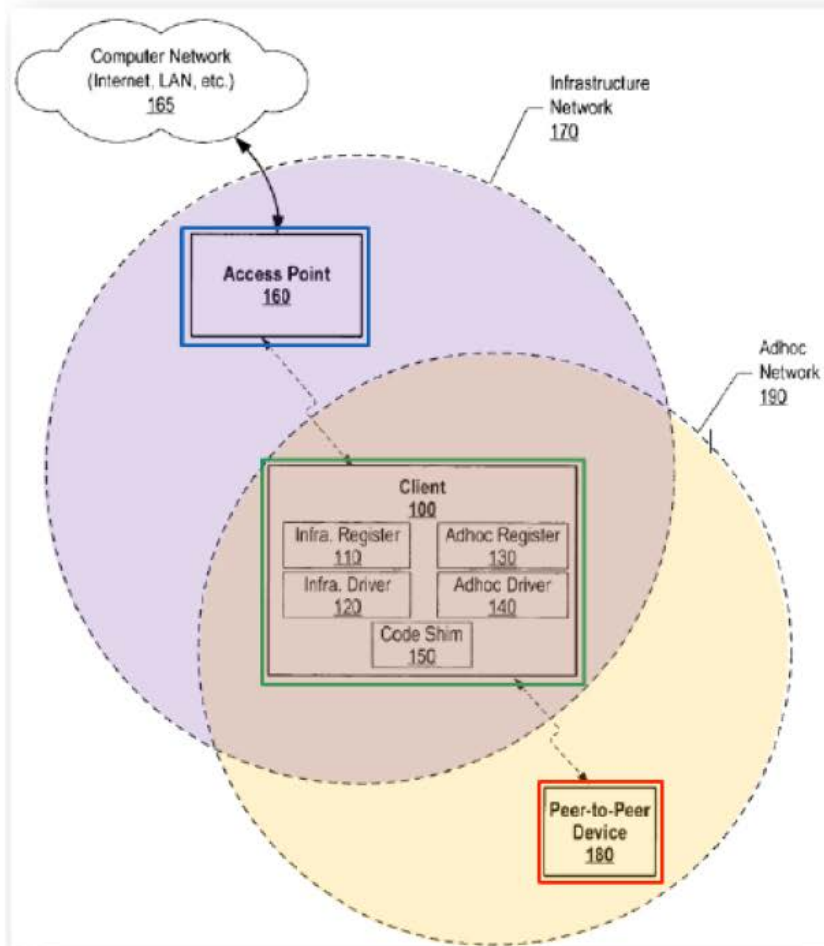
'991 Patent



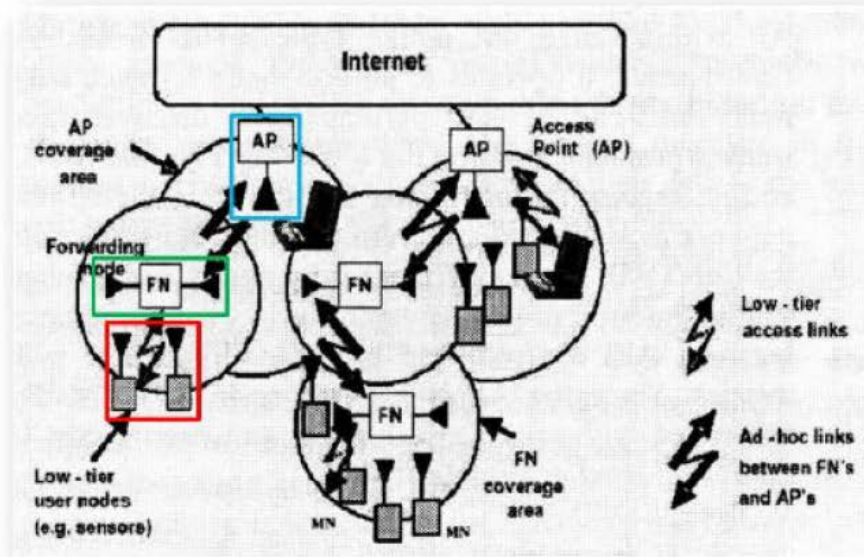
Ex-1004 FIG. 1 and Ex-1001 FIG. 3 (Pet. annotations); Pet. 46.

Cromer & Ganu

Cromer

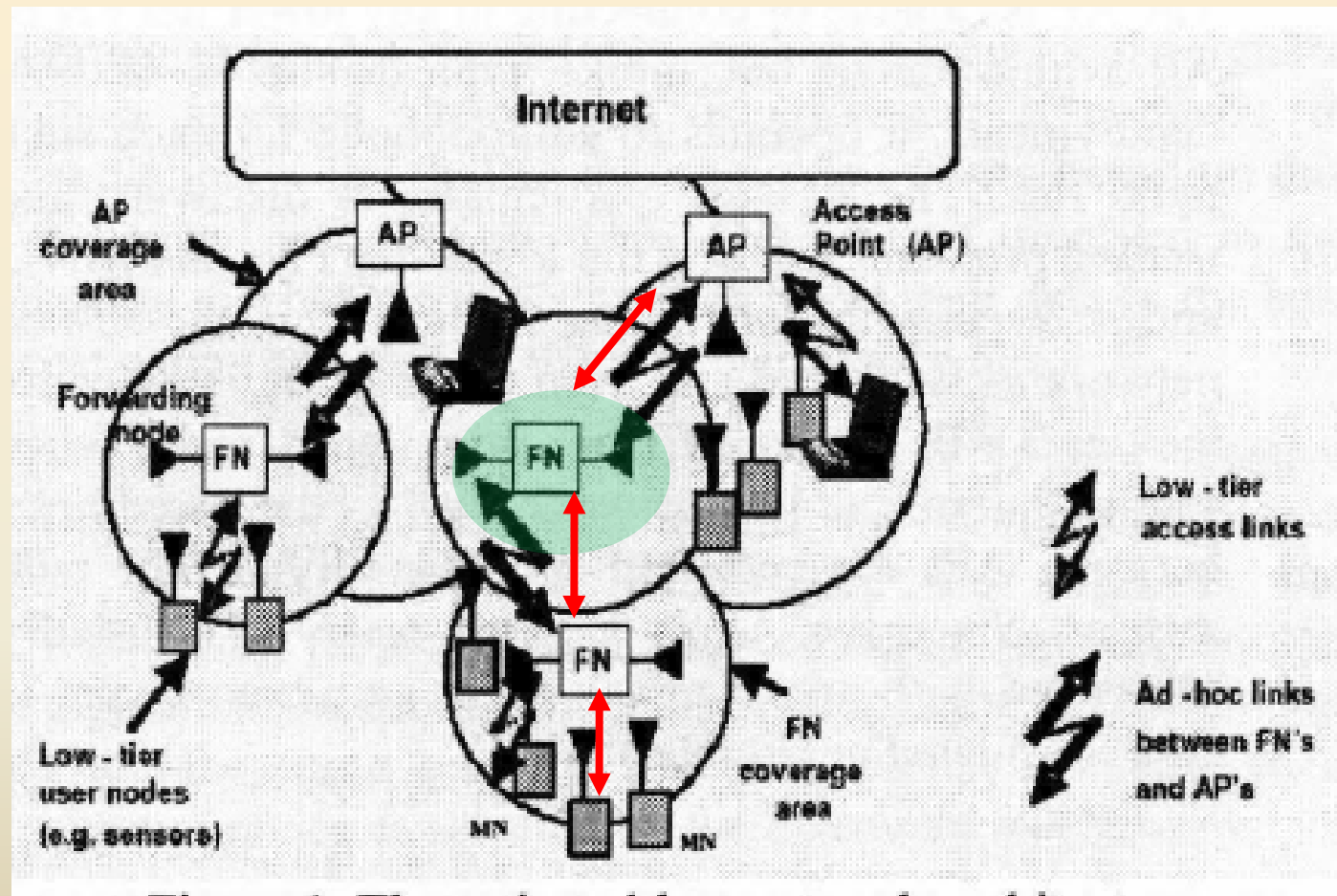


Ganu



Ex-1004 FIG. 1 and Ex-1005 FIG. 1 (Pet. annotations);
Pet. 21-28; Reply 23.

Ganu: Forwarding Nodes (“FN”) Route Traffic



Ex-1005 001-002 (Pet. Annotations).

Cromer-Ganu: Power Savings

Ganu:

- “lower power consumption at end-user devices”
- “energy conservation at the MNs was chosen as the objective”
- “minimizing the transmit power consumption at the MNs” Ex-1001, 003; Pet. 19-21, 24, 28, 49-51; Reply 10-14.

Patent Owner:

- “Cromer’s P2P device (peripheral) can reduce its power consumption” “if Ganu’s discovery protocol is applied to Cromer” Sur-Reply 21.

Claim 1

1. [1pre] A network-enabled hub, usable for facilitating data communications between two or more wireless devices that are configured to communicate indirectly with each other via the network-enabled hub, comprising:

[1a] an interface to a wireless radio circuit that can send and receive data wirelessly, providing the hub with bi-directional wireless data communication capability;

[1b] a processor configured to:

[1c] process data received via the wireless radio circuit;

[1d] generate data to be transmitted by the wireless radio circuit;

* * *

Claim 1 (cont.)

[1e.1] initiate and maintain network connections with nodes of a wireless network external to the network-enabled hub, [1e.2] maintaining at least a first network connection using a first network protocol and a second network connection using a second network protocol, [1e.3] that can be maintained, at times, simultaneously with each other, [1f] wherein the second network protocol is an overlay protocol with respect to the first network protocol in that communications using the second network protocol are partially consistent with the first network protocol and [1g] wherein at least some of the communications using the second network protocol impinge on at least some antennae used for communications using the first network protocol; and

[1h] implement data forwarding logic, implemented in a network-enabled hub using hardware and/or software, that forwards data between an originating node and a destination node, wherein the originating node is a node in one of the first and second networks and the destination node is a node in the other of the first and second networks.

Ex-1001 14:39-15:3

Dependent Claims 3, 4, 6

3. The network-enabled hub of claim 1, wherein the first network connection provides a link via an access point of a wireless LAN and the second network connection provides a link to a personal area network (“PAN”) serving PAN devices, such that network nodes that have access to the wireless LAN can address packets to PAN devices that are nodes on the PAN.

4. The network-enabled hub of claim 3, wherein the network-enabled hub is configured to accept packets from the PAN devices where the packets are addressed to network devices that are accessible only via the network-enabled hub.

6. The network-enabled hub of claim 1, wherein the second network protocol is a protocol that requires lower average power consumption over time relative to the first network protocol.

Ex-1001 15:9-19, 15:28-38

Dependent Claims 7, 14-16

7. The network-enabled hub of claim 1, wherein the first network protocol is an 802.11x wireless protocol and the second network protocol is a modification of the 802.11x wireless protocol that is not entirely compliant with the 802.11x wireless protocol of the first network but can be maintained in a common wireless space as the 802.11x wireless protocol.

14. The network-enabled hub of claim 1, further comprising a housing into which electronic components can be housed internally.

15. The network-enabled hub of claim 1, further comprising a power module that receives power from an integrated wall plug.

16. The network-enabled hub of claim 1, wherein the network-enabled hub is embedded into a personal computer, a cellular phone, or home entertainment equipment.

Ex-1001 16:15-31

Dependent Claims 17-18

17. The network-enabled hub of claim 1, wherein a device that is a node of the second network is one of a wireless mouse, wireless keyboard, wireless headset, personal digital assistant (“PDA”), or portable printer.
18. The network-enabled hub of claim 17, further comprising a power module that receives power from an integrated wall plug.