**No. 2021-1555**

**IN THE**

# United States Court of Appeals

**FOR THE FEDERAL CIRCUIT**

UNILOC USA, INC., UNILOC LUXEMBOURG S.A.,

*Plaintiffs-Appellants*,

v.

MOTOROLA MOBILITY LLC,

*Defendant-Appellee*.

On Appeal from the United States District Court
for the District of Delaware
No. 1:17-cv-1658, Hon. Colm F. Connolly

## OPENING BRIEF FOR APPELLANTS UNILOC USA, INC. AND UNILOC LUXEMBOURG S.A.

Aaron S. Jacobs
PRINCE LOBEL TYE LLP
One International Place, Suite 3700
Boston, MA 02110
(617) 456-8000 (telephone)
(617) 456-8100 (fax)

Jordan A. Rice
MOLOLAMKEN LLP
300 N. LaSalle Street, Suite 5350
Chicago, IL 60654
(312) 450-6700 (telephone)
(312) 450-6701 (fax)

Jeffrey A. Lamken
*Counsel of Record*
Lucas M. Walker
Kenneth E. Notter III
MOLOLAMKEN LLP
The Watergate, Suite 500
600 New Hampshire Avenue, N.W.
Washington, D.C. 20037
(202) 556-2000 (telephone)
(202) 556-2001 (fax)
jlamken@mololamken.com

*Counsel for Appellants Uniloc USA, Inc. and Uniloc Luxembourg S.A.*
*(Additional Counsel Listed on Inside Cover)*

Sean T. O'Kelly
O'KELLY & ERNST LLC
901 N. Market Street, Suite 1000
Wilmington, DE 19801
(302) 778-4000 (telephone)
(302) 295-2873 (fax)

*Counsel for Appellants Uniloc USA, Inc. and Uniloc Luxembourg S.A.*

# UNITED STATES COURT OF APPEALS
# FOR THE FEDERAL CIRCUIT

## CERTIFICATE OF INTEREST

**Case Number** 21-1555

**Short Case Caption** Uniloc USA, Inc. v. Motorola Mobility LLC

**Filing Party/Entity** Uniloc USA, Inc.; Uniloc Luxembourg S.A.

**Instructions:** Complete each section of the form. In answering items 2 and 3, be specific as to which represented entities the answers apply; lack of specificity may result in non-compliance. **Please enter only one item per box; attach additional pages as needed and check the relevant box**. Counsel must immediately file an amended Certificate of Interest if information changes. Fed. Cir. R. 47.4(b).

I certify the following information and any attached sheets are accurate and complete to the best of my knowledge.

Date: 05/18/2021

Signature: /s/ Jeffrey A. Lamken

Name: Jeffrey A. Lamken

| **1. Represented Entities.** Fed. Cir. R. 47.4(a)(1). | **2. Real Party in Interest.** Fed. Cir. R. 47.4(a)(2). | **3. Parent Corporations and Stockholders.** Fed. Cir. R. 47.4(a)(3). |
|---|---|---|
| Provide the full names of all entities represented by undersigned counsel in this case. | Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities.<br><br>☐ None/Not Applicable | Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities.<br><br>☐ None/Not Applicable |
| Uniloc USA, Inc. | Uniloc 2017 LLC | Uniloc Corporation Pty. Ltd. |
| Uniloc Luxembourg S.A. | Uniloc 2017 LLC | None |
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☐ Additional pages attached

**4. Legal Representatives.** List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).

☐ None/Not Applicable ☐ Additional pages attached

| | | |
|---|---|---|
| O'Kelly Ernst & Joyce, LLP: | Thomas H. Kramer | Daniel P. Murray |
| Prince Lobel Tye LLP: | Kevin Gannon | James J. Foster |
| | | |

**5. Related Cases.** Provide the case titles and numbers of any case known to be pending in this court or any other court or agency that will directly affect or be directly affected by this court's decision in the pending appeal. Do not include the originating case number(s) for this case. Fed. Cir. R. 47.4(a)(5). See also Fed. Cir. R. 47.5(b).

☐ None/Not Applicable ☑ Additional pages attached

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**6. Organizational Victims and Bankruptcy Cases**. Provide any information required under Fed. R. App. P. 26.1(b) (organizational victims in criminal cases) and 26.1(c) (bankruptcy case debtors and trustees). Fed. Cir. R. 47.4(a)(6).

☑ None/Not Applicable ☐ Additional pages attached

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# ADDENDUM

## 5. Related Cases

By order entered by the Clerk on April 23, 2021, the Court identified the following appeals as companion cases to be assigned to the same merits panel:

| | | |
|---|---|---|
| Uniloc USA, Inc. v. Apple, Inc., No. 21-1572 (Fed. Cir.) | Uniloc 2017 LLC v. Google LLC, Nos. 21-1498, -1500, -1501, -1502, -1503, -1504, -1505, -1506, -1507, -1508, -1509 (Fed. Cir.) (consolidated) | Uniloc USA, Inc. v. Blackboard Inc., No. 21-1795 (Fed. Cir.) |

# TABLE OF CONTENTS

# TABLE OF AUTHORITIES

**Page(s)**

**CASES**

## STATUTES AND RULES



## CONSTITUTIONAL PROVISIONS



## OTHER AUTHORITIES

## STATEMENT OF RELATED CASES

No appeal in or from this civil action was previously before this or any other appellate court.

The Court has identified the following appeals as companion cases to be assigned to the same merits panel: *Uniloc 2017 LLC v. Google LLC*, Nos. 21-1498, -1500, -1501, -1502, -1503, -1504, -1505, -1506, -1507, -1508, -1509 (Fed. Cir.), *Uniloc USA, Inc. v. Apple Inc.*, No. 21-1572 (Fed. Cir.), and *Uniloc 2017 LLC v. Blackboard Inc.*, No. 21-1795 (Fed. Cir.).

## JURISDICTIONAL STATEMENT

The district court had jurisdiction under 28 U.S.C. §§ 1331 and 1338(a). The district court ruled that Uniloc lacked Article III standing and dismissed for lack of jurisdiction; that ruling is the subject of this appeal. The district court entered final judgment on December 30, 2020. Appx25. Uniloc timely appealed on January 15, 2021. Appx1149-1150. This Court has jurisdiction under 28 U.S.C. § 1295(a)(1).

## STATEMENT OF THE ISSUES

1. Whether Uniloc, the undisputed owner of the patent-in-suit at the time the complaint was filed, had standing under Article III of the Constitution to sue for infringement of the patent.

2. Whether the district court erred in concluding that Uniloc lacked Article III standing based on the theoretical possibility that Fortress, Uniloc's secured lender, could sublicense the patent-in-suit.

3. Whether the district court erred in concluding that Fortress had the ability to sublicense the patent, including for past infringement, at the time the complaint was filed.

4. Whether Uniloc 2017 LLC, which acquired the patent-in-suit while this action was pending, should be substituted as plaintiff.

## STATEMENT OF THE CASE

This appeal arises from a patent-infringement action brought by Uniloc Luxembourg S.A. ("Uniloc Lux") and its exclusive licensee, Uniloc USA, Inc.—

together, "Uniloc"—in November 2017.[1] It is undisputed that Uniloc owned the asserted patent when the complaint was filed, making it the "patentee" that, by statute, has "the right to exclude others" from practicing the invention. 35 U.S.C. § 154(a)(1).

The district court nonetheless held that Uniloc lacked Article III standing to enforce the patent because Uniloc's secured lender, Fortress, purportedly had a conditional (but never-exercised) right to sublicense the patent under loan and related security agreements between Uniloc and Fortress. The court reached that conclusion even though no party to those agreements—not Uniloc, not Fortress—ever asserted or believed that Fortress had the right to sublicense the patent.

## I. UNILOC'S OWNERSHIP OF THE '134 PATENT

In this action, Uniloc asserted U.S. Patent No. 6,161,134 ("the '134 patent"). The '134 patent discloses and claims technology for improved communications between personal electronic devices. Appx38-91. In particular, the patent claims methods in which a telephone (such as a smartphone) provides operating parameters to a portable device (such as a smartwatch or personal digital assistant) to allow the device to receive incoming phone calls. Appx86-87 (claims 1 and 11). The patented technology was invented by engineers at 3Com Corporation, and the patent was

[1] Consistent with the decision below, *see, e.g.*, Appx4, this brief generally refers to Uniloc Lux and Uniloc USA together as "Uniloc" (or "the Unilocs").

originally assigned to 3Com. In 2010, both 3Com and the '134 patent were acquired by Hewlett Packard. Appx38; *see* Appx412, Appx494 (Hewlett Packard was "successor in interest to 3Com").

Plaintiff Uniloc Lux acquired the '134 patent by assignment from Hewlett Packard on May 16, 2017. Appx4; Appx412, Appx422. Along with all right, title, and interest in the patent, Uniloc Lux was assigned the right to sue for infringement occurring "at any time prior to, on, or after" the date of assignment. Appx413(§2.1); Appx4. Uniloc Lux later granted Uniloc USA "an exclusive license" authorizing Uniloc USA to practice the invention, as well as the right to sue for infringement. Appx4-5; Appx428-429(§§1, 5).[2]

Before this suit was filed, Uniloc Lux and Uniloc USA entered into several loan and related security agreements with Fortress Credit Co. LLC ("Fortress"). As explained below, those agreements provided Fortress security in the form of a non-exclusive, sublicensable license to Uniloc's patents (including the '134 patent), which Fortress could exercise only upon an "Event of Default." Appx152(§2.8). Fortress never asserted an Event of Default or a right to sublicense the '134 patent (or any other Uniloc patent). *See* Appx556(¶13).

[2] As discussed below, the '134 patent was assigned to a different entity, Uniloc 2017 LLC ("Uniloc 2017"), during this litigation. Uniloc thus sought to substitute Uniloc 2017 as plaintiff. *See* pp. 9-10, *infra*.

## II. PROCEDURAL HISTORY

### A. Uniloc's Infringement Action

Uniloc—Uniloc Lux and Uniloc USA—filed this action against Motorola Mobility in the District of Delaware on November 15, 2017. Appx92-97. The complaint alleged that "Uniloc Luxembourg is the owner, by assignment, of U.S. Patent No. 6,161,134," and that Uniloc USA was its exclusive licensee. Appx93(¶¶8-9); *see* Appx99(¶¶5-6). The complaint further alleged that Motorola infringed the patent by (among other things) making and selling various Android devices that allow users to "pair a smartphone/tablet with a wearable, such as a watch, and to make telephone calls from the wearable using the smartphone/tablet cellular telephone capabilities." Appx93-95(¶¶10-13); *see* Appx100-102(¶¶10-13).

### B. Motorola's Motion To Dismiss

Motorola moved to dismiss, arguing that Uniloc lacked constitutional standing to sue for infringement of the '134 patent. Motorola conceded that Uniloc owned the patent when the complaint was filed. But Motorola argued that a third party, Fortress, had the ability to sublicense the patent. Motorola did not contend that Fortress had licensed it (or anyone else) to practice the patent. In Motorola's view, however, Fortress's purported *ability* to sublicense the patent deprived Uniloc of any exclusionary right in the patent and precluded it from asserting the injury necessary to establish a case or controversy under Article III. *See* Appx5.

Motorola's motion was based on two agreements between Fortress and Uniloc: the Revenue Sharing and Note and Warrant Purchase Agreement ("RSA" or "Purchase Agreement") and the Patent License Agreement ("License Agreement"). Because they are central to these appeals, both agreements are discussed in detail below.

1. *The RSA and License Agreement*

Uniloc and Fortress (and other related entities) entered into the RSA and License Agreement in December 2014, in connection with a loan Fortress made to Uniloc. Appx147-168 (RSA); Appx173-180 (License Agreement); Appx553-554(¶¶3-6). The RSA entitled Fortress to repayment of the loan and a share of the revenue stream generated by Uniloc's patent portfolio. Appx151-153.[3]

To secure the loan, and "for the benefit of the Secured Parties," the RSA provided that Fortress would receive a conditional license to Uniloc's patents. Appx152(§2.8). The License Agreement granted Fortress "a non-exclusive, transferrable, sub-licensable, divisible, irrevocable, fully paid-up, royalty-free, and worldwide license." Appx174(§2.1). Consistent with the license's purpose of

[3] Payments on the loan notes and revenue stream were owed to the note "Purchasers." Appx152(§2.7). The initial Purchaser was Fortress. *See* Appx182; Appx2-3. The notes were later assigned to or purchased by other Fortress entities, CF DB EZ LLC and CF DB EZ 2017 LLC, which became "Purchasers"; Fortress continued to serve as collateral agent. Appx182. Consistent with the decision below, this brief refers to all of them as "Fortress." *See, e.g.*, Appx21.

securing the loan, the agreements provided that Fortress "shall only use such license following an Event of Default" on the loan. Appx152(§2.8); *see* Appx174(§2.1).

The RSA defined "Event of Default" to include Uniloc's failure to "perform or observe any of the covenants or agreements contained in Article VI" of the RSA (until Uniloc's obligations were paid in full), and any materially false representation or warranty in the RSA. Appx162(§§7.1.2(x), 7.1.3); Appx156. The RSA also provided for "[a]nnulment" of an Event of Default where Uniloc has "cured such Event of Default to [Fortress's] reasonable satisfaction"; the "Event of Default otherwise ceases to exist"; or Fortress has "entered into an amendment to this Agreement which by its express terms cures such Event of Default." Appx165-166(§7.3(y)-(z)); *see* Appx21.

2. *The Alleged Event of Default*

It is undisputed that Fortress never asserted any Event of Default under the RSA or claimed a right to sublicense the '134 patent. Motorola—which was not a party to the RSA or License Agreement—asserted in its motion to dismiss that an Event of Default had occurred nonetheless.

According to Motorola, Uniloc had defaulted in March 2017 by not meeting a revenue target contained in RSA Article VI. Appx3-4; *see* Appx156(§6.2.2). That provision called for Uniloc to "have received at least $20,000,000 in Actual Monetization Revenues" (*e.g.*, from licensing and litigating its patents) during the four

fiscal quarters ending on March 31, 2017. Appx156(§ 6.2.2). Uniloc had received approximately $14 million during that period. Appx3-4. Motorola argued that, under the RSA, Uniloc's alleged breach automatically accorded Fortress the right to sublicense the '134 patent to others (authority Fortress never asserted or exercised). Because Fortress purportedly had that licensing authority, Motorola insisted, Uniloc lacked the constitutionally minimum interest necessary to support suit. Appx5.

Uniloc urged that such licensing authority—even if it existed—would not deprive it of constitutional standing; as owner of the patent, it could sue regardless. There was, moreover, no evidence that Fortress ever asserted or believed that a default had occurred, or that Fortress believed it had authority to sublicense as a result. The evidence showed the opposite, as reflected in a declaration by James Palmer, Managing Director of the Intellectual Property Finance Group at Fortress Investment Group, which was responsible for Fortress's loan to Uniloc. Appx553-558. Palmer explained that "Fortress was satisfied with Uniloc's [monetization] efforts" and never "regard[ed] Uniloc as in default." Appx555(¶¶8, 11). Insofar as Uniloc may have fallen short of a revenue target, he explained, that target was "no longer of significance to Fortress" by 2017. Appx555(¶10).

Indeed, in May 2017, "with Fortress completely aware of the Actual Monetization Revenues numbers," "Fortress made a substantial *additional* investment" in Uniloc. Appx555-556(¶¶10, 12) (emphasis added). Even assuming there had been

an "Event of Default" (despite Fortress's view to the contrary), Palmer explained, that new investment "establishe[d] [that] Uniloc had cured that ostensible 'Event of Default' to Fortress's satisfaction." Appx556(¶12). In short, "at no time . . . did Fortress consider Uniloc as being in default, or believe Fortress had a right to license Uniloc's patents"—and even if an Event of Default had occurred, Fortress considered it cured. Appx556-557(¶¶13-14).

### C. The District Court's Decision

The district court granted Motorola's motion to dismiss. Appx1-24. The court did not deny that Uniloc owned the '134 patent at the time of suit and thus was the "patentee," 35 U.S.C. §§100(d), 154(a)(1), having been validly assigned the patent in May 2017 and retaining title through filing of the complaint. *See* Appx4-5; pp. 3-4, *supra*.

The district court nonetheless held that Uniloc lacked constitutional standing to sue. The court agreed with Motorola that there had been an Event of Default based on a missed revenue target in March 2017, and that the event had triggered Fortress's right to sublicense Uniloc's patents (including the '134 patent, once Uniloc acquired it in May 2017). Appx4, Appx19-20.[4] Fortress's ability to

[4] The district court found default only on the ground that Uniloc "failed to meet the monetization requirement of section 6.2.2 of the [RSA] as of March 31, 2017." Appx20. While Motorola had also asserted default based on alleged breaches of a June 2017 revenue target and of a warranty regarding validity challenges to Uniloc's patents, the district court did not adopt either of those theories.

sublicense the patent, the court ruled, deprived Uniloc of an exclusionary right in the patents. Appx23. As a result, it concluded, Uniloc could not establish Article III injury. Appx24.

The district court rejected Uniloc's argument that any ostensible Event of Default had been cured to Fortress's reasonable satisfaction. Appx21-23. The court concluded that "cure" "requires affirmative action on the party seeking to overcome the defect" and that "there was nothing that the Unilocs could have done to cure their revenue deficiency." Appx22.

The district court also rejected Uniloc's argument that any sublicensing right was at most *prospective*. Such prospective authority, Uniloc had urged, could not deprive Uniloc of standing to sue for infringement occurring *before* the supposed sublicensing right arose. In the district court's view, the absence of a provision in the RSA or License Agreement "limit[ing] the scope of Fortress's license to future infringement" meant the agreements should be construed as giving Fortress "both retrospective and prospective rights to sublicense the asserted patent." Appx23-24.

### D. Assignment of the '134 Patent to Uniloc 2017 and the Motion To Substitute Uniloc 2017 as Plaintiff

In May 2018—about six months after this action was filed, and before Motorola filed the motion to dismiss discussed above—Uniloc assigned the '134

patent to a different entity, Uniloc 2017 LLC ("Uniloc 2017"). Appx437-439; *see* Appx407-410.[5]

Given the transfer in ownership, Uniloc moved to substitute Uniloc 2017 as plaintiff under Federal Rule of Civil Procedure 25(c). Appx105-106. Motorola opposed, arguing (among other things) that substitution was futile because Uniloc purportedly lacked standing at the time suit was filed. The district court agreed. In granting the motion to dismiss, the court stated that the perceived "standing deficiency cannot be cured, even by adding another party." Appx24. It then denied the motion to substitute "as moot" in an oral order. Appx36 (Dec. 30, 2020 Oral Order).

### E. Proceedings on Appeal

Uniloc timely appealed. Appx1149-1150. This Court has identified three other pending appeals, all raising similar questions of Article III standing, as companion cases to be assigned to the same panel. *Uniloc 2017 LLC v. Google LLC*, Nos. 21-1498 *et al.*; *Uniloc USA, Inc. v. Apple Inc.*, No. 21-1572; *Uniloc 2017 LLC v. Blackboard Inc.*, No. 21-1795.

[5] At the same time, Uniloc fully repaid its loan from Fortress, and Uniloc and Fortress mutually agreed to terminate the RSA and License Agreement, including all "rights" the parties held under them. Appx1048-1051(§§1(a), 2(a)-(b)).

## SUMMARY OF ARGUMENT

**I.** As the undisputed owner of the patent-in-suit at the time the complaint was filed, Uniloc had a constitutionally sufficient interest to sue for infringement. That follows directly from this Court's precedent that, where a plaintiff alleges it "is the owner by assignment of the [asserted] patent and [that the defendant] infringed that patent," "the court has both the statutory and constitutional authority to adjudicate the matter." *Schwendimann v. Arkwright Advanced Coating, Inc.*, 959 F.3d 1065, 1071 (Fed. Cir. 2020). A patent grants its owner—the patentee—a legally protected "right to exclude others" from practicing the invention. 35 U.S.C. § 154(a)(1). That right is invaded, and causes injury sufficient to establish standing to sue under Article III of the Constitution, when someone practices the patented invention without authority.

**II.** The district court erroneously ruled that Fortress's putative right to sublicense the patent-in-suit deprived Uniloc of standing under Article III of the Constitution.

**A.** Motorola's standing argument is predicated on breach of a contract to which it is not a party. As this Court recognized in *Uniloc USA, Inc. v. ADP, LLC*, 772 F. App'x 890 (Fed. Cir. 2019), a stranger to a contract cannot assert a breach or invoke contractual remedies where no contracting party has done so.

**B.** Fortress's putative ability to sublicense the patent could not deprive Uniloc of standing regardless. This Court has held that a patent owner has standing even where a licensee has a "virtually unfettered right to sublicense" the patent. *Aspex Eyewear, Inc. v. Miracle Optics, Inc.*, 434 F.3d 1336, 1342 (Fed. Cir. 2006). General legal principles support that result. A *co-owner's* ability to license a patent does not defeat a patentee's constitutional standing to sue. It follows that a *mere licensee's* ability to sublicense cannot defeat a patentee's constitutional standing either. Even where a defendant is *actually licensed*, that provides a merits defense; it does not deprive the patentee of standing. *A fortiori*, the *possibility* that a defendant *could* assert a defense *if* it obtained a license from someone with sublicensing authority cannot defeat standing. Uniloc also had standing because it could forgive past infringement.

**C.** The district court erroneously relied on cases involving *licensee* standing to sue. The suit here was filed by *the patentee*. A licensee's exclusionary rights (if any) derive from the terms of the license agreement; if the patentee has not promised to exclude a person from practicing the invention (and thus retains the ability to license that person), the licensee is a *nonexclusive licensee* and cannot sue for infringement. A *patentee's* right to exclude others, by contrast, derives directly from the patent itself, not any license agreement.

Where a patentee transfers "all substantial rights" to an exclusive licensee, that can effectively render the licensee the new patent owner. So long as a patentee has not transferred all substantial rights, however, it remains the owner with standing to sue—even if a licensee has a right to sublicense. There is no contention that Uniloc transferred all substantial rights in the patent to Fortress, which was at most a *nonexclusive* licensee. Uniloc thus remained the patent owner and retained standing to sue.

**III.** Even if Fortress once had a sublicensing right that could affect standing, it was extinguished before this suit was filed. And Fortress could never release infringement occurring *before* any right to sublicense became effective.

**A.** Any Event of Default was annulled before Uniloc filed suit. Fortress always believed that no Event of Default occurred and that, if one had, it was cured to Fortress's reasonable satisfaction. While the district court reasoned that it was impossible for Uniloc to cure a missed revenue target once the deadline had passed, that effectively reads the cure provision out of the RSA and ignores that a "cure" under the RSA is whatever meets Fortress's "reasonable satisfaction." Likewise, it was error for the district court to deem Fortress's views regarding default and cure irrelevant. Matters of breach and cure are consummate contract issues to be resolved between the contracting parties—particularly where, as here, the contracting parties agree there was no breach and curing any breach required only Fortress's reasonable

satisfaction. Because Fortress attested that any Event of Default had been cured to its reasonable satisfaction, that should have been the end of the matter.

**B.** At a minimum, Uniloc can sue for infringement occurring *before* Fortress had any right to sublicense the patent-in-suit. Even if Fortress could license third parties, it could only do so prospectively; Fortress had no authority to *release* others from liability for past infringement. The district court's conclusion that Fortress could grant retroactive sublicenses because the RSA and License Agreement did not expressly declare Fortress's license prospective defies settled precedent that patent licenses are presumed prospective absent clear language to the contrary. No such clear language exists here.

**IV.** During the course of this litigation, the asserted patent was assigned to Uniloc 2017 LLC. The district court declined to substitute Uniloc 2017 as plaintiff solely because its ruling that Uniloc lacked standing when the case was filed rendered the substitution request moot. Because that ruling was erroneous, the Court should order Uniloc 2017's substitution as plaintiff going forward.

## ARGUMENT

The constitutional requirement of standing derives from Article III of the Constitution and its "case-or-controversy" limitation. *See Lone Star Silicon Innovations LLC v. Nanya Tech. Corp.*, 925 F.3d 1225, 1234 (Fed. Cir. 2019). The gist of standing is whether the plaintiff has alleged sufficient injury to a legally protected

interest. *See id.* In a patent-infringement action, this Court has held, the plaintiff alleges sufficient injury—and thus has constitutional standing to sue—where it is "the owner" of the patent that the defendant allegedly infringed. *Schwendimann v. Arkwright Advanced Coating, Inc.*, 959 F.3d 1065, 1071 (Fed. Cir. 2020).

That principle controls here: As the undisputed owner of the patent-in-suit when the complaint was filed, Uniloc had constitutional standing to sue for infringement. This Court has never suggested—much less held—that a patent owner loses constitutional standing to enforce its own patents whenever someone else theoretically could grant a license. To the contrary, the Court has held that patent owners have standing to sue even where a licensee has a "virtually unfettered right to sublicense" the patents. Indeed, the Court has held that patent owners have standing even where a defendant has *actually* been licensed by someone else; licensing is a merits defense, not a barrier to standing. The *hypothetical possibility* that Fortress could have granted a sublicense (but never did) cannot defeat Uniloc's standing.

Moreover, any sublicensing right Fortress might have had was annulled before Uniloc filed suit. Fortress had authority to sublicense only after an Event of Default under the RSA. Neither Fortress nor any other contracting party believed an Event of Default actually occurred. But Fortress was unequivocal that, *if* any Event of Default occurred, it was cured to Fortress's "reasonable satisfaction" well before

Uniloc filed suit—as evidenced not only by Fortress's attestation, but also by the substantial new investment Fortress made in Uniloc after the supposed "default" happened. Whatever sublicensing right Fortress may once have had, it was extinguished before this suit was filed.

For those and other reasons, the judgment should be reversed. And because the patent-in-suit has now been assigned to Uniloc 2017, Uniloc 2017 should be substituted as plaintiff.

Standard of Review. Standing is a question of law reviewed *de novo*. *Evident Corp. v. Church & Dwight Co.*, 399 F.3d 1310, 1313 (Fed. Cir. 2005).

## I. AS OWNER OF THE PATENT-IN-SUIT WHEN THIS ACTION WAS FILED, UNILOC HAD ARTICLE III STANDING TO SUE FOR INFRINGEMENT

"As long as a plaintiff alleges facts that support an arguable case or controversy under the Patent Act, the court has both the statutory and constitutional authority to adjudicate the matter." *Schwendimann*, 959 F.3d at 1071. A plaintiff satisfies that condition where it alleges that it "*is the owner by assignment of the [asserted] patent* and [that the defendant] infringed that patent." *Id.* (emphasis added). In other words, "title in the patent" "confers constitutional standing on the [patentee] to sue another for patent infringement in its own name." *Intellectual Property Development, Inc. v. TCI Cablevision of Cal., Inc.*, 248 F.3d 1333, 1345 (Fed. Cir. 2001); *see Alfred E. Mann Found. for Sci. Rsch. v. Cochlear Corp.*, 604

F.3d 1354, 1359 (Fed. Cir. 2010); *Morrow v. Microsoft Corp.*, 499 F.3d 1332, 1340 (Fed. Cir. 2007).

Under those principles, Uniloc had standing to sue for infringement of the '134 patent. It alleged—and showed—that it owned the patent when the complaint was filed on November 15, 2017. Appx93(¶¶8-9); Appx99(¶¶5-6); Appx412, Appx422-423; *see* Appx4-5. Indeed, that was undisputed. Uniloc also alleged that "Motorola has infringed" that patent. Appx94-96(¶¶11-16); *see* Appx101-102(¶¶11-16). Under this Court's precedents, no more is needed.

That principle—that ownership of a patent establishes standing to sue for infringement—makes sense. Article III standing exists where the plaintiff suffers a "concrete" and "particularized" injury to a "legally protected interest." *Lujan v. Defs. of Wildlife*, 504 U.S. 555, 560 (1992). Such an interest may exist "'by virtue of statutes creating legal rights, the invasion of which creates standing.'" *Willis v. Gov't Accountability Off.*, 448 F.3d 1341, 1344 (Fed. Cir. 2006). The Patent Act "grant[s] to the patentee"—including successors-in-title like Uniloc—"the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States." 35 U.S.C. § 154(a)(1); *see* §§ 100(d), 261; *Intellectual Property*, 248 F.3d at 1345 ("Standing in a patent infringement case is derived from the Patent Act . . . ."). That exclusionary right is invaded—*i.e.*, it is

"infringe[d]"—when someone "makes, uses, offers to sell, or sells [the] patented invention" in this country "without authority." §271(a).[6]

Here, Motorola invaded Uniloc's rights under §154(a)(1) by practicing the patented invention "without authority." §271(a). That caused Uniloc sufficient injury for Article III standing. *See Lone Star*, 925 F.3d at 1234 ("[T]hose who possess 'exclusionary rights' in a patent suffer an injury when their rights are infringed."). For centuries, property owners like patentees could bring suit for such invasions—indeed, even absent any other resulting injury.[7]

The Patent Act, moreover, provides Uniloc an express cause of action: "*A patentee* shall have remedy by civil action for infringement of his patent." §281 (emphasis added). Thus, because Uniloc was a patentee alleging infringement of its

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[6] As this Court has explained, one can be patentee (*i.e.*, patent owner) by virtue of an express assignment of the patent, or by virtue of an exclusive license that transfers "all substantial rights" in the patent to the licensee and effectively renders the licensee the new patentee. *Mann*, 604 F.3d at 1359-60. "A grant of all substantial rights in a patent amounts to an assignment—that is, a transfer of title in the patent—which confers constitutional standing on the assignee to sue another for patent infringement in its own name." *Intellectual Property*, 248 F.3d at 1345; *see* pp. 34-38, *infra*.

[7] "'[O]ur law holds the property of every man so sacred, that *no man can set his foot upon his neighbour's close without his leave*; *if he does he is a trespasser*, though he does no damage at all . . . .'" *United States v. Jones*, 565 U.S. 400, 405 (2012) (quoting *Entick v. Carrington*, 95 Eng. Rep. 807, 817 (C.P. 1765)) (emphasis added); *see Tenn. Elec. Power Co. v. TVA*, 306 U.S. 118, 137-38 (1939) ("inva[sion]" of "property" right supports suit); *Whittemore v. Cutter*, 29 F. Cas. 1120, 1121 (C.C.D. Mass. 1813) (Story, J.) (patentee may sue for infringement even absent actual damages); W. Keeton *et al.*, *Prosser and Keeton on Torts* 67, §13 (5th ed. 1984).

patent, the district "court ha[d] both the statutory and constitutional authority to adjudicate the matter." *Schwendimann*, 959 F.3d at 1071.

Uniloc also suffered economic harm that provided a constitutionally sufficient "injury-in-fact." *Chou v. Univ. of Chi.*, 254 F.3d 1347, 1359 (Fed. Cir. 2001). "[D]epriv[ation] of an interest in proceeds from licensing [an] invention" is injury-in-fact. *Id.* Uniloc was entitled to a reasonable royalty for the right to practice its inventions. *See* 35 U.S.C. §284; Appx102-103. Motorola's unlicensed infringement deprived Uniloc of those royalties.

## II. FORTRESS'S PUTATIVE RIGHT TO SUBLICENSE COULD NOT DEPRIVE UNILOC OF STANDING TO ENFORCE ITS PATENT

The district court agreed that Uniloc owned the patent-in-suit. Appx4. It ruled, however, that Uniloc lacked standing because its secured lender, Fortress, allegedly obtained a (never-exercised) right to sublicense the patent following an alleged Event of Default under the RSA. Appx23. That was error for at least three independent reasons. First, no contracting party has asserted an Event of Default, and Motorola cannot assert breach or invoke remedial provisions of contracts to which it is a stranger. *See* Section II.A. Second, a licensee's ability to sublicense cannot deprive a patentee of standing to enforce its own patent. *See* Sections II.B-C. Third, any sublicensing right Fortress allegedly had was extinguished before this action was filed; it could not release past infringement regardless. *See* Section III.

### A. Motorola Cannot Assert Breach of Contracts to Which It Is a Stranger

Motorola contends that an Event of Default under the RSA—a contract between Uniloc and Fortress—gave Fortress the right to sublicense the patent-in-suit. *See* Appx19-23. But it is undisputed that Fortress never asserted any Event of Default or claimed a right to sublicense the patent. Indeed, the contracting parties agree there was never an Event of Default. *See* pp. 6-8, *supra*. Motorola, as a "mere stranger" to the RSA and License Agreement, "cannot claim the benefit" of an alleged breach and remedial provisions that no party to the contracts invokes. *Everdell v. Hill*, 58 A.D. 151, 157-58 (N.Y. App. Div. 1901).[8]

This case is indistinguishable from *Uniloc USA, Inc. v. ADP, LLC*, 772 F. App'x 890 (Fed. Cir. 2019), where defendants unsuccessfully sought to dismiss a suit by Uniloc on virtually identical grounds. A default under an agreement between Uniloc and IBM, the defendants alleged, "automatically triggered" a provision that "gave IBM the right to 'license'" the patents-in-suit to third parties. *Id.* at 894. Like Motorola here, the defendants urged that "Uniloc thus could no longer wholly exclude [the defendants] from practicing the patents" and "lacked constitutional standing." *Id.*

[8] New York law governed the RSA and License Agreement. Appx20.

This Court rejected that argument. The defendants "predicated [their argument] on the existence of a breach of the 2016 Uniloc-IBM Agreement." *ADP*, 772 F. App'x at 895. But they "ha[d] not shown that *IBM . . . considers Uniloc to be in breach or has asserted a right to sublicense and release [defendants] from liability relating to the patents-at-issue*." *Id.* (emphasis added). As neither "parties to the Agreement" nor "intended beneficiaries of the contract," the Court held, the defendants could not invoke a breach that the contracting parties did not themselves recognize. *Id.*

That reasoning applies here. Motorola has not shown that Fortress "considers Uniloc to be in breach or has asserted a right to sublicense and release [Motorola] from liability relating to the paten[t]-at-issue." *ADP*, 772 F. App'x at 895. The only evidence is that Fortress was *satisfied* with Uniloc's performance under the RSA, did *not* consider it in breach, and did *not* assert any right to sublicense the patent. *See* pp. 7-8, *supra*. Nor is Motorola a party or intended beneficiary of the RSA or License Agreement. It cannot gin up an alleged breach of those agreements to escape suit.

The district court attempted to distinguish *ADP* on the ground that IBM's interest was "'"reversionary,"'" while Fortress was "'*already granted*'" a "'right to . . . sublicense,'" subject only to "'the limitation that Fortress would not *use* the right until an Event of Default.'" Appx20-21 n.4 (quoting *Uniloc USA, Inc. v. Apple,*

*Inc.*, No. 18-cv-358, 2020 WL 7122617, at *8 (N.D. Cal. Dec. 4, 2020), *on appeal*, No. 21-1572 (Fed. Cir.)). But IBM *also* had been "already granted" a license with right to sublicense. *See Uniloc USA, Inc. v. ADP, LLC*, No. 18-1132, ECF #82 at 36, § 2.1 ("IBM reserves and retains, and *[Uniloc] hereby grants to IBM*," a "license [that] includes the right to grant . . . sublicenses" (emphasis added)). Like Fortress here, IBM could *use* that right only "if" Uniloc breached a contractual obligation. *Id.* § 2.1(e); *see ADP*, 772 F. App'x at 895. And, like here, IBM's sublicensing right was allegedly "automatically triggered" upon breach. *ADP*, 772 F. App'x at 894.

Nor can *ADP* be distinguished on the ground that the agreement here is "unambiguous." Appx20 n.4. This Court did not find the agreement in *ADP* was ambiguous, much less rest its decision on that ground. Rather, the Court held that the defendants' challenge failed because it was predicated on breach of a contract to which the defendants were neither parties nor intended beneficiaries. *ADP*, 772 F. App'x at 895. Motorola's challenge suffers the same defect. While the district court insisted that, under New York law, an unambiguous contract "'must be enforced according to the meaning of its terms,'" Appx20 & n.4, New York law also provides that a "non-party to a contract"—like Motorola and the *ADP* defendants—"lacks standing to enforce the agreement in the absence of terms that 'clearly evidence[ ] an intent to permit enforcement by the third party' in question," *Premium Mortg. Corp. v. Equifax, Inc.*, 583 F.3d 103, 108 (2d Cir. 2009) (quoting *Fourth*

*Ocean Putnam Corp. v. Interstate Wrecking Co.*, 485 N.E.2d 208, 212 (N.Y. 1985)). Because there is *no* evidence—let alone clear evidence—that Uniloc and Fortress intended to allow Motorola to enforce their agreement, Motorola cannot claim an alleged breach of that agreement or invoke its remedial provisions.

That rule reflects fundamental freedom-of-contract principles. "The breach of a contract potentially involves disputes of materiality, potential opportunities to cure, and available remedies, all of which are *consummate contract issues to be resolved between the parties*." *ADP*, 772 F. App'x at 895 (citing *Restatement (Second) of Contracts* §§225, 229, 241-242, 246) (emphasis added). Motorola, a stranger to the contracts, would wrest those matters out of the contracting parties' hands—even against their wishes—and wield them for its own benefit.

The implications of that position are breathtaking. The right to "license" collateral upon default is not merely an express term of myriad security agreements; it is a term the law implies into such agreements generally. *See* U.C.C. §9-610(a) (secured party may "license" collateral upon default). Consequently, in virtually every case involving patents that serve as collateral, defendants would be invited to comb through lender and borrower records in the hope of finding some technical default that theoretically enabled the lender to license the patent—even if the contracting parties themselves thought any putative breach immaterial, or were not even aware of it. That would not merely impose unwarranted burdens on litigants

and non-litigant lenders. It would allow contractual interlopers to destroy amicable economic relationships by asserting breaches and demanding enforcement of (potentially severe) remedial provisions that the contracting parties have never invoked—even where, as here, doing so would make *all* contracting parties *worse off*.

Unsurprisingly, this Court in *ADP* was not aware of "any case where a non-beneficiary third party has asserted a breach of a contract that successfully triggered remedial provisions in the contract." 772 F. App'x at 895. This case should not be the first.

### B. Another Entity's Ability To License a Patent Does Not Deprive the Patentee of Article III Standing

Even if Fortress had a sublicensing right (one it never claimed), that would not have deprived the patent owner—Uniloc—of Article III standing. This Court's decision in *Aspex Eyewear, Inc. v. Miracle Optics, Inc.*, 434 F.3d 1336 (Fed. Cir. 2006), forecloses the district court's contrary ruling.

#### 1. *A Patentee Has Standing To Sue Even Where a Third Party Can License the Patent*

*Aspex* is controlling. In *Aspex*, as here, the plaintiff "was the owner of the [asserted] patent when the original complaint was filed." 434 F.3d at 1337. In *Aspex*, as here, the defendant urged that a licensee had a "*virtually unfettered right to sublicense*" the patent. *Id.* at 1342 (emphasis added). In *Aspex*, the Court held that the sublicensing right did not defeat the patentee's standing: Instead, "[t]he

essential issue regarding the right to sue on a patent is *who owns the patent*." *Id.* at 1341 (emphasis added). Because the plaintiff "was the owner of the patent when the complaint was filed," the Court held, the plaintiff was "entitled to sue." *Id.* at 1343; *see id.* at 1337-38 (plaintiff "was the owner of the [asserted] patent when the original complaint was filed, and thus . . . had standing to sue"). Here, Uniloc was the owner of the patent when the complaint was filed. It was thus entitled to sue for infringement, notwithstanding any sublicensing right.

The district court recognized that *Aspex* "held that a patent owner retained standing to sue for infringement even though it had granted a third party the right to grant sublicenses to others." Appx12 (emphasis added). That should have been the end of the matter: Because Uniloc owned the patent when suit was filed, it had standing to sue. Yet the district court reached the opposite conclusion—that Fortress's putative sublicensing right deprived Uniloc of standing—without ever attempting to distinguish *Aspex* or even citing the case again.

Rather than follow *Aspex*'s holding that *patent owners* have standing to sue despite a third party's ability to sublicense, the district court relied on cases addressing the standing of *licensees* and *former* patent owners who had transferred "all substantial rights" in the patents before filing suit. *See* Appx12-13, Appx15-17 (citing *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1342 (Fed. Cir. 2014), *cert. granted, judgment vacated on other grounds*, 575 U.S. 959 (2015); *WiAV*

*Solutions LLC v. Motorola, Inc.*, 631 F.3d 1257, 1266-68 (Fed. Cir. 2010)). As discussed below, however, Uniloc had not transferred "all substantial rights" in the patent to Fortress, and those cases are inapposite. *See* pp. 34-38, *infra*.

2. *Principles Governing Jointly Owned Patents Confirm Uniloc's Standing at the Time It Filed Suit*

Uniloc's standing is reinforced by principles governing jointly owned patents. By default, each co-owner of a patent may unilaterally license the patent to whomever it wishes. *Schering Corp. v. Roussel-UCLAF SA*, 104 F.3d 341, 344-45 (Fed. Cir. 1997). But this Court has never suggested that a co-owner's right to license a patent defeats another owner's *Article III standing*. To the contrary, each co-owner has independent Article III standing to sue for infringement. *See id.* at 345 (co-owner's "right to license is not incompatible with [another co-owner's] unilateral right to sue"); *AntennaSys Inc. v. AQYR Techs., Inc.*, 976 F.3d 1374, 1376-78, 1381 (Fed. Cir. 2020). This Court has held that a patent owner has Article III standing even if another owner *actually* "authorized [the defendant] to practice the [asserted] patent as a licensee." *AntennaSys*, 976 F.3d at 1378. Actual licensing is a merits defense, not a barrier to standing. *Id.*

If a co-owner's *actual* licensing of the defendant cannot defeat Article III standing, the *hypothetical possibility* that a nonexclusive licensee like Fortress could grant a license cannot defeat standing either. A patentee does not lose constitutional standing to enforce its patent simply because another entity, whether a co-owner or

licensee, supposedly could license the patent as well (and doubly so where in fact no license ever issued).[9]

That is consistent with standing principles elsewhere in the law. Under the Fourth Amendment, each co-owner or co-occupant of a property has standing to object to unauthorized entry or search, even when someone else with "common authority over or other sufficient relationship to the premises or effects" theoretically could consent to entry or search. *United States v. Matlock*, 415 U.S. 164, 171 (1974); *see United States v. Gray*, 491 F.3d 138, 144 (4th Cir. 2007) (collecting cases). Unless someone licenses the intrusion, the right to exclude remains intact. *Id.* The fact that multiple people can license entry does not vitiate the fact that entry remains unlicensed when no one consents. No less is true of the right to exclude under a patent: The hypothetical possibility that someone else *could* license the patent does not prevent the patentee from enforcing its exclusionary rights against those who practice the invention "*without* authority." 35 U.S.C. § 271(a) (emphasis added).

[9] While all *co-owners* generally must be joined as plaintiffs in an infringement suit, that requirement is "not jurisdictional in nature" and "does not impact [a patentee's] Article III standing." *AntennaSys*, 976 F.3d at 1378. Regardless, that requirement is inapplicable here, as Uniloc was the sole owner of the patent-in-suit. And even if Fortress was somehow a co-owner of the patent—which it was not, and which no one has argued—the solution would have been joining Fortress as a plaintiff, not dismissal. *See Lone Star*, 925 F.3d at 1236; *Abbott Labs. v. Diamedix Corp.*, 47 F.3d 1128, 1133 (Fed. Cir. 1995).

### 3. *The District Court Erroneously Converted an Unsuccessful Affirmative Defense into a Jurisdictional Defect*

The decision below conflates jurisdiction with a (frivolous) merits defense. Even where a defendant has *actually been licensed* to practice an invention, that does not deprive the patentee of Article III standing. Instead, a license provides "an *affirmative defense* to a claim of patent infringement." *McCoy v. Mitsuboshi Cutlery, Inc.*, 67 F.3d 917, 920 (Fed. Cir. 1995) (emphasis added); *cf. Chamberlain Grp., Inc. v. Skylink Techs., Inc.*, 381 F.3d 1178, 1193 (Fed. Cir. 2004) ("'[T]he existence of a license, exclusive or nonexclusive, creates an affirmative defense.'" (alteration in original)) (copyright). Such a defense is "not jurisdictional in nature." *AntennaSys*, 976 F.3d at 1378.

Here, Motorola does not contend that it *actually* received a license that could support a defense on the merits. Rather, it argues that Uniloc lacked Article III standing because Motorola *theoretically* could have mounted an affirmative defense *if* it had received a license from Fortress. That theory does not merely "conflat[e] standing with the merits." *Campbell v. Clinton*, 203 F.3d 19, 23 (D.C. Cir. 2000). It conflates truth with imagination: It attempts to defeat standing by imagining facts that could support a license defense. It would allow infringers to escape liability based on the speculative possibility that they *might have* asserted a merits defense *if* they had obtained a license they never obtained—effectively recasting a *losing*

merits defense as a *winning* jurisdictional defense. Nothing in this Court's precedent, or common sense, supports that result.

4. *Uniloc Had Standing Because It Could Forgive Past Infringement*

Plaintiffs also have Article III standing where they can "'forgive'" third parties' infringement. *Lone Star*, 925 F.3d at 1234. "[T]hose who possess 'exclusionary rights' in a patent suffer an injury when their rights are infringed." *Id.* Those exclusionary rights include the ability "to 'forgive activities that would normally be prohibited under the patent statutes.'" *Id.* As "sole owner" of the patent-in-suit, Uniloc could forgive past infringement by releasing infringers from liability. *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1467 & n.8 (Fed. Cir. 1998). Neither the district court nor Motorola suggested otherwise. *See* Appx17-19; Appx715-716. For that reason too, Uniloc has standing.

The district court conceded that "*Lone Star* . . . could be read to support th[e] argument" that Uniloc's ability to forgive infringement establishes its standing. Appx17. The district court nonetheless dismissed *Lone Star* because, in the court's view, it "cannot be reconciled" with other cases. Appx18-19 (citing *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1542, 1551-54 (Fed. Cir. 1995) (en banc); *Textile Prods., Inc. v. Mead Corp.*, 134 F.3d 1481, 1483-85 (Fed. Cir. 1998); *WiAV*, 631 F.3d at 1266-68). None of those cases, however, addressed forgiveness of infringement as a basis for standing, much less rejected it. Nor did any of them involve a

*patent owner's* ability to forgive infringement. *Cf. Ethicon*, 135 F.3d at 1467 & n.8 (recognizing ability of "sole owner" to release infringement). They all involved *licensee* standing—as the district court itself recognized. Appx18-19. As discussed in the next section, licensee suits are governed by different principles, and for good reason.

### C. The District Court Erroneously Relied on Cases Involving Suits by *Licensees*, Not *Patent Owners*

The district court correctly recognized that this Court's *Aspex* decision "held that a patent owner *retained* standing to sue for infringement even though it had granted a third party the right to grant sublicenses to others." Appx12 (citing *Aspex*, 434 F.3d at 1342) (emphasis added). The district court nonetheless ruled that Uniloc *lacked* standing to sue for infringement, despite being the patent owner, because it had purportedly granted a third party the right to sublicense others. That decision rested on cases where *licensees*, rather than *patent owners*, attempted to bring infringement actions. Those cases are governed by wholly different principles.

#### 1. *Cases Concerning Licensee Standing Do Not Govern Uniloc's Standing as Patent Owner*

As the "patentee," Uniloc has the "right to exclude" under 35 U.S.C. § 154(a)(1), and an express cause of action against infringers under § 281. In virtually every case the district court invoked, however, the question was whether an entity claiming to be an *exclusive licensee* had standing to sue. *See* Appx8-19.

An "exclusive licensee has a sufficient interest in the patent to have standing to sue under Article III" (although, because it is not a "patentee" authorized to sue under §281, it must join the patent owner in the suit). *Propat Int'l Corp. v. Rpost, Inc.*, 473 F.3d 1187, 1193 (Fed. Cir. 2007); *see Independent Wireless Tel. Co. v. Radio Corp. of Am.*, 269 U.S. 459 (1926). But a *nonexclusive* licensee—holding only a "bare" license—cannot sue for infringement. *Molon Motor & Coil Corp. v. Nidec Motor Corp.*, 946 F.3d 1354, 1360-61 (Fed. Cir. 2020).

Because of that distinction, courts often must examine the "terms of [the license] agreement" to determine whether a license is exclusive or not. *Textile Prods.*, 134 F.3d at 1484. If the agreement includes "'the patent owner's promise that others,'" including the alleged infringer, "'shall be excluded from practicing'" the invention, the licensee is an "exclusive licensee." *Id.* An exclusive licensee is considered to "'shar[e] the property rights represented by a patent'" and possess an exclusionary "interest in the patent sufficient to establish an injury when a third party infringes, *akin to an ownership interest*." *Molon*, 946 F.3d at 1361 (emphasis added).

By contrast, if the patentee has *not* promised to exclude others from practicing the invention—if the license agreement leaves the patentee "free to grant licenses to others," including the accused infringer—the license is not exclusive and the licensee lacks an exclusionary interest in the patent. *Textile Prods.*, 134 F.3d at

1484; *see Rite-Hite*, 56 F.3d at 1552; *Morrow*, 499 F.3d at 1341-42 (finding plaintiff lacked standing where it "lack[ed] an exclusive license" and patent owner "could grant an exclusive license to any party"). This Court thus explained in *WiAV* that a *nonexclusive licensee* "lacks standing to sue a party who has the ability to obtain . . . a license from another party with the right to grant it." 631 F.3d at 1266.

The district court believed that principle—that a "'*licensee* lacks standing to sue a party who has the ability to obtain . . . a license from another party with the right to grant it'"—could be stretched to cases like this one, where *the patentee* is plaintiff. Appx11, Appx15-17 (quoting *WiAV*, 631 F.3d at 1266) (emphasis added). That was error. "[A]n *exclusive licensee* derives its standing from the exclusionary rights it holds" under its licensing agreement—specifically, from "'the patentee's . . . promise that others [including the alleged infringer] shall be excluded from practicing the invention.'" *WiAV*, 631 F.3d at 1266 (emphasis added). That promise is what brings the licensee within "'the monopoly of the patent.'" *Ortho Pharm. Corp. v. Genetics Inst., Inc.*, 52 F.3d 1026, 1031 (Fed. Cir. 1995); *see WiAV*, 631 F.3d at 1266-67. The licensee's exclusionary rights thus are violated only where someone practices the invention *despite the patentee's agreement* that the defendant will not be allowed to practice the invention. *WiAV*, 631 F.3d at 1266-67. Where the patentee has reserved the right to license the defendant, however, that

agreement—and thus the exclusionary right the licensee needs to be able to sue—is absent.

A *patentee's* exclusionary rights, however, do not derive from a license agreement. They flow directly from the patent itself, which "grant[s] to the patentee . . . the right to exclude others" from practicing the invention. 35 U.S.C. § 154(a)(1). That exclusionary right is not merely "*akin* to an ownership interest," *Molon*, 946 F.3d at 1361 (emphasis added)—it *is* an ownership interest. That interest is invaded, and gives the patentee standing to sue, whenever someone practices the invention "without authority." § 271(a). That is why "[t]he essential issue regarding the right to sue on a patent is *who owns the patent*." *Aspex*, 434 F.3d at 1341-42 (emphasis added). That is why a plaintiff has Article III standing to sue for infringement where it alleges it is "the owner by assignment of the [asserted] patent." *Schwendimann*, 959 F.3d at 1071. That is why a patentee may sue *even if* another person has a "virtually unfettered right to sublicense" the patent-in-suit. *Aspex*, 434 F.3d at 1341-42; *see* pp. 24-26, *supra*. And that is why Uniloc has standing to sue here.

A nonexclusive licensee lacks standing, moreover, because it "'has no property interest in the monopoly of the patent, nor any contract with the patent owner that others shall not practice the invention.'" *Ortho*, 52 F.3d at 1031. A patent owner, however, has a "'property interest in the monopoly of the patent'"—*it owns the patent*. *Id.* And a patent owner does not need a "'contract with the patent

owner that others shall not practice the invention.'" *Id.* It need not (and cannot) contract with itself. *See* 1 *Williston on Contracts* § 3:2 (4th ed. 2020 update).

Historically, nonexclusive licensees have been denied standing *to protect patent owners*. Quoting Judge Learned Hand, this Court has explained:

> "The reason why [the licensee] is not permitted to sue is not because he has nothing to protect. But against that interest is the interest of the infringer to be immune from a second suit by the owner of the patent; and also *the interest of the patent owner to be free to choose his forum* . . . . Indeed, *the owner may have granted a number of licenses, and it would be exceedingly oppressive to subject him to the will of all his licensees*. These two interests in combination have been held to overweigh any interest of the licensee."

*Ortho*, 52 F.3d at 1031 (quoting *A.L. Smith Iron Co. v. Dickson*, 141 F.2d 3, 6 (2d Cir. 1944)) (ellipsis in original) (emphasis added).

The justifications for denying nonexclusive licensees standing to sue—lack of a property interest in the patent, avoiding a separate infringement suit by the patent owner, and protecting the patent owner's interests—are wholly absent when the patentee is the one suing. Yet the district court effectively equated a patentee like Uniloc with a mere *nonexclusive licensee*. That cannot be sustained.

2. *Cases Concerning Transfers of All Substantial Rights Reinforce Uniloc's Standing*

Other cases cited by the district court involved alleged transfers of "all substantial rights" in a patent. *See* Appx12-13 (citing *Luminara Worldwide, LLC v. Liown Electronics Co.*, 814 F.3d 1343, 1347 (Fed. Cir. 2016); *Azure*, 771 F.3d at

1347). Where a patent owner transfers "all substantial rights" in the patent to an exclusive licensee, the license is considered "tantamount to an assignment of the patent to the exclusive licensee." *Mann*, 604 F.3d at 1359. In that situation, "the licensee becomes the owner of the patent for standing purposes and gains the right to sue on its own." *Id.* at 1359-60. If the agreement does *not* transfer all substantial rights, however, "the licensor remains the owner of the patent and retains the right to sue for infringement." *Id.* at 1359.

When determining whether an exclusive license transferred "all substantial rights" in a patent, the "licensee's right to sub-license" may be relevant. *Prima Tek II, L.L.C. v. A-Roo Co.*, 222 F.3d 1372, 1380 (Fed. Cir. 2000). For example, the right to practice a patent, without the right to license others, may fall short of making one the patent's "owner." But this Court has never suggested that a licensee's ability to sublicense by itself effectively transfers ownership of a patent. To the contrary, one must "examine the 'totality' of the agreement" to determine whether the licensee "obtained *all* substantial rights in the patent." *Lone Star*, 925 F.3d at 1229 (emphasis added). No matter how significant some rights may seem, if "the licensor did not transfer '*all* substantial rights' to the exclusive licensee," "the licensor remains the owner of the patent and retains the right to sue for infringement." *Mann*, 604 F.3d at 1359 (emphasis added).

This Court's precedents make clear there is nothing talismanic about a licensee's right to sublicense. For example, in *Luminara*, 814 F.3d at 1350-51, the Court considered the licensee's "sole right to sublicense the asserted patents" as just one of many factors supporting the conclusion that the licensee held "all substantial rights to the patent[s]" and therefore effectively became the patentee. Likewise, in *Speedplay, Inc. v. Bebop, Inc.*, 211 F.3d 1245, 1251-52 (Fed. Cir. 2000), the Court cited a right to sublicense—among other rights—as evidence that a licensee had "all substantial rights" in a patent. In *Propat*, by contrast, the licensee did *not* have "all substantial rights" in the patent *despite* having the right "to license the patent to third parties." 473 F.3d at 1190. And in *Aspex*, the Court held that a patentee had *not* transferred "all substantial rights" to a licensee—and thus remained "the owner of the patent . . . entitled to sue"—even though it had given the licensee a "virtually unfettered right to sublicense." 434 F.3d at 1342-43.

The district court appears to have interpreted the Court's decision in *Azure*, 771 F.3d 1336, as holding that a licensee's ability to sublicense deprives a patent owner of standing. *See* Appx12-13. That was doubly mistaken. First, the judgment in *Azure* was vacated by the Supreme Court, *see* 575 U.S. 959, and never reinstated, *see Azure Networks, LLC v. v. CSR PLC*, No. 13-1459, ECF #83 at 2 (Fed. Cir. May 29, 2015) (recalling mandate and ordering supplemental briefing); *id.* ECF #99 (Fed. Cir. Sept. 14, 2015) (dismissing appeal under Fed. R. App. P. 42(b)). *Azure* thus has

no precedential force. Second, *Azure* did not deem a licensee's right to sublicense dispositive. Rather, consistent with the precedents discussed above, *Azure* considered "freedom to sublicense" as just one of several "factors" supporting a conclusion that the original patent owner (Tri-County) had transferred "all substantial rights" in the patent to its exclusive licensee (Azure), rendering Azure the new "effective owner" and depriving Tri-County of standing to sue. 771 F.3d at 1344, 1347.[10]

This Court's "all substantial rights" precedents thus lend no support to the decision below. There is *no* contention that Uniloc transferred all substantial rights in the patent-in-suit to Fortress, rendering Fortress the new patent owner. Nor could there be; that would require an *exclusive* license. *See Luminara*, 814 F.3d at 1349-50. But Fortress's license was expressly "non-exclusive." Appx174(§2.1).[11] This

[10] While *Azure* suggested in passing that the "logic" of the rule that "a nonexclusive license confers no standing *on the licensee* because the licensee does not have a legally protected interest conferred by the Patent Act" applies "even if it is *the patent owner* holding the nonexclusive right and the licensee holds the exclusionary rights," 771 F.3d at 1344 (some emphasis added), that statement must be read in context. The "patent owner" *Azure* referred to was actually the *former* patent owner (Tri-County), which had "transferred all substantial rights" in the patent and thus had not "retained ownership." *Id.* at 1347. Nothing in *Azure* purported to—or could—displace the Court's earlier holding in *Aspex* that a patentee who does *not* transfer all substantial rights retains the right to sue, even if a licensee can sublicense the patent. *See Newell Cos., Inc. v. Kenney Mfg. Co.*, 864 F.2d 757, 765 (Fed. Cir. 1988) (in event of conflict, "the precedential decision is the first").

[11] The district court and Motorola recognized that Uniloc Lux owned the '134 patent at the time of suit. Appx4, Appx16. Nor would it matter if anyone urged that Uniloc Lux's license agreement with Uniloc USA effectively rendered *Uniloc USA* the patent owner—something neither the district court nor Motorola even suggested—because Uniloc USA was a named plaintiff as well. As "the owner of the patent for

Court's precedents, moreover, make clear that a licensee's ability to sublicense does not defeat the patent owner's standing unless the license agreement goes *further* and transfers "all substantial rights" to the licensee, which did not happen here. Uniloc accordingly "remains the owner of the patent and retains the right to sue for infringement." *Mann*, 604 F.3d at 1359.

## III. UNILOC HAD STANDING BECAUSE ANY SUBLICENSING RIGHT WAS EXTINGUISHED BEFORE SUIT WAS FILED AND COULD NOT RELEASE PAST INFRINGEMENT

### A. Any Event of Default Was Annulled or Nonexistent Before Uniloc Filed Suit

Even if Fortress once had a right to sublicense, it was extinguished before Uniloc filed suit. Under the RSA and License Agreement, Fortress could "only use the Patent License" (including sublicensing authority) upon "an Event of Default." Appx174(§2.1); Appx152(§2.8). An Event of Default, however, could be annulled if Uniloc "'cured such Event of Default to [Fortress's] reasonable satisfaction.'" Appx21 (alteration in original) (quoting Appx165-166(§7.3(y)).

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standing purposes" at the time the suit was filed, Uniloc USA would have possessed "the right to sue," *Mann*, 604 F.3d at 1359-60, and in fact sued as a named plaintiff. Insofar as Uniloc Lux "remain[ed] the owner of the patent and retain[ed] the right to sue," *id.* at 1359, it was a named plaintiff too. Because both Uniloc Lux and Uniloc USA are plaintiffs, there is jurisdiction either way. *See Bowsher v. Synar*, 478 U.S. 714, 721 (1986) (presence of one plaintiff with standing satisfies Article III). And now that the patent has been assigned to Uniloc 2017, Uniloc 2017 should be substituted as the sole plaintiff going forward. *See* pp. 47-48, *infra*.

The district court concluded that an Event of Default occurred in March 2017 when Uniloc fell short of an RSA revenue target. Appx23. It is undisputed, however, that Fortress did *not* believe "an 'event of default' ha[d] occurred under the [RSA]." Appx554(¶5); *see* Appx20. Fortress was unequivocal: "Uniloc *had not defaulted* on the [RSA]" by missing a revenue target. Appx555(¶10) (emphasis added). To the contrary, Fortress was at all times "satisfied with Uniloc's [monetization] efforts." Appx555(¶8). Whether or not Uniloc cleared the March 2017 revenue target, "Fortress did not consider it or treat it as a default." Appx555-556(¶11). Indeed, by March 2017, that revenue target was "no longer of significance to Fortress," because "the situation had changed markedly, and positively, since December 2014" when the target was set. Appx555(¶10). Simply put, "at no time . . . did Fortress consider Uniloc as being in default." Appx556(¶13).

But even if an Event of Default did occur—unbeknownst to any contracting party—it was cured to Fortress's reasonable satisfaction well before Uniloc filed suit. By May 2017, "Fortress [was] completely aware of [Uniloc's] Actual Monetization Revenues numbers." Appx556(¶12). At that time—just weeks after the alleged Event of Default—"Fortress made a substantial *additional* investment" in Uniloc. Appx555(¶10) (emphasis added). So "to the extent there had been minimum monetization revenue requirements . . . , Fortress viewed [its May 2017 investment] as wiping the slate clean." Appx556(¶12). That substantial new investment,

Fortress declared, "establishe[d] [that] Uniloc had cured th[e] ostensible 'Event of Default' to Fortress's satisfaction." Appx556(¶12).[12]

Even though the parties to the RSA—Fortress and Uniloc—were unequivocal in their agreement that there had been no Event of Default and that any default had been cured regardless, the district court ruled that Uniloc had not cured its "failure to meet the [March 2017] monetization requirement." Appx22. It was "of no moment," the court declared, whether Fortress believed an Event of Default had occurred or been cured. Appx20. "'Cure,'" the court reasoned, "requires affirmative action on the party seeking to overcome the defect or error." Appx22. As a

[12] The district court found an Event of Default based solely on the March 2017 revenue target. Appx23. Motorola had also alleged default based on an allegedly missed June 2017 revenue target and an alleged breach of a warranty in the RSA that Uniloc's patents had not been challenged or found invalid. But the district court did not credit either of those alternative theories. And those theories fail regardless. Like the March 2017 revenue target, the June 2017 target (set in 2014) was "no longer of significance to Fortress" by 2017. Appx555(¶10). "At all times prior to November 15, 2017"—when Uniloc filed suit—"Fortress was satisfied with Uniloc's [monetization] efforts." Appx555(¶8). Nor were any alleged omissions about challenges to patent validity "material," as would be required to establish an Event of Default based on the RSA's patent-validity warranty. Appx162(§7.1.3). Fortress explained that "the purpose of the loan [underlying the RSA] was to fund patent litigation," so Fortress "expected that the validity of virtually all asserted patents would be contested." Appx557-558(¶¶17, 20). Moreover, when Fortress made its new investment in May 2017 (when, according to Motorola, a breach of the warranty occurred), "Fortress was aware that Uniloc had filed a number of actions on the listed patents . . . and understood in all, or virtually all, of them invalidity had been (or would shortly be) asserted." Appx558(¶20). Fortress did not understand Uniloc to have made any contrary representation, and "did not rely" on any supposed representation regardless. Appx558(¶21).

result, the court ruled, to "cure" an Event of Default based on failure to meet the monetization target, Uniloc needed to affirmatively "do[] something to fix or remove that failure." Appx22. In the court's view, however, "there was nothing that the Unilocs *could have done* to cure their revenue deficiency"—once March 31 passed, it reasoned, it was impossible to increase the revenue collected *before* March 31. Appx22 (emphasis added).

That makes a hash of the RSA. It effectively reads the cure provision out of the RSA by making any Event of Default involving a deadline impossible to cure: Once a deadline passes, after all, there is no way to go back in time "to fix or remove that failure." Appx22. But the RSA does not say that. And the argument makes no sense. Cure does not require literally and retroactively undoing an alleged breach; here, it simply required that Fortress's "reasonable satisfaction" be met. Appx165-166(§7.3(y)).

By the same token, the cure provision nowhere demands that cure take a particular form or involve "affirmative action." Appx22. Anything that "reasonabl[y] satisfi[es]" Fortress qualifies. Appx165-166(§7.3(y)). And here "Fortress was reasonably satisfied Uniloc had effected a cure." Appx556(¶14). Specifically, "Fortress was satisfied with Uniloc's *efforts*" "to diligently *pursue* monetization." Appx555(¶8) (emphasis added). Those efforts persuaded Fortress to make the substantial investment in May 2017 that demonstrated Uniloc had cured any default

to Fortress's reasonable satisfaction. Appx556(¶12). Consequently, even if "cure" required some affirmative action, Uniloc's ongoing efforts to diligently pursue monetization checked that box.[13]

It was also error to disregard Fortress's positions regarding default and cure as "of no moment." Appx20. As this Court has explained, "[t]he breach of a contract potentially involves disputes of materiality, potential opportunities to cure, and available remedies, all of which are *consummate contract issues to be resolved between the parties*." *ADP*, 772 F. App'x at 895 (emphasis added). Whether the contracting parties thought an alleged breach was immaterial, cured, or insufficient to trigger a remedial provision is thus of great "moment"—especially where, as here, the contracting parties *agree* there was no default and curing default merely required Fortress's reasonable satisfaction. That is why a stranger to the contract like Motorola cannot assert a breach in the first place. *See* pp. 20-24, *supra*. At the very least, it was error for the district court to dismiss those considerations entirely. If

[13] In dismissing Fortress's May 2017 investment, the district court invoked a provision allowing cure through an RSA "amendment" that "by its express terms cures such Event of Default." Appx165-166(§7.3(z)); *see* Appx22. But Uniloc did not invoke that provision; it invoked RSA §7.3(y), which allowed cure by *anything* that met Fortress's "reasonable satisfaction." Appx165-166(§7.3(y)). As Fortress attested, Uniloc's diligent monetization efforts constituted cure under that provision, and Fortress's agreement to expand its investment in Uniloc was further confirmation that "Uniloc *had cured* th[e] ostensible 'Event of Default' to Fortress's satisfaction." Appx556(¶12) (emphasis added).

the issue could be litigated by Motorola at all—and it could not—such factual questions would be for a factfinder to resolve at trial.

### B. Even If Fortress Had a Right To Sublicense Capable of Affecting Standing, Uniloc Had Standing To Sue for Past Infringement

At a minimum, Uniloc had standing to sue for infringement that *predated* any ability Fortress had to sublicense the patent-in-suit. Fortress's right to sublicense could be exercised only after an Event of Default, and only with respect to patents held by Uniloc. Appx152(§2.8); Appx174(§2.1). The only Event of Default the district court found here allegedly occurred in March 2017, while Uniloc acquired the '134 patent in May 2017. Appx19; Appx412, Appx422. Consequently, even assuming an unremedied breach, Fortress could not have sublicensed the patent until May 16, 2017, when Uniloc acquired it. Appx19.

Fortress could not authorize third parties' use of the invention *before* that date. The RSA granted Fortress a (contingent) "right to grant sublicenses" to third parties. Appx152(§2.8). A "license to a third party," however, "only operates *prospectively*." *Ethicon*, 135 F.3d at 1467 (emphasis added)*; see Davis v. Blige*, 505 F.3d 90, 103-04 (2d Cir. 2007) (collecting cases). Accordingly, this Court has held, the "grant of a license by one co-owner *cannot* deprive the other co-owner of the right to sue for accrued damages for past infringement. That would require a *release*, not a *license*." *Schering*, 104 F.3d at 345 (emphasis added). The same result follows "inescapably" here: If a co-owner cannot forgive past infringement on a patentee's

behalf, a mere licensee cannot either. *See Spinelli v. Nat'l Football League*, 903 F.3d 185, 197-98 (2d Cir. 2018).[14] Thus, even assuming *dubitante* that Uniloc lacked a right to exclude *after* May 2017, it unquestionably had a right to exclude—and thus retained standing to sue for any infringement occurring—*before* May 2017.

The law often allows parties to sue for events before a particular date, but not after. For example, the owner of an expired patent can sue for infringement that preceded expiration. Even if the patentee no longer has a *present* right to exclude, it can still sue for *past* invasions of that right. *See Keranos, LLC v. Silicon Storage Tech., Inc.*, 797 F.3d 1025, 1033 (Fed. Cir. 2015). Likewise here, Uniloc can—at a minimum—sue for infringement occurring before Fortress had any conceivable right to sublicense the patent.

In reaching the contrary result, the district court misapprehended Fortress's putative sublicensing authority. In the court's view, Fortress had "both retrospective and prospective rights to sublicense the asserted patent" because the RSA and License Agreement did not expressly "limit the scope of Fortress's license to future infringement." Appx23-24. That is backward. "Patent licenses are prospective

[14] While *Spinelli* arose in the copyright context, the Second Circuit relied on this Court's precedent and the parallels between patent and copyright law. *See* 903 F.3d at 198 (citing *Davis*, 505 F.3d at 99-100, 103); *Davis*, 505 F.3d at 104 (citing *Schering*, 104 F.3d at 345). *Spinelli* is thus particularly apposite, given the "historic kinship between patent law and copyright law." *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 439 (1984).

*unless* the parties make them retroactive with clear language." *Oyster Optics, LLC v. Infinera Corp.*, 843 F. App'x 298, 302 (Fed. Cir. 2021); *see Ethicon*, 135 F.3d at 1467; *Schering*, 104 F.3d at 345; *Spinelli*, 903 F.3d at 197-98; *Davis*, 505 F.3d at 103-04. No such language exists here. The RSA and License Agreement say nothing about allowing Fortress to "retroactively license" or "release" past infringement.[15] And while the agreements mention a right to "exploit" the patents, Appx174(§2.1), precedent is clear that the "freedom to exploit the patent" does *not* include the ability to "release [a defendant] from its liability for past accrued damages" to a patent owner. *Ethicon*, 135 F.3d at 1467-68.

Rather than identify clear language authorizing Fortress to release past infringement, the district court relied on the fact that the License Agreement could "remain effective until the date on which all statutes of limitations for infringement of the licensed patents have run," including "after the expiration of a patent." Appx23-24 (citing Appx175(§5.2)). The court thought that provision would "mak[e] sense only if Fortress had the ability to grant a retroactive license for past infringement," because "there is no need for a license to practice an expired patent." Appx24. That is hardly the only explanation. The License Agreement did not

[15] *Contrast, e.g.*, *Intel Corp. v. ULSI Sys. Tech., Inc.*, 995 F.2d 1566, 1567 (Fed. Cir. 1993) (agreement specifying "'retroactive . . . license'"); *ADP*, No. 18-1132, ECF #82, at 36 (§2.1) (Uniloc-IBM agreement allowing IBM in certain circumstances "to grant . . . sublicenses *and releases*" (emphasis added)).

merely grant Fortress a (conditional) right to sublicense. It also obligated Fortress to "notify [Uniloc] of any infringement of the Licensed Patents by third parties" and "reasonably cooperate with [Uniloc]" in any action Uniloc might bring as a result. Appx175(§4). By extending that obligation until all statutes of limitations had fully run, the License Agreement protected Uniloc's ability to enforce its patents against infringers—the very activity the RSA and License Agreement were intended to support. Appx557(¶17). It did not *sub silentio* authorize Fortress to thwart those efforts by releasing infringers from all liability past, present, and future.

The district court also thought the absence of a provision declaring Fortress's license prospective-only was significant because such terms are purportedly "'readily found in other, similar contracts.'" Appx23. But the court offered no evidence for that supposition. Neither did Motorola. Of the two cases Motorola cited, one involved an expressly "retroactive license" that expressly "extinguishe[d] any liability for past infringement." *Canon Inc. v. Tesseron Ltd.*, 146 F. Supp. 3d 568, 578 (S.D.N.Y. 2015) (cited Appx1067). The other failed to acknowledge this Court's instruction that retroactive licenses require "clear language." *Oyster*, 843 F. App'x at 302; *see Acceleration Bay LLC v. Activision Blizzard, Inc.*, Nos. 16-cv-453 *et al.*, 2017 WL 3668597, at *3 (D. Del. Aug. 24, 2017). Motorola offered *no* example of a provision declaring a license to be prospective-only—doubtless

because a license is *presumed* to be purely prospective "[a]bsent agreement to the contrary." *Ethicon*, 135 F.3d at 1467. The district court erred in ruling otherwise.

## IV. UNILOC 2017 SHOULD BE SUBSTITUTED AS PLAINTIFF

While this action was pending, Uniloc Lux assigned the '134 patent and others to a different entity, Uniloc 2017 LLC. Appx437, Appx439. That assignment made Uniloc 2017 the new owner of the '134 patent and the "patentee" entitled to sue for infringement. *See* 35 U.S.C. §§ 100(d), 154(a)(1), 261, 281; *see* pp. 16-19, *supra*. Where "an interest is transferred" during the course of litigation, "the action may be continued by . . . the original party unless the court, on motion, orders the transferee to be substituted in the action or joined with the original party." Fed. R. Civ. P. 25(c); *cf.* Fed. R. App. P. 43(a)-(b). Uniloc accordingly moved to substitute Uniloc 2017—the transferee and current owner of the '134 patent—as the plaintiff in this action. Appx105.

Several courts have recognized that, following its acquisition of Uniloc Lux's patents, Uniloc 2017 is a proper plaintiff to continue infringement actions involving those patents. *See Uniloc 2017 LLC v. Blackboard Inc.*, No. 20-cv-665, Dkt. 68 (D. Del. Jan. 10, 2020) (order substituting Uniloc 2017 as plaintiff following assignment of patent-in-suit) (entered pre-transfer by W.D. Tex.), *subsequent judgment appealed*, No. 21-1795 (Fed. Cir.); *see also Uniloc USA, Inc. v. Samsung Electronics Am., Inc.*, 809 F. App'x 863, 864 n.1 (Fed. Cir. 2020) (noting that Uniloc 2017 had

been joined as plaintiff following assignment); *Uniloc USA Inc. v. LG Electronics U.S.A. Inc.*, Nos. 18-cv-6737 *et al.*, 2019 WL 690290, at *1-2 (N.D. Cal. Feb. 19, 2019) (joining Uniloc 2017). The district court here did not dispute that Uniloc 2017 would likewise be the proper party to continue this action. It concluded, however, that the case had to be dismissed based on Uniloc's perceived lack of standing when the suit was filed. Appx24. It therefore denied the substitution motion solely on the ground that it was "moot." Appx36 (Dec. 30, 2020 Oral Order).

The premise of that ruling—that Uniloc lacked standing when it filed suit—was erroneous for the reasons discussed above. As a result, the district court's sole basis for not substituting Uniloc 2017 under Rule 25(c) has vanished. This Court, moreover, has independent authority to order substitution based on a transfer of interest. *See* Fed. R. App. P. 43(b). It should do so here.[16]

## CONCLUSION

The judgment should be reversed. Uniloc 2017, the current owner of the patent-in-suit, should be substituted as plaintiff.

[16] Motorola opposed substitution below on the ground that Uniloc allegedly delayed in seeking substitution. But Motorola cannot identify any credible prejudice that ordering substitution at this point might cause. Indeed, it would make no sense for the case to proceed on remand with the patent's *former* owner, rather than its *current* owner, as plaintiff. Alternatively, Uniloc 2017 could be joined as an additional plaintiff.

May 18, 2021

Respectfully submitted,

/s/ Jeffrey A. Lamken

Jeffrey A. Lamken
*Counsel of Record*
Lucas M. Walker
Kenneth E. Notter III
MOLOLAMKEN LLP
The Watergate, Suite 500
600 New Hampshire Avenue, N.W.
Washington, D.C. 20037
(202) 556-2000 (telephone)
(202) 556-2001 (fax)
jlamken@mololamken.com

Jordan A. Rice
MOLOLAMKEN LLP
300 N. LaSalle Street, Suite 5350
Chicago, IL 60654
(312) 450-6700 (telephone)
(312) 450-6701 (fax)

Aaron S. Jacobs
PRINCE LOBEL TYE LLP
One International Place
Suite 3700
Boston, MA 02110
(617) 456-8000 (telephone)
(617) 456-8100 (fax)

Sean T. O'Kelly
O'KELLY & ERNST LLC
901 N. Market Street, Suite 1000
Wilmington, DE 19801
(302) 778-4000 (telephone)
(302) 295-2873 (fax)

*Counsel for Appellants Uniloc USA, Inc. and Uniloc Luxembourg S.A.*

# ADDENDUM

# ADDENDUM – TABLE OF CONTENTS

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

| | | |
|---|---|---|
| UNILOC USA, INC., UNILOC LUXEMBOURG, S.A., | : | |
| Plaintiffs, | : | |
| v. | : | Civil Action No. 17-1658-CFC |
| MOTOROLA MOBILITY, LLC, | : | |
| Defendant. | : | |

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Sean O'Kelly, O'KELLY ERNST & JOYCE, LLC, Wilmington, Delaware; Aaron Jacobs, James Foster, Kevin Gannon, PRINCE LOBEL TYE LLP, Boston, Massachusetts

*Counsel for Plaintiffs*

Jeremy Tigon, Karen Jacobs, MORRIS, NICHOLS, ARSHT & TUNNELL LLP, Wilmington, Delaware; Anthony Tomaselli, Carly Conway, Kristin Noel, Martha Snyder, QUARLES & BRADY LLP, Madison, Wisconsin

*Counsel for Defendant*

**MEMORANDUM OPINION**

December 30, 2020
Wilmington, Delaware

COLM F. CONNOLLY,
UNITED STATES DISTRICT JUDGE

Plaintiffs Uniloc Luxembourg, S.A. and Uniloc USA, Inc. have sued Defendant Motorola Mobility LLC for infringement of U.S. Patent No. 6,161,134 (the #134 patent). D.I. 10. Motorola has moved pursuant to Federal Rule of Civil Procedure 12(b)(1) to dismiss for lack of subject matter jurisdiction on the grounds that the Unilocs do not have standing to sue for infringement of the asserted patent. D.I. 56. I will grant the motion.

## I. BACKGROUND

The Uniloc Plaintiffs are in the business of acquiring patents and suing companies for infringement of those patents. Beginning in December 2014, to fund their litigation efforts, the Unilocs made certain financial arrangements with nonparty Fortress Credit Co. LLC. In a nutshell, Fortress agreed to loan the Unilocs up to $26 million and purchased stock options in Uniloc Luxembourg; in return, the Unilocs granted Fortress a share of their revenues. As security for the $26 million loan, the Unilocs granted Fortress a license in a patent portfolio.

The relevant terms of the financial arrangements between Fortress and the Unilocs were set forth in two written agreements originally executed in December 2014 and amended thereafter. The first is titled Conformed Revenue Sharing and

Note and Warrant Purchase Agreement and is referred to by the parties as the Purchase Agreement. The second is titled Patent License Agreement.

Under the express terms of both agreements, Fortress obtained a license to the Uniloc patent portfolio on December 30, 2014, but it agreed not to "use" the license unless and until a so-called "Event of Default" occurred. D.I. 58-1, Ex. A § 2.8; D.I. 58-1, Ex. B § 2.1. The Purchase Agreement describes the license as "a non-exclusive, royalty free, license (including the right to grant sublicenses). . . which shall be evidenced by, and reflected in, the Patent License Agreement." D.I. 58-1, Ex. A § 2.8. The Patent License Agreement grants to Fortress the right to sublicense the patents (after an Event of Default) at its "sole and absolute discretion solely for the benefit of [Fortress]." D.I. 58-1, Ex. B § 2.1.

Under section 7.1.2 of the Purchase Agreement, the "fail[ure of the Unilocs] to perform or observe any of the covenants or agreements contained in Article VI" constitutes an Event of Default. D.I. 58-1, Ex. A § 7.1.2. One of those covenants, set forth in section 6.2.2 of the Purchase Agreement, required that, "[a]s of March 31, 2017 and the last day of each fiscal quarter thereafter, the [Unilocs] . . . have received at least $20,000,000 in Actual Monetization Revenues during the four fiscal quarter period ending on such date." D.I. 58-1, Ex. A § 6.2.2. Motorola has asserted, and the Unilocs have not contested, that the Unilocs received only $14

million in revenues as of March 31, 2017 and thus failed to satisfy section 6.2.2's monetization requirement.

Under section 5.2 of the Patent License Agreement, Fortress's license to the patent portfolio

> shall end after the later of (x) the expiration of the last Licensed Patent to expire, (y) the date on which all statutes of limitations have fully run for bringing infringement claims under the Licensed Patents and (z) the termination of any sublicensing agreement by [Fortress] with regards to the Licensed Patents.

D.I. 58-1, Ex. B § 5.2.

On May 16, 2017, Uniloc Luxembourg acquired by assignment from Hewlett Packard Enterprise Company several patents, including the #134 patent. The assignment included "the right to sue for injunctive relief and damages . . . for infringement of any of the [a]ssigned [p]atents accruing at any time prior to, on, or after the" effective date of the assignment. D.I. 58-2, Ex. K § 2.1. Motorola has asserted, and the Unilocs have never contested, that the #134 patent became part of the Uniloc patent portfolio in which Fortress held a security interest the same day that Uniloc Luxembourg acquired the patent from Hewlett Packard. *See* D.I. 67 at 4, 7; D.I. 86 at 2; D.I. 103 at 1; D.I. 58-2, Ex. E at 27:6–17, 27:21–28:24; D.I. 112-1 at 15:13–16:7. Ten days after Uniloc Luxembourg acquired the #134 patent, it granted Uniloc USA an exclusive license to make, use, sell, and sublicense the

patent. D.I. 58-2, Ex. L ¶ 1. Six months later, in November 2017, the Unilocs filed this suit.

Motorola argues that the Unilocs' failure to meet the monetization requirement of the Purchase Agreement in March 2017 constituted an Event of Default that gave Fortress an unfettered right to sublicense the #134 patent and thereby deprived the Unilocs of the right to exclude Motorola from practicing the patent. Motorola contends that because the Unilocs did not possess the exclusionary rights of the #134 patent when they filed suit, they lack standing and therefore the Court lacks subject matter jurisdiction over the case.

## II. LEGAL STANDARDS

Article III of the Constitution limits the jurisdiction of federal courts to "Cases" and "Controversies." *Lujan v. Defs. of Wildlife*, 504 U.S. 555, 559 (1992). Standing is "an essential and unchanging part" of this case-or-controversy requirement. *Id.* at 560. "Only a party with standing can invoke the jurisdiction of the federal courts." *Constitution Party of Pa. v. Aichele*, 757 F.3d 347, 357 (3d Cir. 2014). When the court's subject matter jurisdiction is challenged pursuant to Rule 12(b)(1), the plaintiff bears the burden of demonstrating standing. *Ortho Pharm. Corp. v. Genetics Inst.*, 52 F.3d 1026, 1032–33 (Fed. Cir. 1995). To meet that burden, the plaintiff must allege a "personal injury fairly traceable to the defendant's allegedly unlawful conduct and likely to be redressed by the requested

relief." *Allen v. Wright*, 468 U.S. 737, 751 (1984). The personal injury must be "an invasion of a legally protected interest which is (a) concrete and particularized and (b) actual or imminent, not 'conjectural' or 'hypothetical.'" *Lujan*, 504 U.S. at 560 (internal quotation marks and citations omitted).

Patents and the rights they confer are creatures of statute. *See Crown Die & Tool Co. v. Nye Tool & Mach. Works*, 261 U.S. 24, 40 (1923) ("Patent property is the creature of statute law and its incidents are equally so and depend upon the construction to be given to the statutes creating it and them, in view of the policy of Congress in their enactment."). Section 2 of the Patent Act empowers the United States Patent & Trademark Office (PTO) to grant and issue patents, 35 U.S.C. § 2; and § 154 of the Act provides that every patent issued by the PTO "grant[s] to the patentee, his heirs or assigns . . . the right to exclude others from making, using, offering for sale, or selling [an] invention," 35 U.S.C. § 154(a). *See also* 35 U.S.C. § 271 ("[W]hoever without authority makes, uses, offers to sell, or sells any patented invention . . . infringes the patent."); 35 U.S.C. § 281 ("A patentee shall have remedy by civil action for infringement of his patent."). Thus, in a patent infringement case, the actual or threatened injury required by Article III exists solely by virtue of the Patent Act. *See Intell. Prop. Dev., Inc. v. TCI Cablevision of Cal., Inc.*, 248 F.3d 1333, 1345 (Fed. Cir. 2001) ("Standing in a patent infringement case is derived from the Patent Act."); *see also WiAV Solutions*

*LLC v. Motorola, Inc.*, 631 F.3d 1257, 1264 (Fed. Cir. 2010) ("Because the Patent Act creates the legally protected interests in dispute [in an infringement case], the right to assert infringement of those interests comes from the Act itself."); *see generally Linda R.S. v. Richard D.*, 410 U.S. 614, 617 n.3 (1973) ("Congress may enact statutes creating legal rights, the invasion of which creates standing, even though no injury would exist without the statute.").[1]

The language of § 154 appears to be straightforward. The right that comes with a patent is the right to exclude others from making, using, offering for sale,

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[1] The right to exclude that accompanies the issuance of a patent pursuant to § 154 is legally distinct from the cause of action created by § 281 of the Patent Act, which provides that "[a] patentee shall have remedy by civil action for infringement of his patent." *See generally Davis v. Passman*, 442 U.S. 228, 239 n.18 (1979) (explaining that a party's standing to sue is a separate question from whether the party has a cause of action). In *Lexmark International, Inc. v. Static Control Components, Inc.*, 572 U.S. 118, 128 n.4 (2014), the Supreme Court held that "the absence of a valid (as opposed to arguable) cause of action does not implicate subject-matter jurisdiction, i.e., the court's statutory or constitutional power to adjudicate the case." In *Lone Star Silicon Innovations LLC v. Nanya Technology Corp.*, 925 F.3d 1225, 1235 (Fed. Cir. 2019), the Federal Circuit held that "*Lexmark* is irreconcilable with our earlier authority treating § 281 as a jurisdictional requirement." Whether a party constitutes a patentee for purposes of § 281 is, at least in theory, a different question than whether a party is a patentee for purposes of § 154 or otherwise has a legally protected interest, the invasion of which constitutes the injury required for Article III standing. There is no natural or common law right to exclude others from practicing a party's invention. *Crown Die & Tool Co. v. Nye Tool & Mach. Works*, 261 U.S. 24, 40 (1923). A party alleging infringement has constitutional standing only because of statutory rights. *Id.*

and selling an invention. The right is granted to the patentee, his heirs, and his assigns.

But constitutional standing in a patent case is anything but straightforward. Courts long ago abandoned the text of the Patent Act (and its predecessor statute) and expanded the list of potential grantees of a patent's exclusionary rights beyond the patentee and the patentee's heirs and assigns. Most notably, in *Independent Wireless Telegraph Co. v. Radio Corp. of America*, 269 U.S. 459 (1926), the Supreme Court confirmed "the rule" that "an exclusive licensee has a sufficient interest in [a] patent to have standing to sue under Article III of the Constitution." *Propat Int'l Corp. v. RPost US, Inc.*, 473 F.3d 1187, 1193 (Fed. Cir. 2007). Ever since *Independent Wireless* courts have struggled to define what an exclusive licensee is. That struggle has been exacerbated by inconsistent rulings about the meaning and scope of the right to exclude that comes with a patent. The resulting body of case law for constitutional standing in patent cases lacks coherence and breeds confusion. *See, e.g.*, *Uniloc USA, Inc. v. Apple, Inc.*, No C 18-00358 WHA, 2020 WL 7122617, at *3 (N.D. Cal. Dec. 4, 2020) (noting that "confusion about the interplay between . . . [a plaintiff's] statutory right to sue [in a patent case] and our doctrine of standing has long persisted"); *Aspex Eyewear, Inc. v. Miracle Optics, Inc.*, No. CV01-10396 MMM (CWx), 2009 WL 10699035, at *9 (C.D. Cal. July 14, 2009) (noting "confusion [that] arises from the fact that, in the context of

standing to sue for patent infringement, the term 'exclusive licensee' can refer to various types of contractual arrangements with different legal effects"); Roger D. Blair & Thomas F. Cotter, *The Elusive Logic of Standing Doctrine in Intellectual Property Law*, 74 Tul. L. Rev. 1323, 1328 (2000) ("[T]he standing rules in [patent] law appear to be as much a patchwork as Dr. Frankenstein's monster, and only marginally more coherent.").

Resolution of the pending motion turns on the interpretation of three Federal Circuit cases that address the constitutional standing of a plaintiff in a patent infringement action: *Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538 (Fed. Cir. 1995) (en banc); *WiAV*; and *Lone Star Silicon Innovations LLC v. Nanya Tech. Corp.*, 925 F.3d 1225 (Fed. Cir. 2019).

### A. *Rite-Hite* and *WiAV*

In *Rite-Hite*, the Federal Circuit held that "[t]o be an exclusive licensee for standing purposes, a party must have received, not only the right to practice the invention within a given territory, but also the patentee's express or implied promise that *others* shall be excluded from practicing the invention within that territory as well." 56 F.3d at 1552 (emphasis added). That test left open the question of whether an exclusive licensee must receive from the patentee a promise to exclude *all* others from practicing the invention in the specified territory for the exclusive licensee to have constitutional standing.

In two cases decided after *Rite-Hite* the Federal Circuit appeared to answer yes to that question. In *Mars, Inc. v. Coin Acceptor, Inc.*, 527 F.3d 1359 (Fed. Cir. 2008), the court held that "if the patentee *allows* others to practice the patent in the licensee's territory, the licensee is *not* an exclusive licensee." *Id.* at 1368 (emphasis in original). And in *Textile Productions Inc. v. Mead Corp.*, 134 F.3d 1481 (Fed. Cir. 1998), the court held that "[t]o qualify as an exclusive license, an agreement must clearly manifest the patentee's promise to refrain from granting *to anyone else* a license in the area of exclusivity." *Id.* at 1484 (emphasis added); *see also id.* ("[I]f a patentee-licensor is free to grant licenses to others, licensees under that patent are not exclusive licensees."). The court emphasized in *Textile Productions* that the contract at issue—an exclusive requirements contract—did not "confer a right to exclude *all others* from making an invention" and that the patent holder "did not promise that *all others*" shall be excluded from practicing the invention. *Id.* at 1484–85 (emphasis added).

The meaning of "exclusive licensee" endorsed by *Mars* and *Textile Productions* is consistent with the general understanding of the term today, *see Exclusive License, Black's Law Dictionary* (11th ed. 2019) (defining an "exclusive license" as "[a] license that gives the licensee the sole right to perform the licensed act, often in a defined territory, and that prohibits the licensor from performing the licensed act and from granting the right to anyone else; esp., such a license of a

copyright, patent, or trademark right"); and with the general understanding of the term at the time the Supreme Court decided *Independent Wireless*, *see Exclusive*, *Black's Law Dictionary* (2d ed. 1910) (defining "exclusive right" as a right "which only the grantee thereof can exercise, and from which all others are prohibited or shut out").

But in *WiAV* the Federal Circuit held that *Textile Productions*'s and *Mars*'s holdings apply only where "a party [is] an *implied* exclusive licensee of the patents in suit in the absence of a written agreement explicitly granting the party exclusionary rights in the patents." *WiAV*, 631 F.3d at 1266 (emphasis in original). Under *WiAV*, when a contract expressly grants an exclusionary license,

> the key question in determining whether [a plaintiff] has standing to assert the [patents] against the Defendants is not . . . whether [the plaintiff] has established that it has the right to exclude *all* others from practicing the patent. The question is whether [the plaintiff] has shown that it has the right under the patents to exclude *the Defendants* from engaging in the alleged infringing activity and therefore is injured by the Defendants' conduct.

*Id.* at 1267 (emphasis in original).

Applying this test, the court in *WiAV* held that in cases involving an express grant of an exclusive patent license, the "exclusive licensee lacks standing to sue a party who has the ability to obtain such a license from another party with the right to grant it." *Id.* at 1266; *see also id.* at 1266–67 ("[I]f an exclusive licensee has the

right to exclude others from practicing a patent, and a party accused of infringement does not possess, and is incapable of obtaining, a license of those rights from any other party, the exclusive licensee's exclusionary right is violated."). Thus, under *WiAV*, a third party's legal right to grant the defendant a license to the asserted patent deprives an exclusive licensee plaintiff of standing. *ChromaDex, Inc. v. Elysium Health, Inc.*, CA No. 18-1434-CFC-JLH, 2020 WL 7360212, at *5 (D. Del. Dec. 17, 2020).

*WiAV* did not address whether a third party's legal right to license the asserted patent to the defendant deprives the patent's owner (i.e., the patentee, its heirs, and assigns) of standing to sue for infringement. The parties take opposing sides on the issue.

Support for both sides' positions can be found in Federal Circuit case law. On at least two occasions, the Federal Circuit has held that a patent owner retained standing to sue for infringement even though it had granted a third party the right to grant sublicenses to others. *See Alfred E. Mann Found. For Scientific Research v. Cochlear Corp.*, 604 F.3d 1354, 1362 (Fed. Cir. 2010); *Aspex Eyewear, Inc. v. Miracle Options, Inc.*, 434 F.3d 1336, 1342 (Fed. Cir. 2006). On the other hand, in *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014), *cert. granted, judgment vacated on other grounds*, 575 U.S. 959 (2015), the Federal Circuit held that a patent owner deprived itself of standing after it transferred to a

licensee "significant rights," including the right to sublicense the asserted patent, that left the owner without "exclusionary rights and interests created by the patent statutes." In reaching this conclusion, the court held that "th[e] same logic" behind the Federal Circuit's long-held rule that "a nonexclusive license confers no standing on the licensee because the licensee does not have a legally protected interest conferred by the Patent Act" "applies even if it is the patent owner holding the nonexclusive right and [it is] the licensee [who] holds the exclusionary rights." *Id.* at 1345 (emphasis omitted).

In my view, Motorola has the better of the arguments. First, "constitutional standing . . . does not depend on labels; it is the substance of the allegations that matters." *Lone Star*, 925 F.3d at 1234. Thus, a plaintiff's standing does not turn on whether it is designated a patentee, patent owner, patent holder, or exclusive licensee. And the substance that matters is whether the plaintiff has exclusionary rights. The Federal Circuit has stated repeatedly and unambiguously that it is the violation of the exclusionary rights that come with a patent that constitutes the injury-in-fact necessary for Article III standing in a patent infringement case. *See Luminara Worldwide, LLC v. Liown Elecs. Co.*, 814 F.3d 1343, 1347 (Fed. Cir. 2016) ("Under our precedent, only parties with exclusionary rights to a patent may bring suit for patent infringement."); *Morrow v. Microsoft Corp.*, 499 F.3d 1332, 1339 (Fed. Cir. 2007) ("Constitutional injury in fact occurs when a party performs

at least one prohibited action with respect to the patented invention that violates these exclusionary rights."); *id.* ("The party holding the exclusionary rights to the patent suffers legal injury in fact under the statute."); *Intell. Prop. Dev.*, 248 F.3d at 1346 ("A party . . . that has the right to exclude others from making, using, and selling an invention described in the claims of a patent is constitutionally injured by another entity that makes, uses, or sells the invention."); *Lone Star*, 925 F.3d at 1235 ("We have recognized that those who possess 'exclusionary rights' in a patent suffer an injury when their rights are infringed."). And although the scope of a patent's exclusionary rights is subject to debate,[2] at its core, the right to

[2] The parties did not cite and I have not found a Federal Circuit case that defines what the "exclusionary rights" are. (There are cases holding that certain rights—for example, the right to sue—are *not* exclusionary rights.) The closest the Federal Circuit has come to providing a definition appears to be in *Morrow v. Microsoft Corp.*, 499 F.3d 1332 (Fed. Cir. 2007). On three occasions in that case, the court appeared to define the exclusionary rights as consisting of "an exclusive license, the exclusive right to license, and the right to sublicense." 499 F.3d at 1341; *see also id.* (distinguishing "exclusive right to sue for infringement" from "the exclusionary rights—an exclusive license (right to make, use, or sell the patented invention) along with the exclusive right [to] license and the right to sublicense"); *id.* ("The grant of this exclusive license and the right to sublicense constituted a transfer of the exclusionary rights to the patent"); *id.* at 1345 (Prost, J. dissenting) (noting that "the majority equates exclusionary rights with the right to practice and right to license"). It is not clear to me why, of the three exclusionary rights identified in *Morrow*, only the right to sublicense is not qualified as "exclusive." Nor is it clear to me how a non-exclusive right to sublicense could ever be "exclusionary" since the exercise of that right would by definition expand the number of people able to practice the patent. As discussed below, I do not believe that under Federal Circuit case law (including an en banc decision) the mere right

exclude is the legal right to prevent others from practicing the asserted patent. *Impression Prods. v. Lexmark Int'l, Inc.*, 137 S. Ct. 1523, 1534 (2017) ("The right to use, sell, or import an item exists independently of the Patent Act. What a patent adds—and grants exclusively to the patentee—is a limited right to prevent others from engaging in those practices."); *Morrow*, 499 F.3d at 1340 ("Parties that hold the exclusionary rights [under a patent] are often identified as exclusive licensees, because the grant of an exclusive license to make, use, or sell the patented invention carries with it the right to prevent others from practicing the invention."); *Ortho Pharm.*, 52 F.3d at 1032 ("[I]t is the licensee's beneficial ownership of a right to prevent others from making, using or selling the patented technology that provides the foundation for . . . standing."). A plaintiff does not have the ability to prevent the defendant from practicing a patent if another party has the right to allow the defendant to use the patent.

Second, nothing in *WiAV* suggests that its holding should be limited to exclusive licensees. The court held in *WiAV* that "the touchstone of constitutional standing in a patent infringement suit is whether *a party* can establish that it has an exclusionary right in a patent that, if violated by another, would cause *the party holding the exclusionary right* to suffer legal injury." 631 F.3d at 1265 (emphasis

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to license or sublicense a patent is an exclusionary right sufficient to confer Article III standing. *See* discussion *infra* Section II.B.

added). The fact that the plaintiff was designated in the applicable contract in *WiAV* as an exclusive licensee was relevant only insofar as the contract gave the plaintiff the exclusionary rights that accompanied the asserted patent. In the court's words: "Because the legally protected interests in a patent are the exclusionary rights created by the Patent Act, a party holding one or more of those exclusionary rights—*such as an exclusive licensee*—suffers a legally cognizable injury when an unauthorized party encroaches upon those rights and therefore has standing to sue." 631 F.3d at 1264–65 (emphasis added).

The Unilocs argue that extending *WiAV* to cover patentees—like Uniloc Luxembourg—who grant a licensee the ability to sublicense will lead to "[t]he absurd result" that "*no one* could bring suit." D.I. 67 at 1 (emphasis in the original). But this argument "would convert standing into a requirement that must be observed only when satisfied." *Valley Forge Christian College v. Americans for Separation of Church and State, Inc.*, 454 U.S. 464, 489 (1982). "The assumption that if [the plaintiff] ha[s] no standing to sue, no one would have standing, is not a reason to find standing." *Schlesinger v. Reservists Committee to Stop the War*, 418 U.S. 208, 227 (1974). Granting a third party the right to license a patent in that party's sole and absolute discretion has consequences. One of those consequences is the loss of the exclusionary rights in the patent. As the Federal Circuit stated in *Morrow*:

> [A] patent is a bundle of rights which may be retained in whole or in part, divided and assigned. While parties are free to assign some or all patent rights as they see fit based on their interests and objectives, this does not mean that the chosen method of division will satisfy standing requirements.

499 F.3d at 1341 n.8 (citations omitted).

In sum, under *WiAV*, the plaintiff in an infringement case—regardless of whether the plaintiff is the owner of the asserted patent or a licensee—does not possess the right to exclude the defendant from practicing the patent and therefore lacks constitutional standing to sue that defendant if another party has the ability to grant the defendant a license to the patent.

**B. *Lone Star***

The Unilocs argue that the Federal Circuit's 2019 decision in *Lone Star* "upended the law of jurisdiction and standing in patent cases" and that under *Lone Star* "if the plaintiff has the ability to grant licenses or forgive infringement, or if the plaintiff has the ability to collect royalties, that is sufficient to meet a constitutional test" for standing. Tr. of Oct. 1, 2020 Hr'g at 17: 1–2; 18:8–11.

There is language in *Lone Star* that could be read to support this argument. Specifically, the court held in *Lone Star* that:

> As we explained in *Morrow*, "exclusionary rights" involve the ability to exclude others from practicing an invention or to "forgive activities that would normally be prohibited under the patent statutes." 499 F.3d at 1342. Lone Star

> alleged that it possesses the sort of exclusionary rights that confer Article III standing. *See, e.g.*, J.A. 13082–13084 (alleging that it possesses rights in the asserted patents). The transfer agreement, which is referenced in each complaint, also suggests as much. *See, e.g.*, J.A. 2621 (mentioning AMD's "assign[ment]" of rights to Lone Star); J.A. 2025 (allowing Lone Star to "collect royalties"). These rights distinguish Lone Star from the plaintiff in *Morrow*, who lacked the ability to grant licenses or "forgive" infringement. 499 F.3d at 1338–43. Lone Star also alleged that Appellees infringe its exclusionary rights. *See, e.g.*, J.A. 2623–2655. And it is clear that a court could redress an injury caused by that infringement. This is enough to confer standing at the pleadings stage. . . .
>
> Lone Star adequately alleged that it possesses exclusionary rights and that Appellees infringe those rights. *See, e.g.*, J.A. 2621–2655. . . . *Cf. Morrow*, 499 F.3d at 1340 (concluding that a party "hold[ing] exclusionary rights and interests created by the patent statutes, but not all substantial rights to the patent" still has constitutional standing to sue for infringement).

925 F.3d at 1234–35. But the Unilocs' understanding that *Lone Star* confers constitutional standing on a plaintiff that merely has the ability to license a patent (or forgive infringement) cannot be reconciled with (1) the Federal Circuit's en banc holding in *Rite-Hite* that "[t]o be an exclusive licensee [i.e., to have exclusionary rights] for standing purposes, a party must have received . . . the patentee's express or implied promise that others shall be excluded from practicing the invention . . . ." 56 F.3d at 1552; (2) the court's holding in *Textile Productions* that a licensee is an exclusive licensee and has constitutional standing only "if the

patentee has promised, expressly or impliedly, that 'others shall be excluded from practicing the invention' . . . ." 134 F.3d at 1484 (quoting *Rite-Hite*); or (3) the court's holding in *WiAV* that a licensee does not have exclusionary rights in a patent if a third-party could license a defendant's infringing activity. Accordingly, I read the quoted passage from *Lone Star* as non-binding dicta.[3]

## III. ANALYSIS

Motorola argues that the Unilocs lost standing to bring a claim for infringement of the #134 patent when they failed to satisfy their monetization obligations under the Purchase Agreement. I agree. That failure constituted an Event of Default under the Agreement, which gave Fortress the right to use its license of the patent. At that point—on May 16, 2017—Fortress had the legal right to grant Motorola a sublicense to the #134 patent and thus, under *WiAV*, the Unilocs no longer possessed the right to exclude Motorola from practicing the patent.

The Unilocs argue that Fortress "did not view or treat" the Unilocs as having defaulted and did not believe it had a right to sublicense the #134 patent. D.I. 67 at

[3] To the extent that the Unilocs are correct in their reading of the *Lone Star* decision it would not change my analysis since I would still be bound to follow *Rite-Hite*, *Textile Productions*, and *WiAV*. *See Newell Cos., Inc. v. Kenney Mfg. Co.*, 864 F.2d 757, 765 (Fed. Cir. 1988) ("[P]rior decisions of a panel of the court are binding precedent on subsequent panels unless and until overturned in banc . . . . Where there is direct conflict, the precedential decision is the first.").

4. But it is undisputed that the Unilocs failed to meet the monetization requirement of section 6.2.2 of the Purchase Agreement as of March 31, 2017; and the Purchase Agreement expressly states that the failure "to perform or observe any of the covenants or agreements contained in Article VI" constitutes an Event of Default. D.I. 58-1, Ex. A § 7.1.2. Under New York law, which governs both the Purchase Agreement and the Patent License Agreement, "a written agreement that is complete, clear and unambiguous on its face must be enforced according to the meaning of its terms." *MHR Capital Partners LP v. Presstek Inc.*, 912 N.E.2d 43, 47 (N.Y. 2009). Thus, Fortress's after-the-fact subjective beliefs with respect to the Unilocs are of no moment; the clear and unambiguous language of section 6.2.2 dictates the outcome here.[4]

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[4] The Unilocs cite the Federal Circuit's non-precedential decision in *Uniloc USA, Inc. v. ADP, LLC*, 772 F. App'x 890, 895 (Fed. Cir. 2019) for the proposition that Motorola must show that Fortress "considers Uniloc to be in breach or has asserted a right to sublicense and release Movants from liability relating to the patents at issue." D.I. 86 at 3 (quoting *ADP*). But the contract at issue here is unambiguous and therefore, under New York law, speaks for itself. Moreover, as Judge Alsup recently noted in rejecting the exact argument about *ADP* made by Unilocs:

> *ADP* distinguishes itself from this case. There, the panel described the third-party interest in the patents as "reversionary," or as the Unilocs describe it, "discretionary." Fortress's interest here is neither reversionary nor discretionary. It required no "activat[ion]" or invocation. Rather, under the plain language of agreement, the Unilocs *already granted* Fortress the right to use and sublicense the [asserted] patent on the limitation that Fortress would not *use* the

The Unilocs intimate that Fortress's view and treatment of the Unilocs after March 31, 2017 constituted a waiver of Fortress's right to use its license of the #134 patent. And they expressly argue that Fortress's execution of an amendment to the Purchase Agreement in May 2017 "establishes [that the] Uniloc[s] had cured that ostensible 'Event of Default' to Fortress's satisfaction." D.I. 67-2 ¶ 12. But neither of these arguments holds water.

Section 7.3 of the Purchase Agreement, titled "Annulment of Defaults," provides three ways to render an Event of Default inoperative. It reads:

> [o]nce an Event of Default has occurred, such Event of Default shall be deemed to exist and be continuing for all purposes of this Agreement until the earlier of (x) [Fortress] shall have waived such Event of Default in writing, (y) the [Unilocs] shall have cured such Event of Default to [Fortress's] reasonable satisfaction or the [Unilocs] or such Event of Default otherwise ceases to exist, or (z) the Collateral Agent and the Purchasers or [Fortress] (as required by Section 9.4.1) have entered into an amendment to this Agreement which by its express terms cures such Event of Default, at which time such Event of Default shall no longer be deemed to exist or to have continued.

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> right until an Event of Default. This distinction isn't merely semantic.

*Uniloc USA, Inc. v. Apple, Inc.*, No. C 18-00358 WHA, 2020 WL 7122617, at *8 (N.D. Cal. Dec. 4, 2020) (citations omitted).

D.I. 58-1, Ex. A § 7.3. As an initial matter, Fortress never waived the Unilocs' failure to meet their monetization obligations under section 6.2.2 in writing, so no annulment of that default occurred under clause (x) of section 7.3. Second, there was no curing here, so no annulment occurred under clause (y). "Cure" means "to remove one or more legal defects" or "to correct one or more legal errors." *Cure*, *Black's Law Dictionary* (11th ed. 2019). It requires affirmative action on the party seeking to overcome the defect or error. For the Unilocs to "have cured" their failure to meet the monetization requirement of section 6.2.2, they must have done something to fix or remove that failure. As the Unilocs' counsel admitted during oral argument, there was nothing that the Unilocs could have done to cure their revenue deficiency. Tr. 27:16–17 ("If the money doesn't come in by a certain date, there's no way that that fact can be changed.").

Third, under clause (z) of section 7.3, for an amendment to annul a default, the amendment must "by its express terms cure[] such Event of Default." The May 2017 amendment, however, makes no reference to either a curing by the Unilocs of their failure to satisfy their monetization obligations under section 6.2.2 or a waiver by Fortress. On the contrary, the amendment states that "[t]he execution, delivery and effectiveness of this Amendment *shall not operate as a waiver* of any right, power or remedy of the Collateral Agent or any Purchaser under the

Agreement or any Document, *nor constitute a waiver* of any provision of the Agreement or any Document." D.I. 58-1, Ex. C § 4 (emphasis added).

Accordingly, I find that an Event of Default occurred under section 6.2.2 of the Purchase Agreement on March 31, 2017 and that the Event of Default was neither cured by the Unilocs nor waived by Fortress. It follows that Fortress had the legal right to sublicense the #134 patent when this suit was filed in November 2017 and therefore, under *WiAV*, the Unilocs lacked the requisite exclusionary rights in the patent to have standing to bring suit.

Finally, in response to briefing I ordered after oral argument, the Unilocs argued for the first time that any license Fortress obtained as of May 16, 2017 was prospective only and therefore that license could not have deprived the Unilocs of standing to sue for infringement that occurred prior to that date. Neither the Purchase Agreement nor the Patent License Agreement, however, limit the scope of Fortress's license to future infringement. And under New York law, "if parties to a contract omit terms—particularly, terms that are readily found in other, similar contracts—the inescapable conclusion is that the parties intended the omission." *Quadrant Structured Prod. Co., Ltd. v. Vertin*, 16 N.E.3d 1165, 1172 (N.Y. 2014). That conclusion is reinforced in this case by the fact that the Patent License Agreement expressly provides that it can remain effective until the date on which all statutes of limitations for infringement of the licensed patents have run. D.I.

58-1, Ex. B § 5.2. Because the statute of limitations for infringement extends up to six years after the expiration of a patent, *see* 35 U.S.C. § 286; *In re Morgan*, 990 F.2d 1230, 1232 (Fed. Cir. 1993), and because there is no need for a license to practice an expired patent, such a provision makes sense only if Fortress had the ability to grant a retroactive license for past infringement. Thus, the license Fortress obtained on May 16, 2017 gave it both retrospective and prospective rights to sublicense the asserted patent and thereby deprived the Unilocs of standing to sue Motorola for infringement of the asserted patent before and after May 16, 2017.

## IV. CONCLUSION

For the reasons discussed above, neither Uniloc Luxembourg nor Uniloc USA held exclusionary rights to the asserted patent on the date they filed this suit. Accordingly, they lacked standing and this court lacks subject matter jurisdiction under Article III. The Unilocs' standing deficiency cannot be cured, even by adding another party. *Azure Networks*, 771 F.3d at 1347. I will therefore grant Motorola's motion and dismiss the case.

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

| | | |
|---|---|---|
| UNILOC USA, INC., UNILOC LUXEMBOURG, S.A., | : | |
| Plaintiffs, | : | |
| v. | : | |
| | : | Civil Action No. 17-1658-CFC |
| MOTOROLA MOBILITY, LLC, | : | |
| Defendant. | : | |

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**ORDER**

At Wilmington this Thirtieth day of December in 2020:

For the reasons set forth in the Memorandum Opinion issued this day, **IT IS HEREBY ORDERED** that Defendant Motorola Mobility, LLC's Motion to Dismiss for Lack of Subject Matter Jurisdiction (D.I. 56) is GRANTED and the Court of the Clerk is directed to CLOSE the case.

COLM F. CONNOLLY,
UNITED STATES DISTRICT JUDGE

CLOSED,APPEAL,MEDIATION−MPT,PATENT

# U.S. District Court
## District of Delaware (Wilmington)
## CIVIL DOCKET FOR CASE #: 1:17−cv−01658−CFC

Uniloc USA, Inc. et al v. Motorola Mobility, LLC
Assigned to: Judge Colm F. Connolly
Related Cases: 1:17−cv−01552−GMS
1:17−cv−01656−GMS
1:17−cv−01657−GMS
Case in other court: Federal Circuit, 21−01555
Cause: 35:271 Patent Infringement

Date Filed: 11/15/2017
Date Terminated: 12/30/2020
Jury Demand: Plaintiff
Nature of Suit: 830 Patent
Jurisdiction: Federal Question

**Plaintiff**

**Uniloc USA, Inc.** represented by **Sean T. O'Kelly**
O'Kelly & Ernst, LLC
824 N. Market Street
Suite 1001A
Wilmington, DE 19801
(302) 778−4000
Fax: (302) 295−2873
Email: sokelly@oelegal.com
*LEAD ATTORNEY*
*ATTORNEY TO BE NOTICED*

**Aaron S. Jacobs**
Email: ajacobs@princelobel.com
*PRO HAC VICE*
*ATTORNEY TO BE NOTICED*

**Daniel Patrick Murray**
New Castle County Department of Public Works
187−A Old Churchmans Road
New Castle, DE 19720
302−395−5320
Fax: 302−395−5870
Email: Daniel.Murray@newcastlede.gov
*TERMINATED: 09/13/2018*
*ATTORNEY TO BE NOTICED*

**James J. Foster**
Email: jfoster@princelobel.com
*PRO HAC VICE*
*ATTORNEY TO BE NOTICED*

**Kevin Gannon**
Email: kgannon@princelobel.com
*PRO HAC VICE*
*ATTORNEY TO BE NOTICED*

**Thomas H. Kramer**
O'Kelly Ernst & Joyce, LLC
901 North Market Street
Suite 1000
Wilmington, DE 19801
(302) 778−4000
Fax: (302) 295−2873
Email: tkramer@oelegal.com
*ATTORNEY TO BE NOTICED*

**Plaintiff**

| | | |
|---|---|---|
| 11/11/2020 | 106 | [SEALED] Letter to The Honorable Colm F. Connolly from Jeremy A. Tigan regarding Plaintiffs' New Argument on Standing − re 103 Letter. (Attachments: # 1 Motorola's Response)(Tigan, Jeremy) (Attachment 1 replaced on 11/12/2020) (nmf, ). (Entered: 11/11/2020) |
| 11/12/2020 | 107 | [SEALED] Letter to The Honorable Colm F. Connolly from Jeremy A. Tigan regarding Motorola's Proposed Response − re 106 Letter. (Tigan, Jeremy) (Entered: 11/12/2020) |
| 11/12/2020 | | CORRECTING ENTRY: The pdf of the Motorola's Response attached to the sealed letter at D.I. 106 has been replaced per request of filer. (nmf) (Entered: 11/12/2020) |
| 11/12/2020 | 108 | REDACTED VERSION of 106 Letter, by Motorola Mobility, LLC. (Attachments: # 1 Motorola's Response)(Tigan, Jeremy) (Entered: 11/12/2020) |
| 11/13/2020 | 109 | Letter to Judge Connolly from Thomas Kramer regarding Defendant's Supplemental Response − re 106 Letter,. (Kramer, Thomas) (Entered: 11/13/2020) |
| 12/06/2020 | 110 | NOTICE of Subsequent Authority by Motorola Mobility, LLC re 56 MOTION to Dismiss for Lack of Jurisdiction Over the Subject Matter (Attachments: # 1 Exhibit 1)(Tigan, Jeremy) (Entered: 12/06/2020) |
| 12/10/2020 | | ORAL ORDER re 56 MOTION to Dismiss for Lack of Jurisdiction Over the Subject Matter, 50 MOTION to Substitute Party: Uniloc 2017 LLC to replace Uniloc USA, Inc., and Uniloc Luxembourg, S.A.: Plaintiffs are ordered to submit no later than 12:00 pm December 14, 2020 a letter brief not exceeding 500 words that (1) identifies, with citations to the record, where Schedule I(a) of the Purchase Agreement was updated to include U.S. Patent No. 6,161,134 (see D.I. No. 58−1, Ex. B section 1 (defining "Licensed Patents")); and (2) identifies, with page citations, where in their briefing Plaintiffs affirmatively stated why they have standing (as opposed to merely rebutting arguments made by Defendants that Plaintiffs lack standing). Defendants are invited to submit no later than 12:00 pm December 16, 2020 a letter brief not exceeding 500 words in response to Plaintiffs' letter brief. Plaintiffs may not submit a letter brief in reply. Ordered by Judge Colm F. Connolly on 12/10/2020. (nmf) (Entered: 12/10/2020) |
| 12/14/2020 | 111 | Letter to the Honorable Colm F. Connolly from Sean T. O'Kelly, Esq. regarding Response to the Court's Order dated December 10, 2020 − re Oral Order,,,,. (O'Kelly, Sean) (Entered: 12/14/2020) |
| 12/16/2020 | 112 | Letter to The Honorable Colm F. Connolly from Jeremy A. Tigan regarding Defendant's Response to the Court's December 10, 2020 Order − re Oral Order,,,,. (Attachments: # 1 Exhibit A)(Tigan, Jeremy) (Entered: 12/16/2020) |
| 12/29/2020 | 113 | Letter to The Honorable Colm F. Connolly from Jeremy A. Tigan regarding Notice of Subsequent Authority − re 56 MOTION to Dismiss for Lack of Jurisdiction Over the Subject Matter . (Attachments: # 1 Exhibit A)(Tigan, Jeremy) (Entered: 12/29/2020) |
| 12/30/2020 | 114 | MEMORANDUM OPINION. Signed by Judge Colm F. Connolly on 12/30/2020. (fms) (Entered: 12/30/2020) |
| 12/30/2020 | 115 | ORDER granting 56 Motion to Dismiss for Lack of Subject Jurisdiction (CASE CLOSED). Signed by Judge Colm F. Connolly on 12/30/2020. (fms) (Entered: 12/30/2020) |
| 12/30/2020 | | ORAL ORDER − Plaintiffs motion to substitute party (D.I. 50 ) is DENIED as moot. Ordered by Judge Colm F. Connolly on 12/30/2020. (fms) (Entered: 12/30/2020) |
| 01/15/2021 | 116 | NOTICE OF APPEAL to the Federal Circuit of 115 Order on Motion to Dismiss/Lack of Subject Jurisdiction . Appeal filed by Uniloc Luxembourg, S.A., Uniloc USA, Inc.. (O'Kelly, Sean) (Entered: 01/15/2021) |
| 01/15/2021 | | APPEAL − Credit Card Payment of $505.00 received re 116 Notice of Appeal (Federal Circuit) filed by Uniloc Luxembourg, S.A., Uniloc USA, Inc.. ( Filing fee $505, receipt number ADEDC−3466409.) (O'Kelly, Sean) (Entered: 01/15/2021) |
| 01/15/2021 | | Notice of Appeal and Docket Sheet to US Court of Appeals for the Federal Circuit re 116 Notice of Appeal (Federal Circuit). (kmd) (Entered: 01/15/2021) |
| 01/19/2021 | 117 | NOTICE of Docketing Record on Appeal from USCA for the Federal Circuit re 116 Notice of Appeal (Federal Circuit) filed by Uniloc Luxembourg, S.A., Uniloc USA, Inc. USCA Case Number 2021−1555 (fms) (Entered: 01/19/2021) |

US006161134A

# United States Patent [19]

Wang et al.

[11] Patent Number: 6,161,134

[45] Date of Patent: Dec. 12, 2000

[54] **METHOD, APPARATUS AND COMMUNICATIONS SYSTEM FOR COMPANION INFORMATION AND NETWORK APPLIANCES**

[75] Inventors: **Peter Si-Sheng Wang**, Cupertino, Calif.; **Ismail Dalgic**, Mountain View, Calif.

[73] Assignee: **3Com Corporation**, Santa Clara, Calif.

[21] Appl. No.: **09/181,431**

[22] Filed: **Oct. 30, 1998**

[51] **Int. Cl.**[7] ..... **G06F 13/00**

[52] **U.S. Cl.** ..... **709/220**

[58] **Field of Search** ..... 709/200, 205, 709/212, 218, 220, 222; 708/109; 455/550

[56] **References Cited**

U.S. PATENT DOCUMENTS

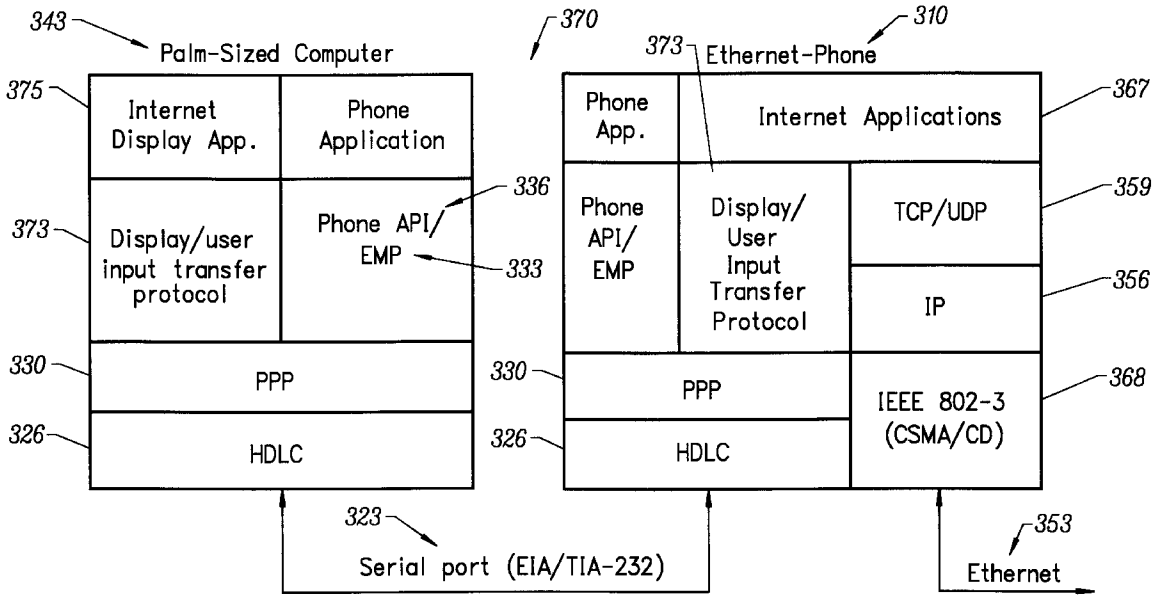
| | | | |
|---|---|---|---|
| 5,497,339 | 3/1996 | Bernard | 708/109 |
| 5,606,594 | 2/1997 | Register et al. | 455/550 |

*Primary Examiner*—Robert B. Harrell
*Attorney, Agent, or Firm*—David J. Weitz; Wilson Sonsini Goodrich & Rosati

[57] **ABSTRACT**

The invention provides an information appliance and a network appliance (or telephone) that function independently as well as with each other as companion appliances. The information appliance stores user information corresponding to a particular user. The telephone is linked to network. In some embodiments, the companion appliances are capable of simultaneously exchanging voice and data messages with devices connected to the network. The appliances are connected to each other physically through a communications port, and exchange data link layer formatted data corresponding to user personalized information, commands from the user, and responses including message status information corresponding to action of the network connected devices. The user information enables the telephone to perform network communications according to user specified settings, and enables the telephone to assume the user specific information appliance network identification. The information appliance is typically a portable computer and in some embodiments is a palm-sized computer. In some embodiments, the telephone is an Ethernet telephone. One aspect of the invention provides a method for transmitting data from a portable computer to a telephone. Other aspects of the invention include: a method for exchanging voice and data messages between a telephone and devices connected to a network, a portable computer adapted for connection to a telephone, a telephone adapted for connection to a portable computer, and a communications system including the telephone connected to the portable computer.

**75 Claims, 26 Drawing Sheets**



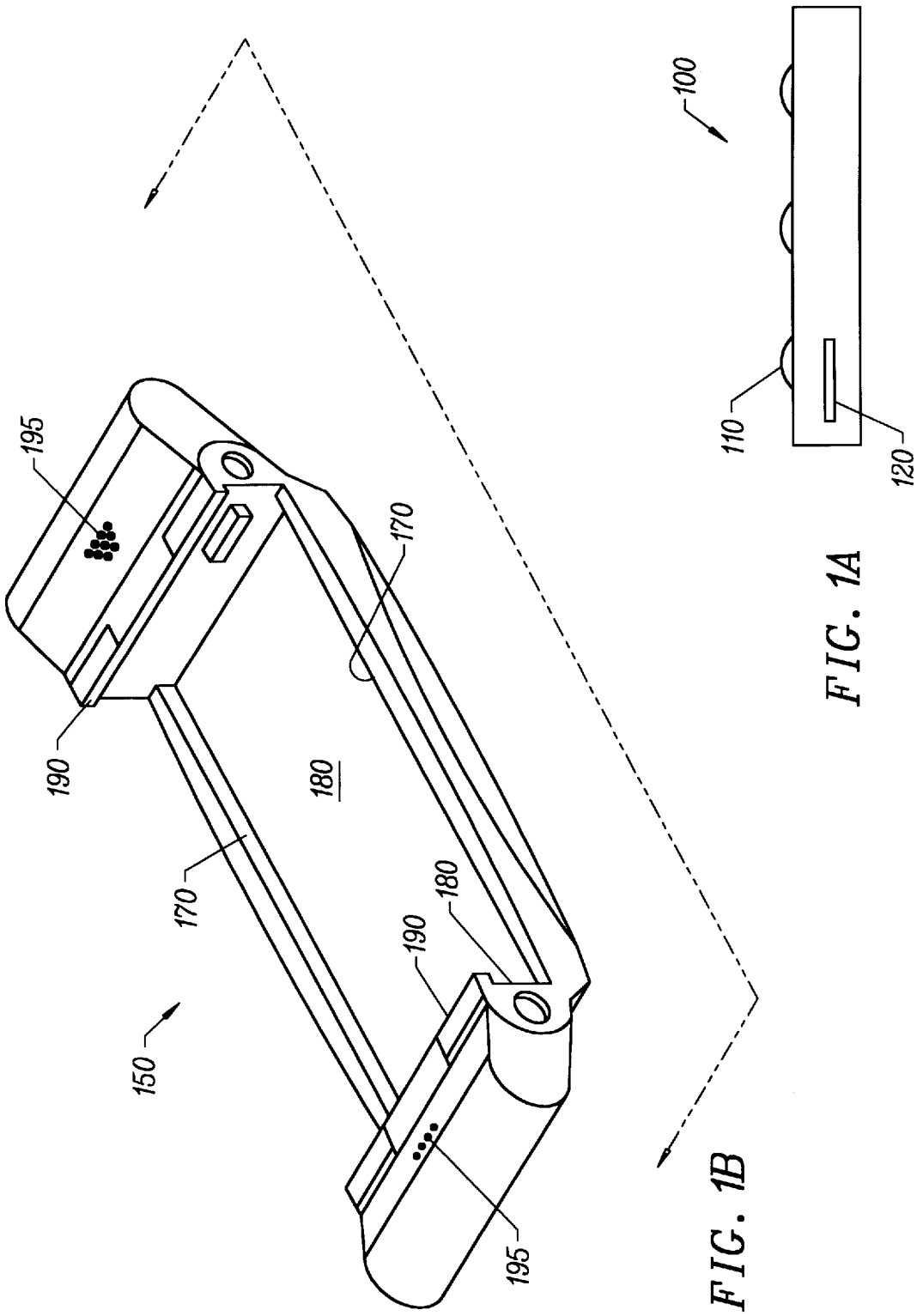



FIG. 1A

FIG. 1B

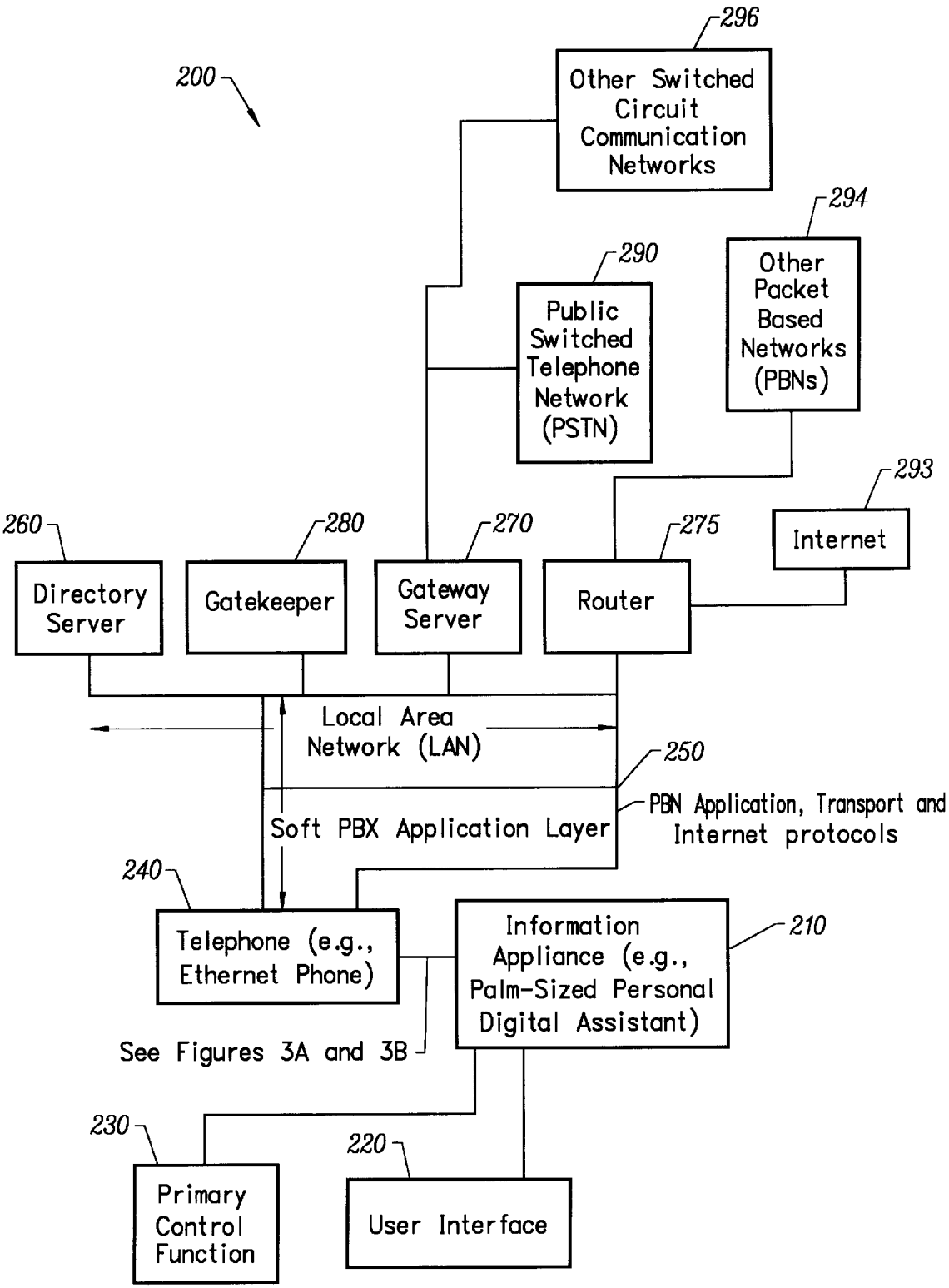

200
296
Other Switched Circuit Communication Networks
294
Other Packet Based Networks (PBNs)
290
Public Switched Telephone Network (PSTN)
293
Internet
260
Directory Server
280
Gatekeeper
270
Gateway Server
275
Router
Local Area Network (LAN)
250
Soft PBX Application Layer
PBN Application, Transport and Internet protocols
240
Telephone (e.g., Ethernet Phone)
Information Appliance (e.g., Palm-Sized Personal Digital Assistant)
210
See Figures 3A and 3B
230
Primary Control Function
220
User Interface

FIG. 2

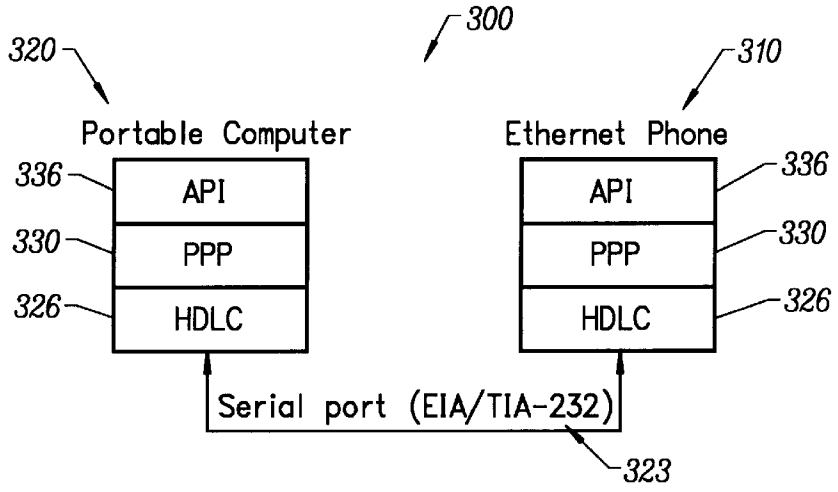

300
320
310
Portable Computer
Ethernet Phone
336
API
330
PPP
326
HDLC
336
API
330
PPP
326
HDLC
Serial port (EIA/TIA-232)
323

FIG. 3A

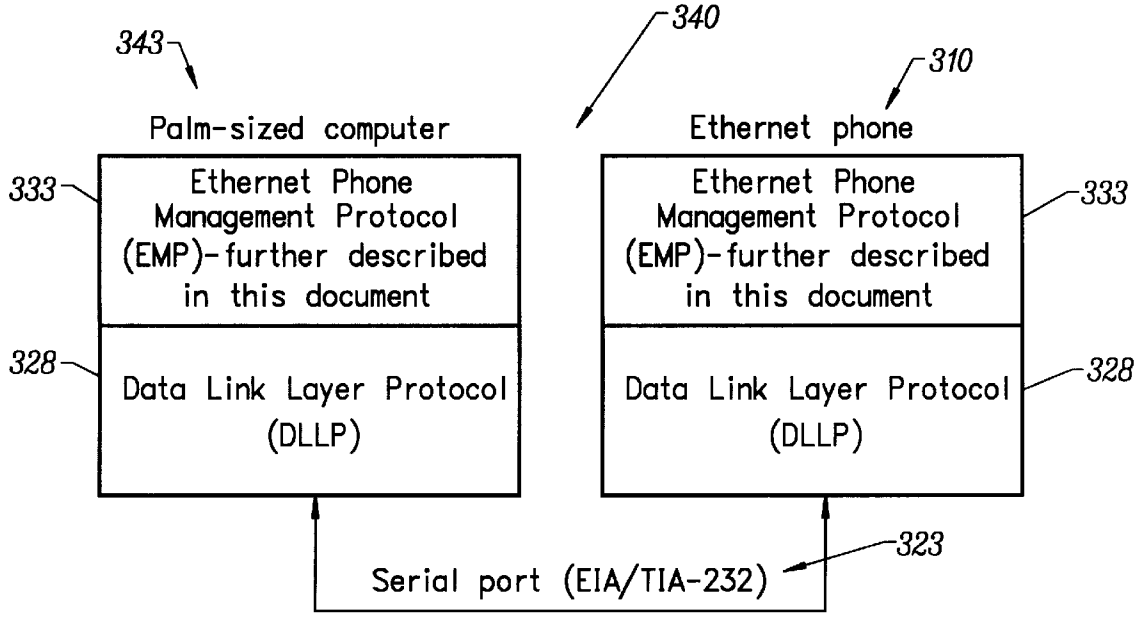

343
340
310
Palm-sized computer
Ethernet phone
333
Ethernet Phone Management Protocol (EMP)-further described in this document
328
Data Link Layer Protocol (DLLP)
Ethernet Phone Management Protocol (EMP)-further described in this document
333
Data Link Layer Protocol (DLLP)
328
323
Serial port (EIA/TIA-232)

FIG. 3B

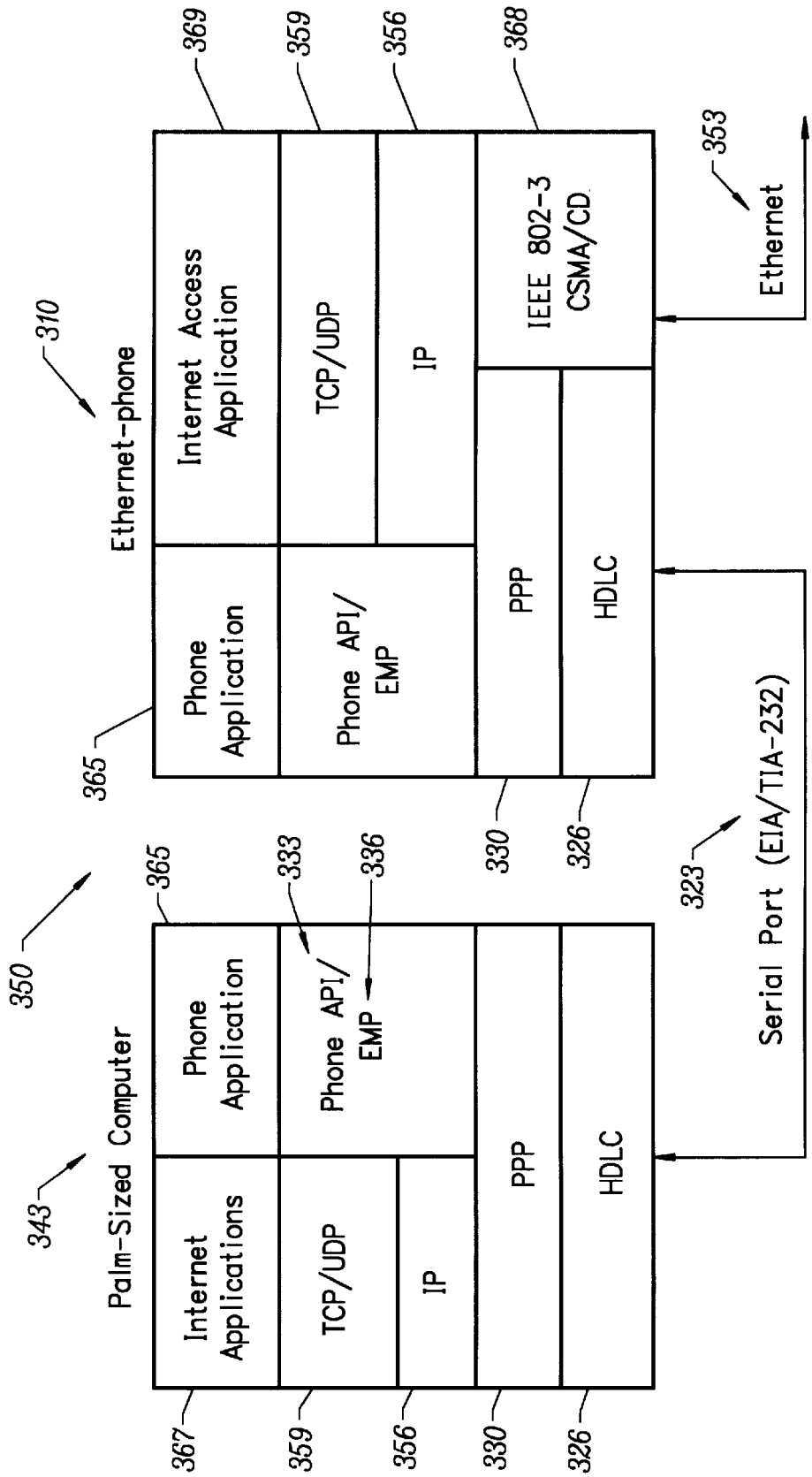

369
359
356
368
353
Ethernet
310
Ethernet-phone
Internet Access Application
TCP/UDP
IP
IEEE 802-3 CSMA/CD
Phone Application
Phone API/ EMP
PPP
HDLC
365
330
326
323
Serial Port (EIA/TIA-232)
350
Palm-Sized Computer
343
Internet Applications
TCP/UDP
IP
PPP
HDLC
Phone Application
Phone API/ EMP
333
336
367
359
356
330
326

FIG. 3C

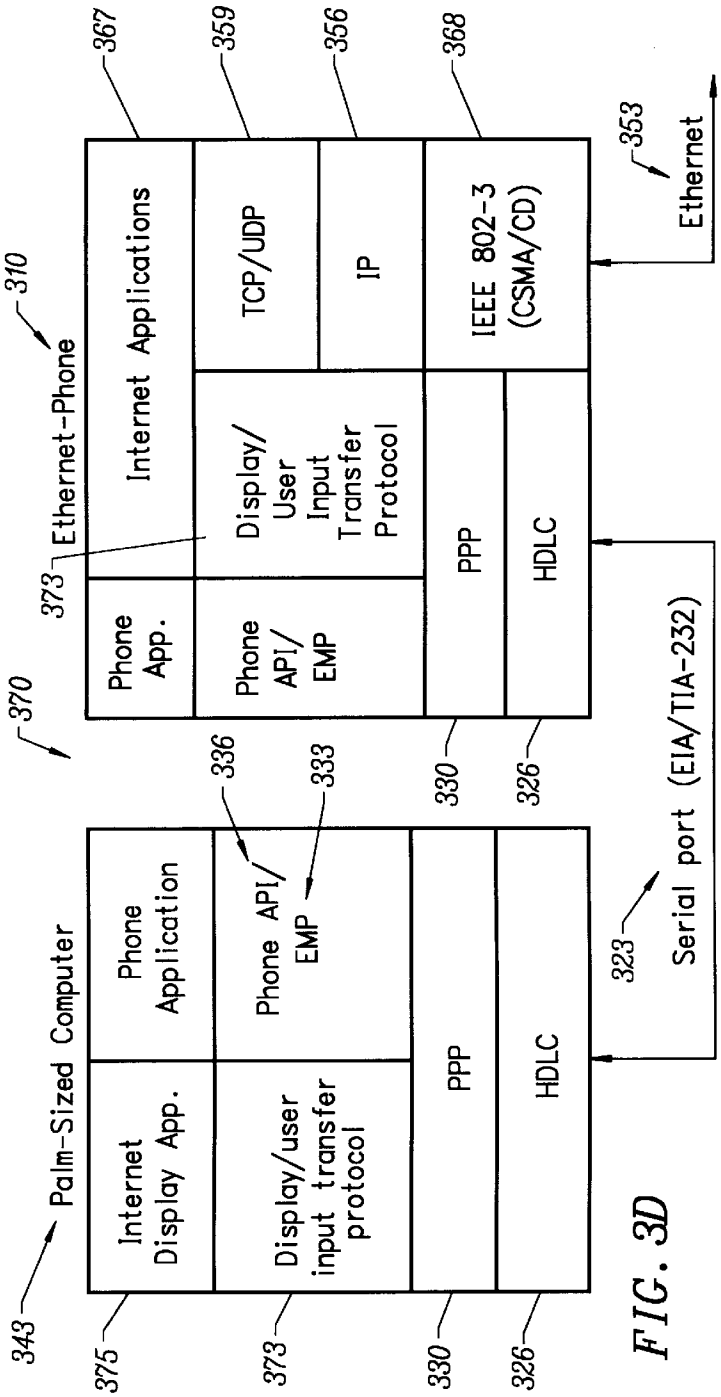

Palm-Sized Computer
343
Internet Display App.
Phone Application
375
Display/user input transfer protocol
Phone API/ EMP
373
PPP
330
HDLC
326
336
333
323
Serial port (EIA/TIA-232)
370
Ethernet-Phone
310
Phone App.
Phone API/ EMP
Display/ User Input Transfer Protocol
Internet Applications
367
TCP/UDP
359
IP
356
IEEE 802-3 (CSMA/CD)
368
PPP
330
HDLC
326
353
Ethernet

FIG. 3D

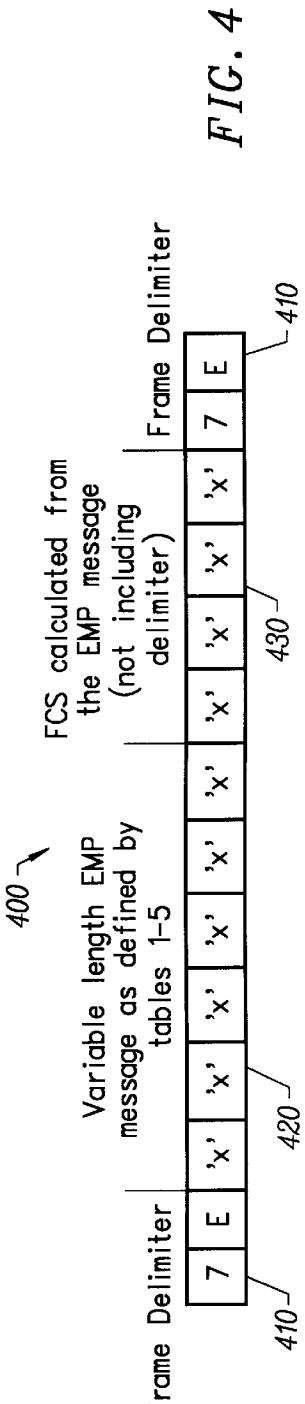

400
Frame Delimiter
7 E
Variable length EMP message as defined by tables 1-5
'x' 'x' 'x' 'x' 'x' 'x' 'x' 'x'
420
FCS calculated from the EMP message (not including delimiter)
430
Frame Delimiter
7 E
410
410

FIG. 4

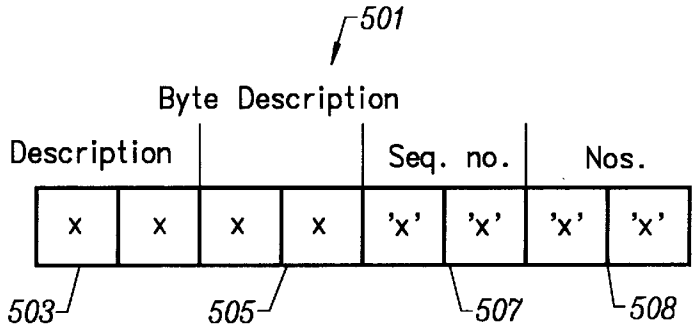



FIG. 5A

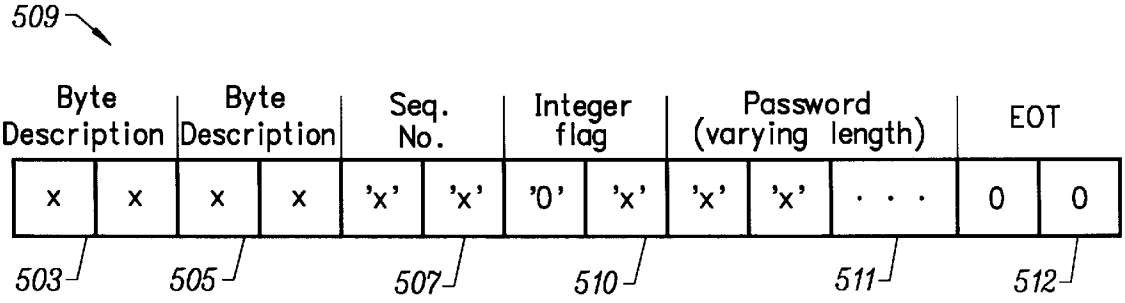



FIG. 5B

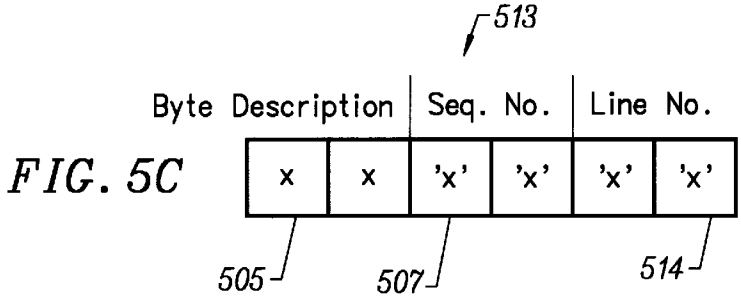



FIG. 5C

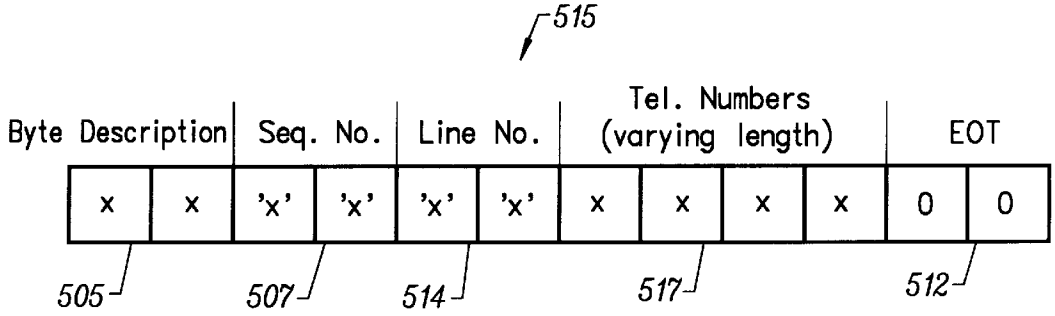



FIG. 5D

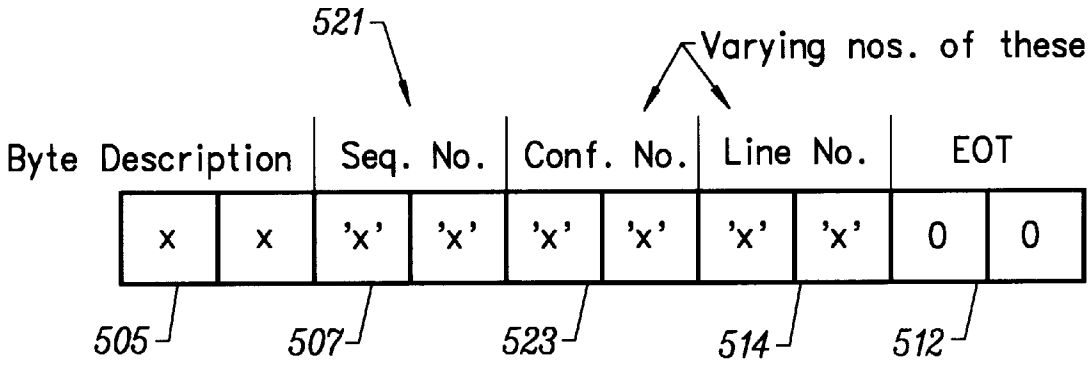

521
Varying nos. of these
Byte Description
Seq. No.
Conf. No.
Line No.
EOT
x
x
'x'
'x'
'x'
'x'
'x'
'x'
0
0
505
507
523
514
512

FIG. 5E

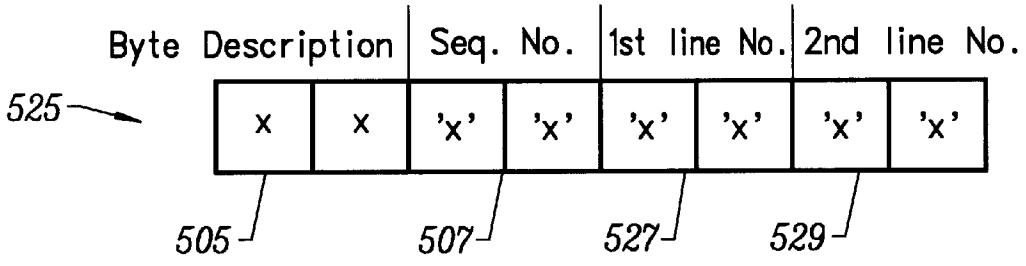

Byte Description
Seq. No.
1st line No.
2nd line No.
525
x
x
'x'
'x'
'x'
'x'
'x'
'x'
505
507
527
529

FIG. 5F

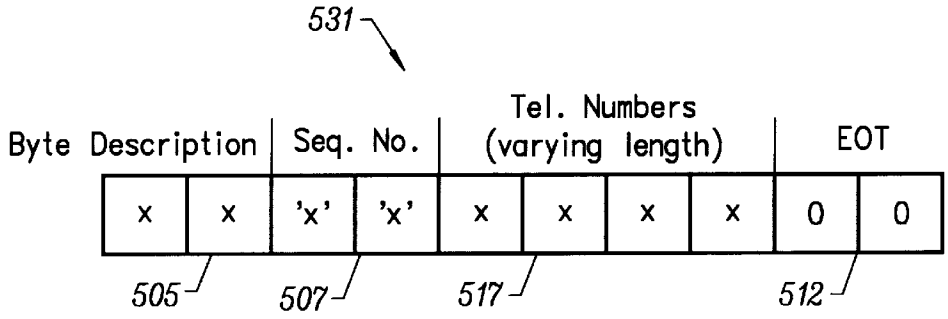



FIG. 5G

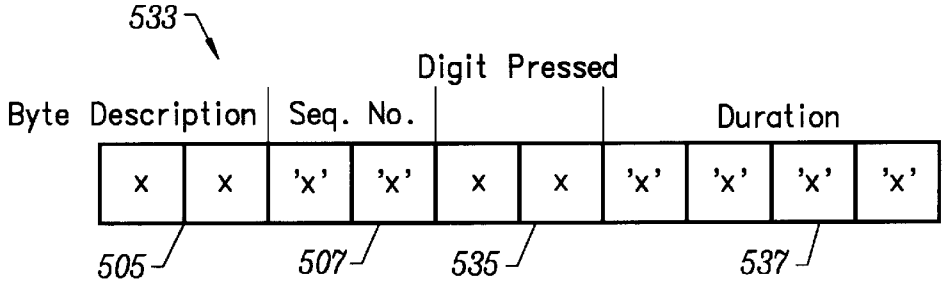



FIG. 5H

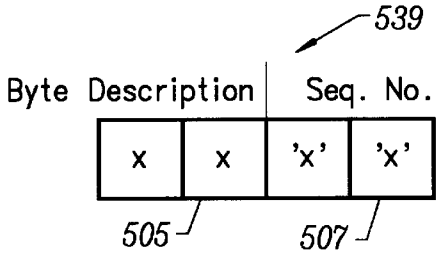



FIG. 5I

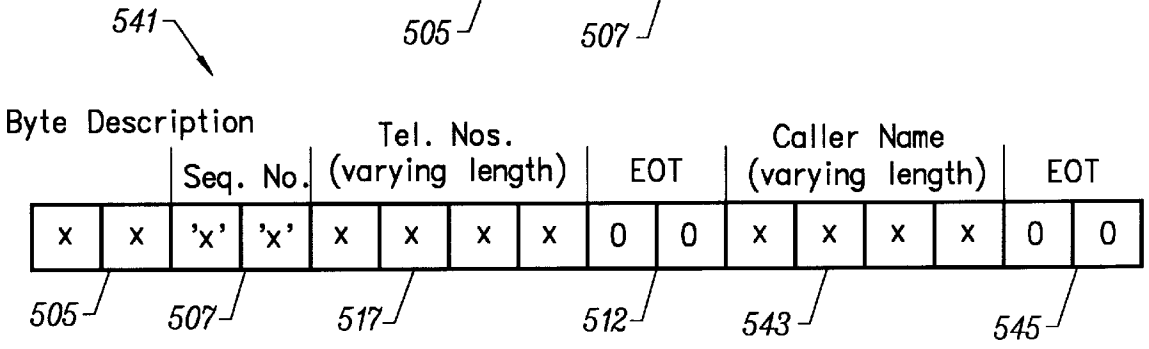



FIG. 5J

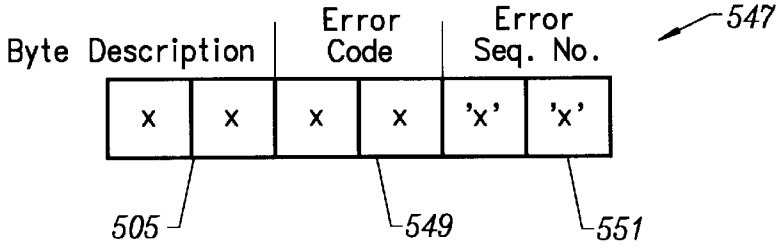



FIG. 5K

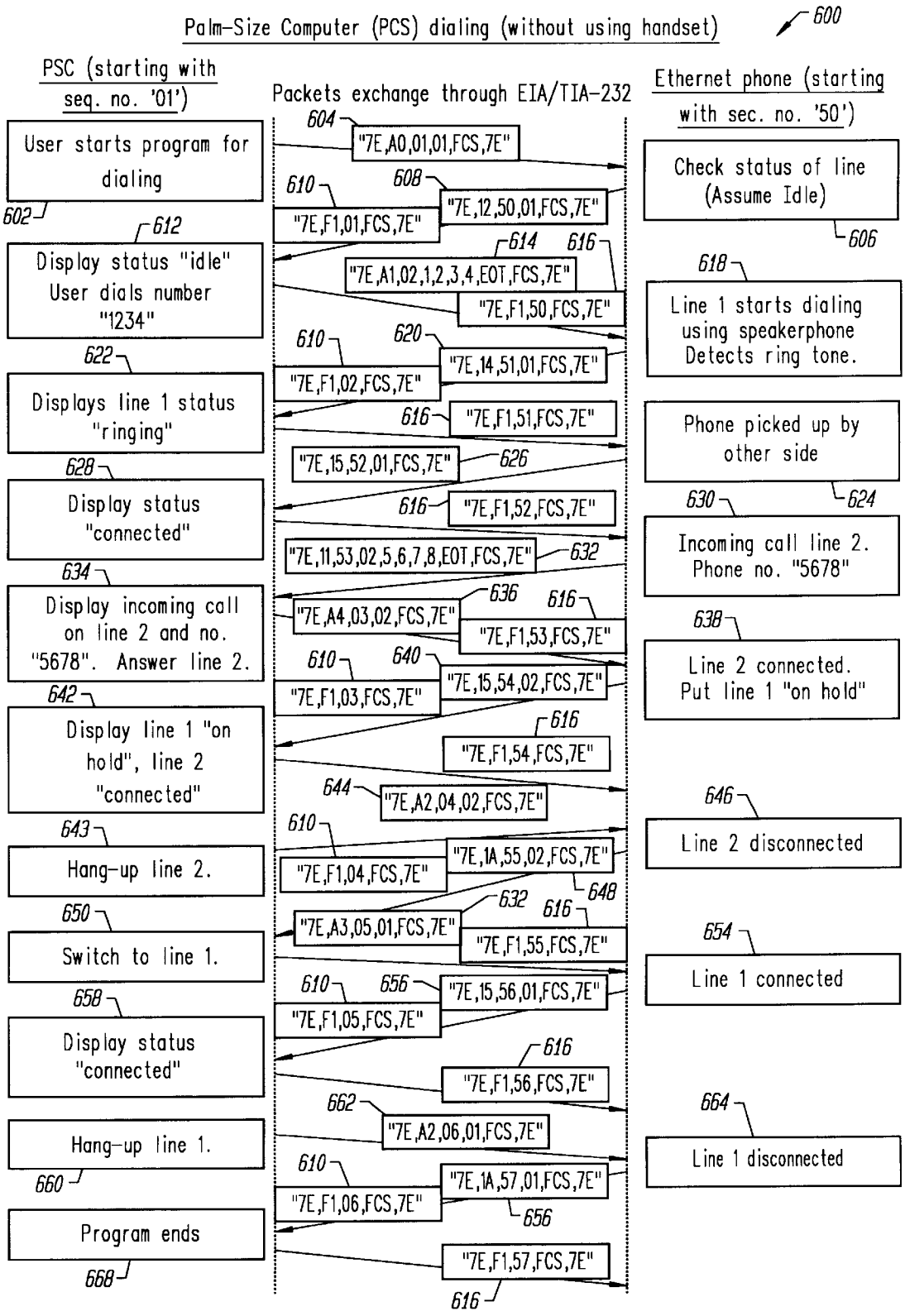

Palm-Size Computer (PCS) dialing (without using handset)
600
PSC (starting with seq. no. '01')
Packets exchange through EIA/TIA-232
Ethernet phone (starting with sec. no. '50')
User starts program for dialing
602
Display status "idle" User dials number "1234"
612
Displays line 1 status "ringing"
622
Display status "connected"
628
Display incoming call on line 2 and no. "5678". Answer line 2.
634
Display line 1 "on hold", line 2 "connected"
642
Hang-up line 2.
643
Switch to line 1.
650
Display status "connected"
658
Hang-up line 1.
660
Program ends
668
604
"7E,A0,01,01,FCS,7E"
Check status of line (Assume Idle)
606
610
608
"7E,12,50,01,FCS,7E"
"7E,F1,01,FCS,7E"
614
616
"7E,A1,02,1,2,3,4,EOT,FCS,7E"
"7E,F1,50,FCS,7E"
618
Line 1 starts dialing using speakerphone Detects ring tone.
620
"7E,14,51,01,FCS,7E"
"7E,F1,02,FCS,7E"
"7E,F1,51,FCS,7E"
Phone picked up by other side
624
"7E,15,52,01,FCS,7E"
626
"7E,F1,52,FCS,7E"
630
Incoming call line 2. Phone no. "5678"
"7E,11,53,02,5,6,7,8,EOT,FCS,7E"
632
636
"7E,A4,03,02,FCS,7E"
"7E,F1,53,FCS,7E"
638
Line 2 connected. Put line 1 "on hold"
640
"7E,15,54,02,FCS,7E"
"7E,F1,03,FCS,7E"
"7E,F1,54,FCS,7E"
644
"7E,A2,04,02,FCS,7E"
646
Line 2 disconnected
"7E,1A,55,02,FCS,7E"
"7E,F1,04,FCS,7E"
648
"7E,A3,05,01,FCS,7E"
"7E,F1,55,FCS,7E"
654
Line 1 connected
656
"7E,15,56,01,FCS,7E"
"7E,F1,05,FCS,7E"
"7E,F1,56,FCS,7E"
662
"7E,A2,06,01,FCS,7E"
664
Line 1 disconnected
"7E,1A,57,01,FCS,7E"
"7E,F1,06,FCS,7E"
656
"7E,F1,57,FCS,7E"

*FIG. 6*

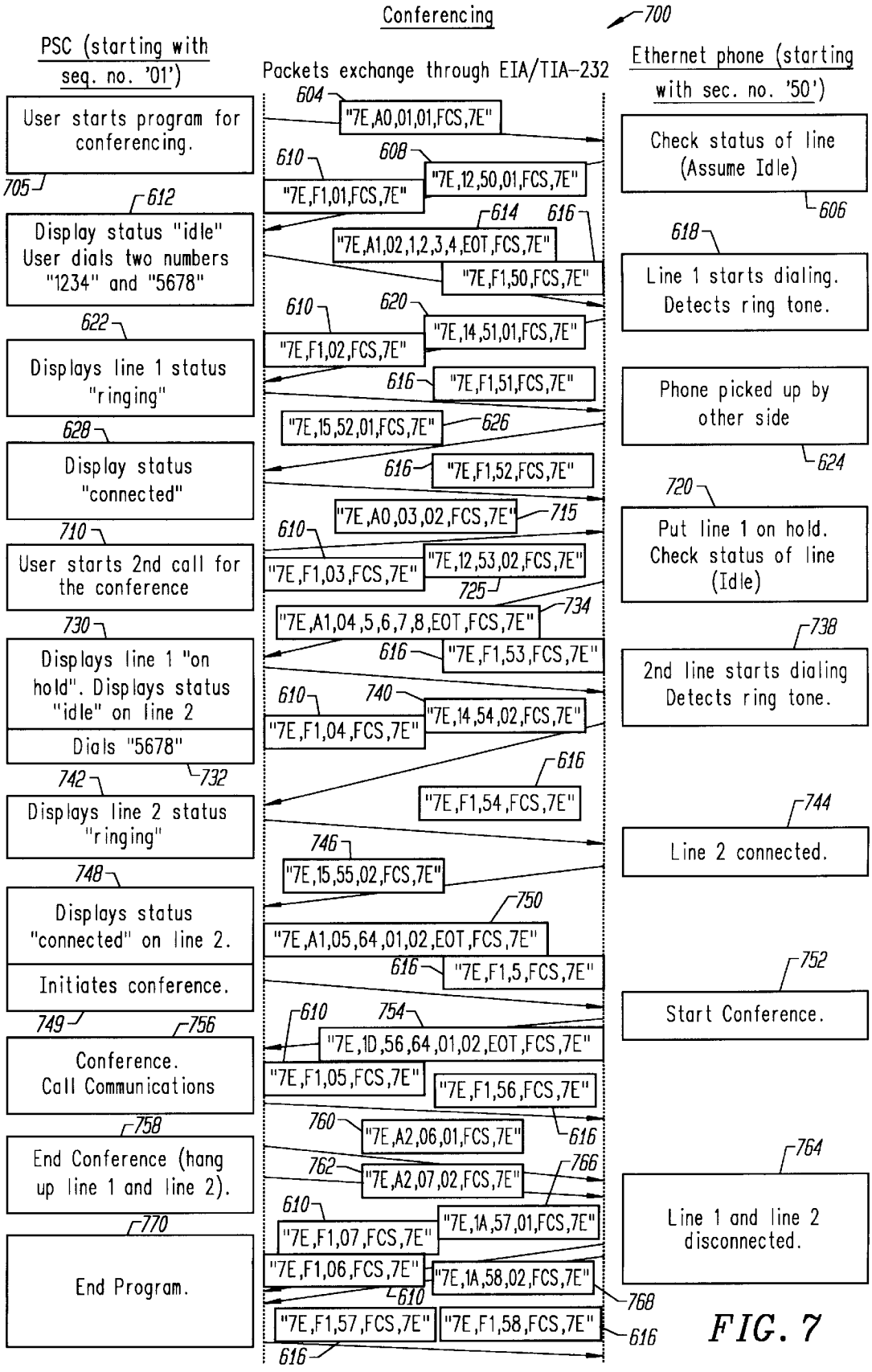

Conferencing
700
PSC (starting with seq. no. '01')
Packets exchange through EIA/TIA-232
Ethernet phone (starting with sec. no. '50')
User starts program for conferencing.
705
"7E,A0,01,01,FCS,7E"
604
Check status of line (Assume Idle)
606
"7E,12,50,01,FCS,7E"
608
"7E,F1,01,FCS,7E"
610
612
Display status "idle" User dials two numbers "1234" and "5678"
"7E,A1,02,1,2,3,4,EOT,FCS,7E"
614
"7E,F1,50,FCS,7E"
616
618
Line 1 starts dialing. Detects ring tone.
"7E,14,51,01,FCS,7E"
620
"7E,F1,02,FCS,7E"
610
622
Displays line 1 status "ringing"
"7E,F1,51,FCS,7E"
616
Phone picked up by other side
624
"7E,15,52,01,FCS,7E"
626
"7E,F1,52,FCS,7E"
616
628
Display status "connected"
"7E,A0,03,02,FCS,7E"
715
720
Put line 1 on hold. Check status of line (Idle)
"7E,12,53,02,FCS,7E"
"7E,F1,03,FCS,7E"
610
710
User starts 2nd call for the conference
725
"7E,A1,04,5,6,7,8,EOT,FCS,7E"
734
"7E,F1,53,FCS,7E"
616
738
2nd line starts dialing Detects ring tone.
730
Displays line 1 "on hold". Displays status "idle" on line 2
"7E,14,54,02,FCS,7E"
740
"7E,F1,04,FCS,7E"
610
Dials "5678"
732
"7E,F1,54,FCS,7E"
616
742
Displays line 2 status "ringing"
744
Line 2 connected.
"7E,15,55,02,FCS,7E"
746
748
Displays status "connected" on line 2.
"7E,A1,05,64,01,02,EOT,FCS,7E"
750
"7E,F1,5,FCS,7E"
616
752
Start Conference.
Initiates conference.
"7E,1D,56,64,01,02,EOT,FCS,7E"
754
610
749
Conference. Call Communications
756
"7E,F1,05,FCS,7E"
"7E,F1,56,FCS,7E"
616
"7E,A2,06,01,FCS,7E"
760
764
Line 1 and line 2 disconnected.
758
End Conference (hang up line 1 and line 2).
"7E,A2,07,02,FCS,7E"
762
766
"7E,1A,57,01,FCS,7E"
"7E,F1,07,FCS,7E"
610
770
End Program.
"7E,F1,06,FCS,7E"
"7E,1A,58,02,FCS,7E"
768
610
"7E,F1,57,FCS,7E"
"7E,F1,58,FCS,7E"
616
616

FIG. 7

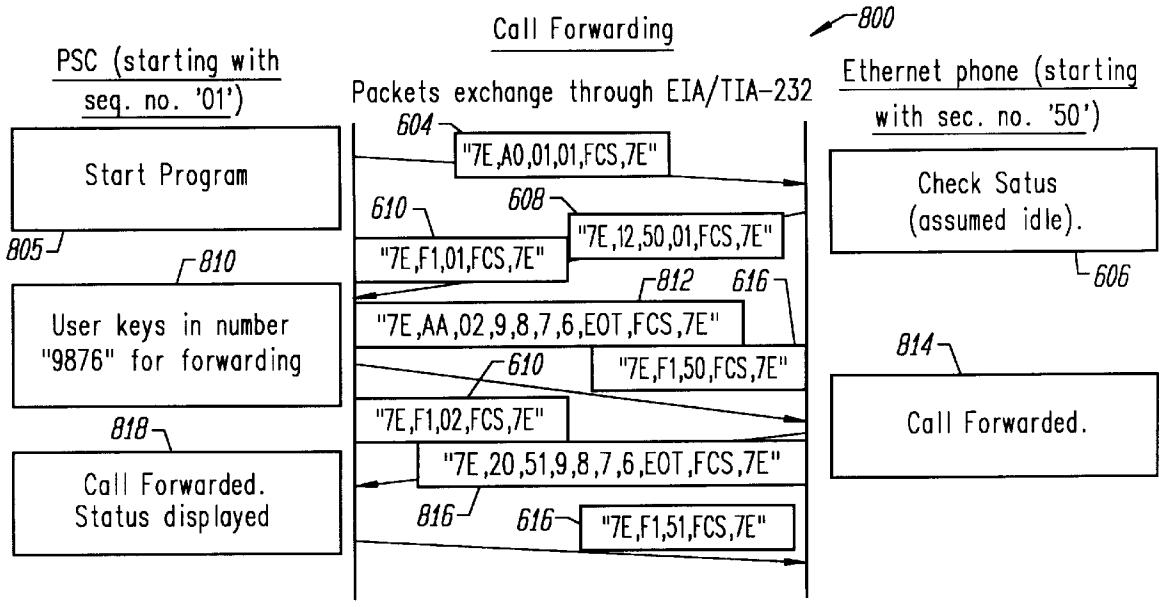

Call Forwarding
800
PSC (starting with seq. no. '01')
Packets exchange through EIA/TIA-232
Ethernet phone (starting with sec. no. '50')
604
"7E,A0,01,01,FCS,7E"
Start Program
610
608
"7E,12,50,01,FCS,7E"
"7E,F1,01,FCS,7E"
Check Satus (assumed idle).
805
810
812
616
606
User keys in number "9876" for forwarding
"7E,AA,02,9,8,7,6,EOT,FCS,7E"
814
610
"7E,F1,50,FCS,7E"
"7E,F1,02,FCS,7E"
Call Forwarded.
818
"7E,20,51,9,8,7,6,EOT,FCS,7E"
Call Forwarded. Status displayed
816
616
"7E,F1,51,FCS,7E"

*FIG. 8*

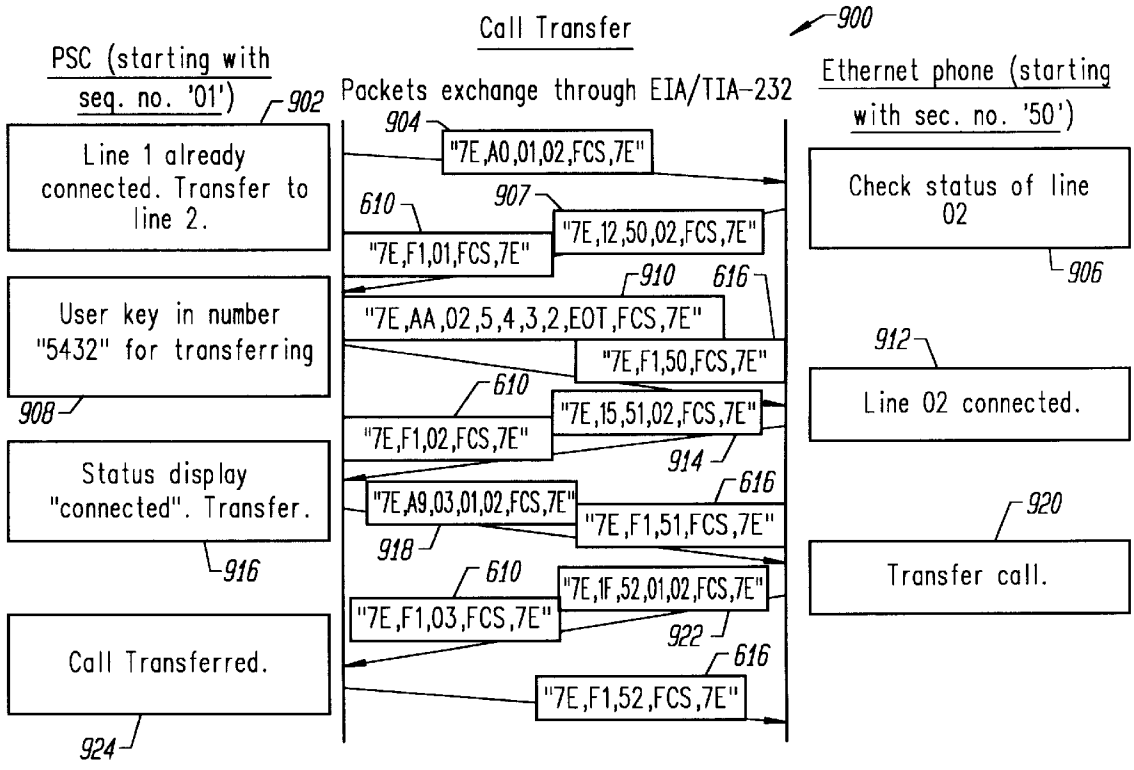

Call Transfer
900
PSC (starting with seq. no. '01')
902
Packets exchange through EIA/TIA-232
Ethernet phone (starting with sec. no. '50')
Line 1 already connected. Transfer to line 2.
904
"7E,A0,01,02,FCS,7E"
Check status of line 02
906
610
907
"7E,12,50,02,FCS,7E"
"7E,F1,01,FCS,7E"
910
616
User key in number "5432" for transferring
"7E,AA,02,5,4,3,2,EOT,FCS,7E"
908
"7E,F1,50,FCS,7E"
912
610
"7E,15,51,02,FCS,7E"
Line 02 connected.
"7E,F1,02,FCS,7E"
914
Status display "connected". Transfer.
616
"7E,A9,03,01,02,FCS,7E"
"7E,F1,51,FCS,7E"
920
916
918
610
"7E,1F,52,01,02,FCS,7E"
Transfer call.
"7E,F1,03,FCS,7E"
922
Call Transferred.
616
"7E,F1,52,FCS,7E"
924

*FIG. 9*

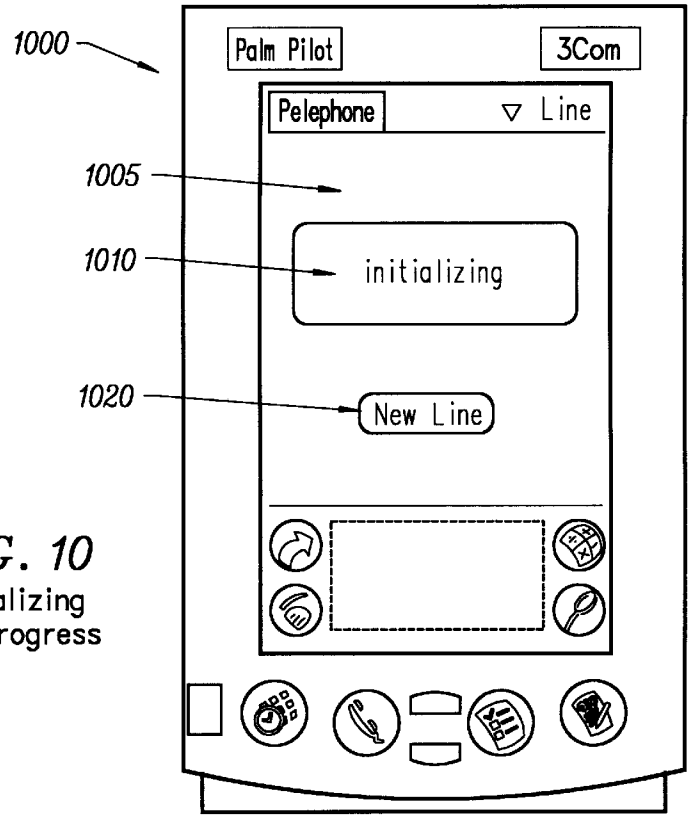



*FIG. 10*
Initializing in Progress

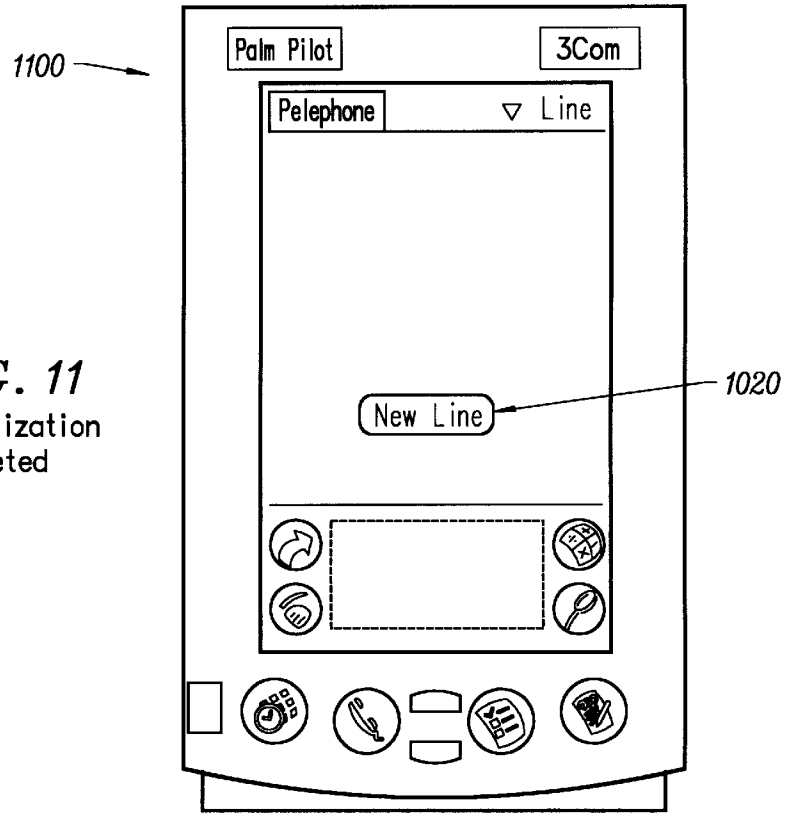



*FIG. 11*
Initialization Completed

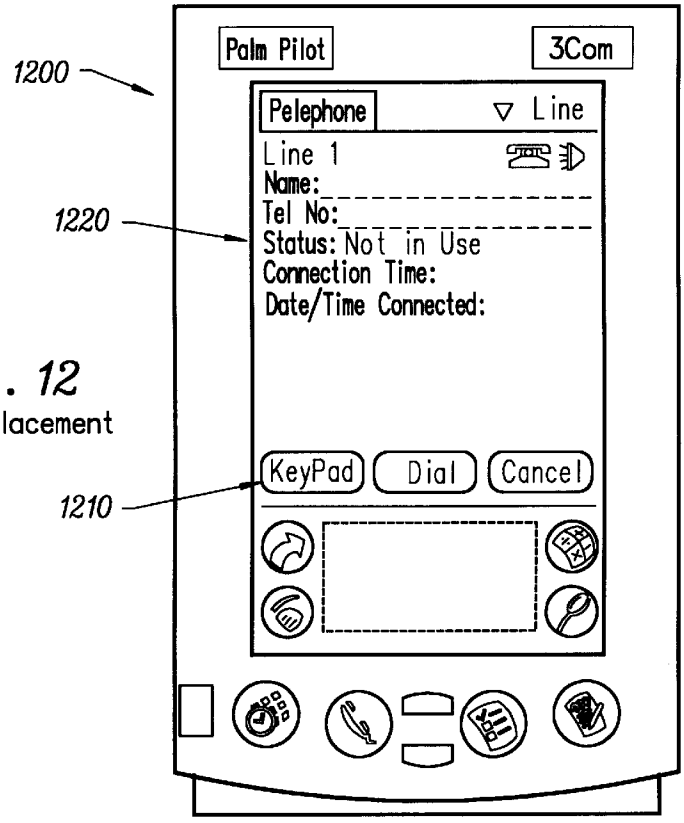



*FIG. 12*
Call Placement

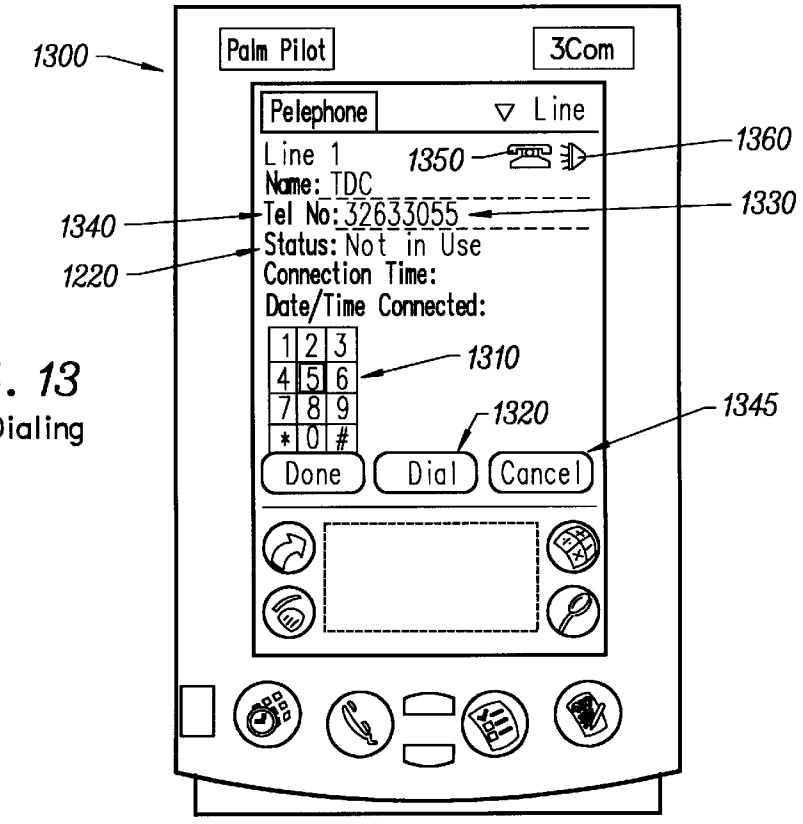



*FIG. 13*
User Dialing

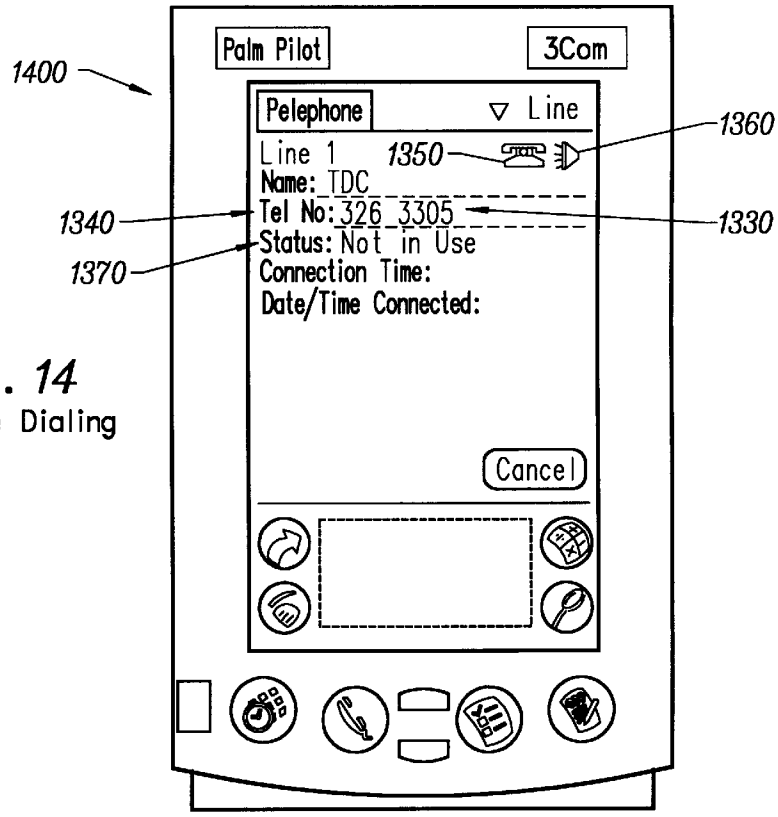



*FIG. 14*
Telephone Dialing

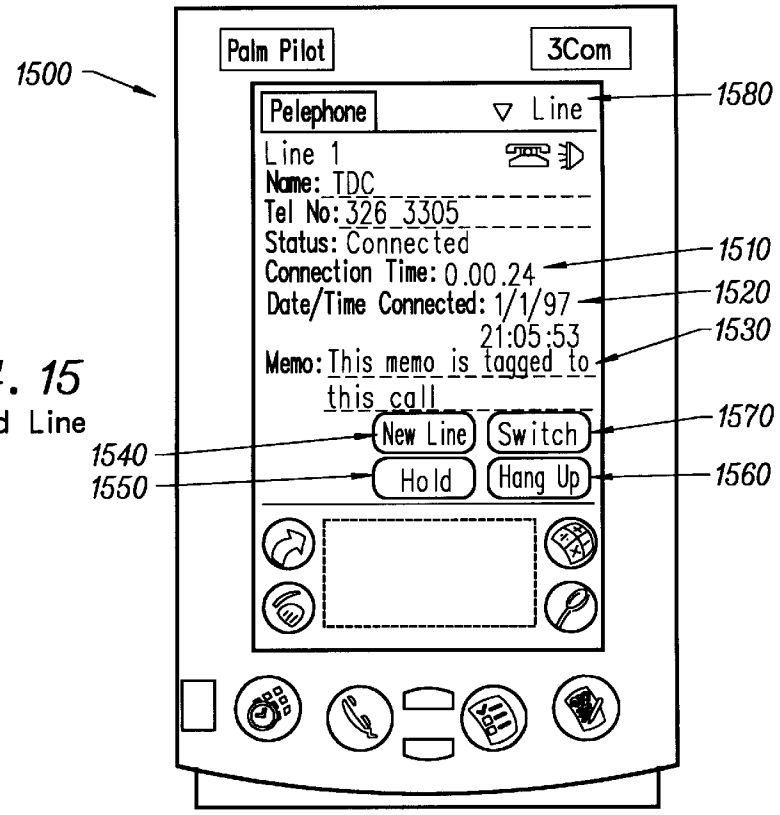



*FIG. 15*
Connected Line

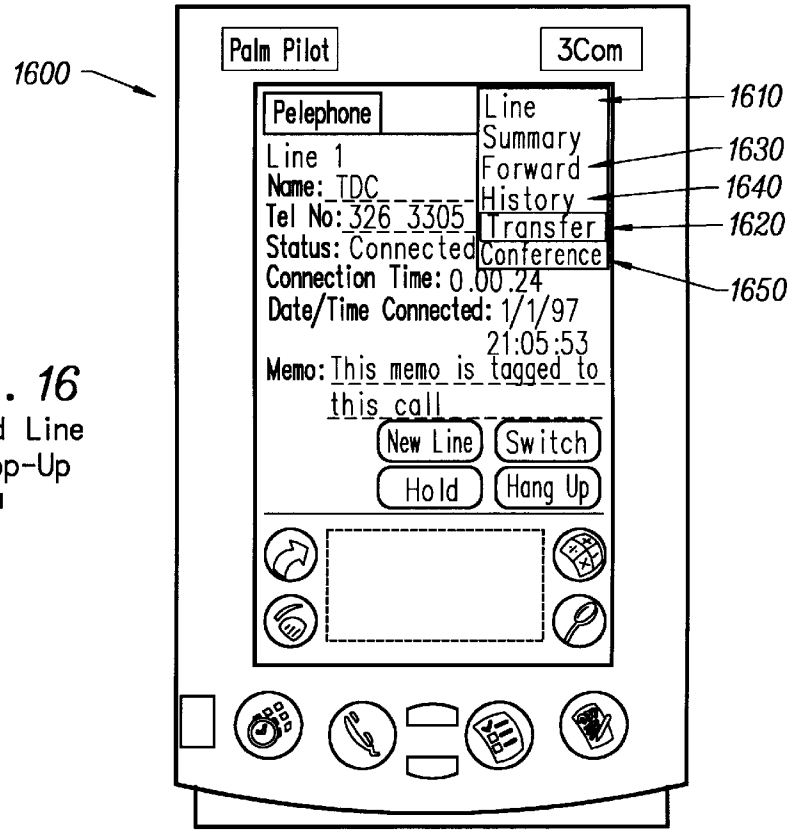



*FIG. 16*
Connected Line with Pop-Up Menu

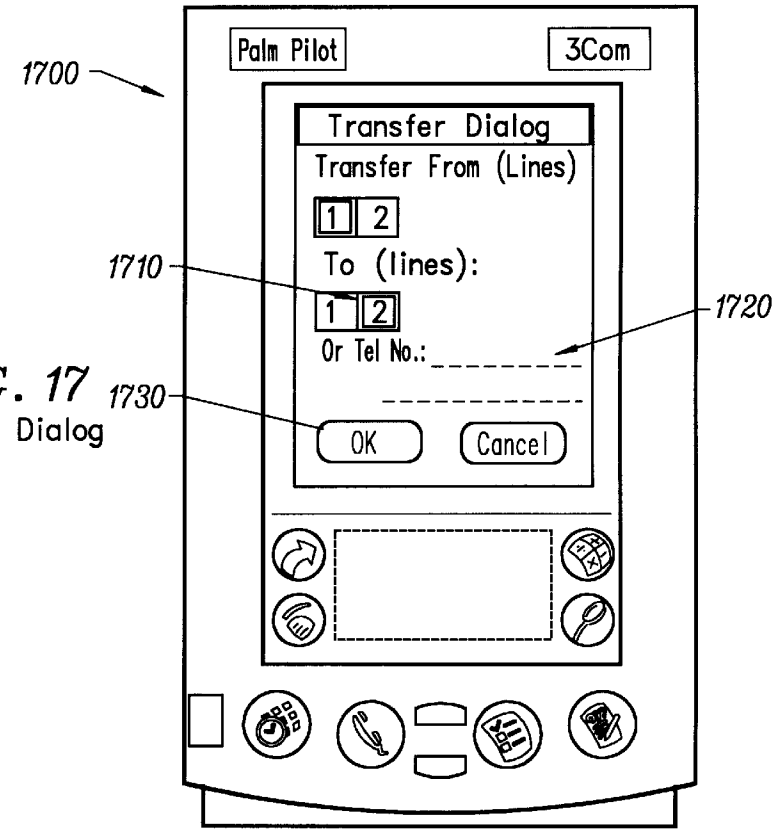



*FIG. 17*
Transfer Dialog

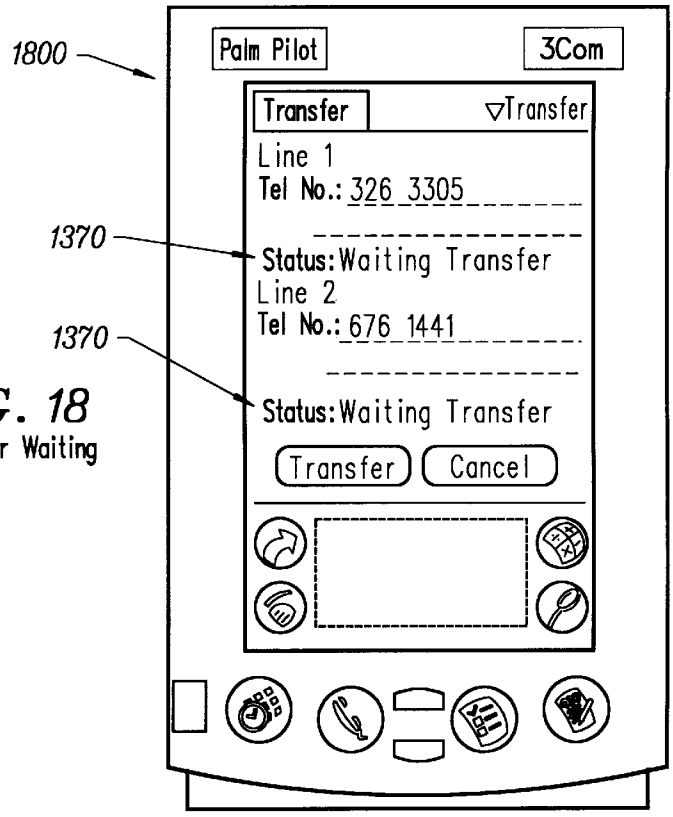



FIG. 18
Transfer Waiting

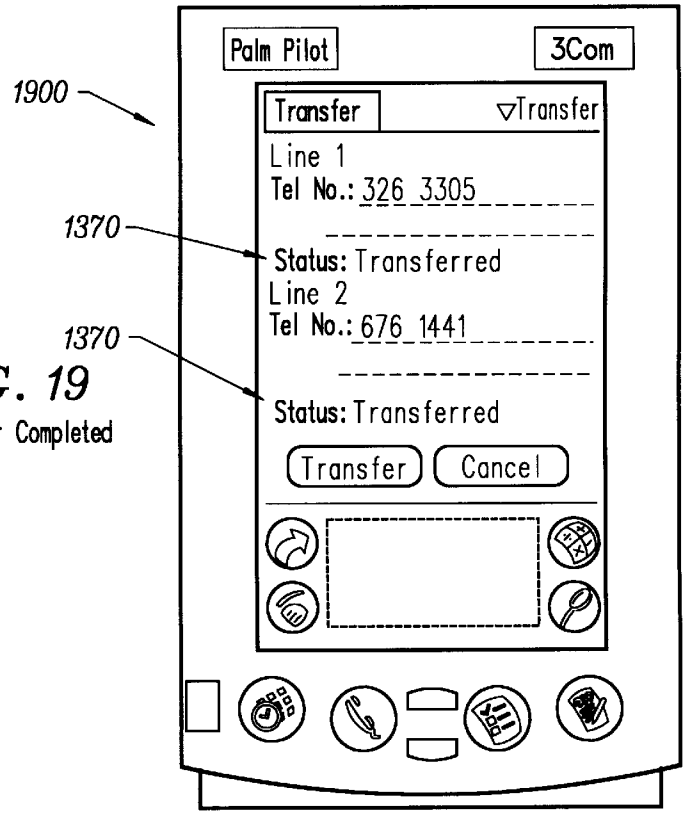



FIG. 19
Transfer Completed

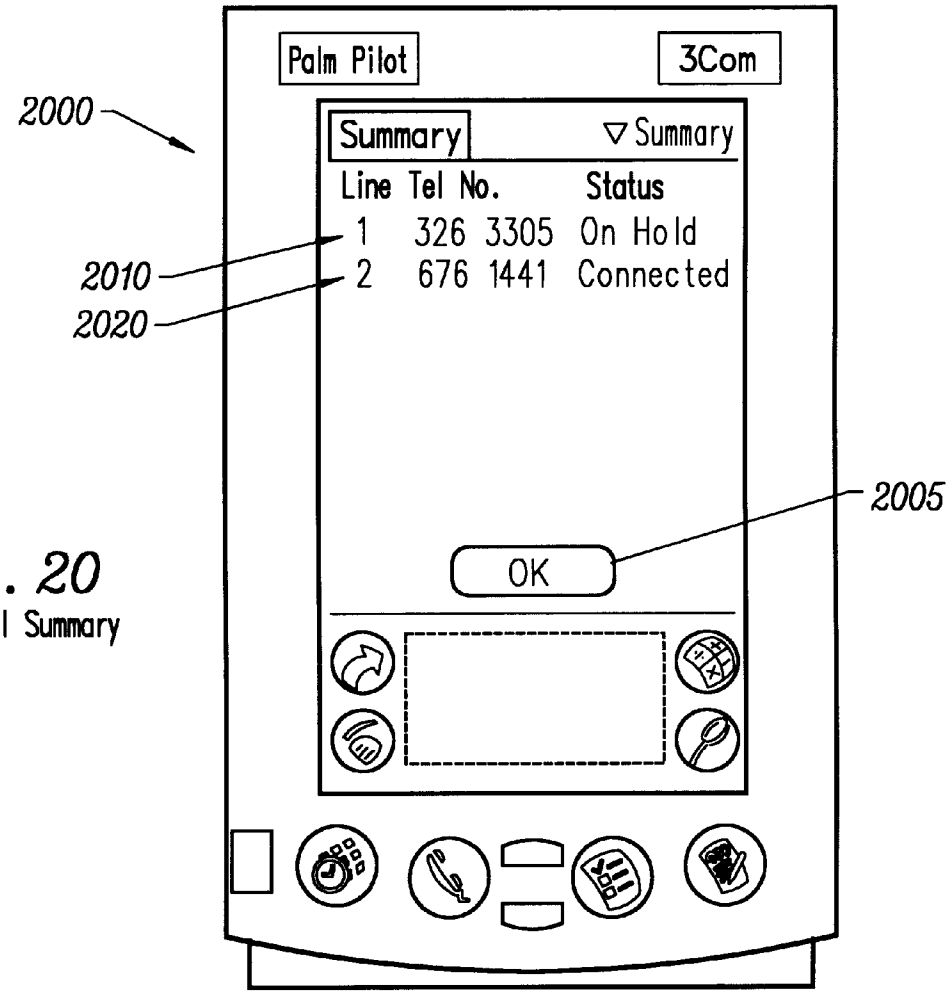



*FIG. 20*
Active Call Summary

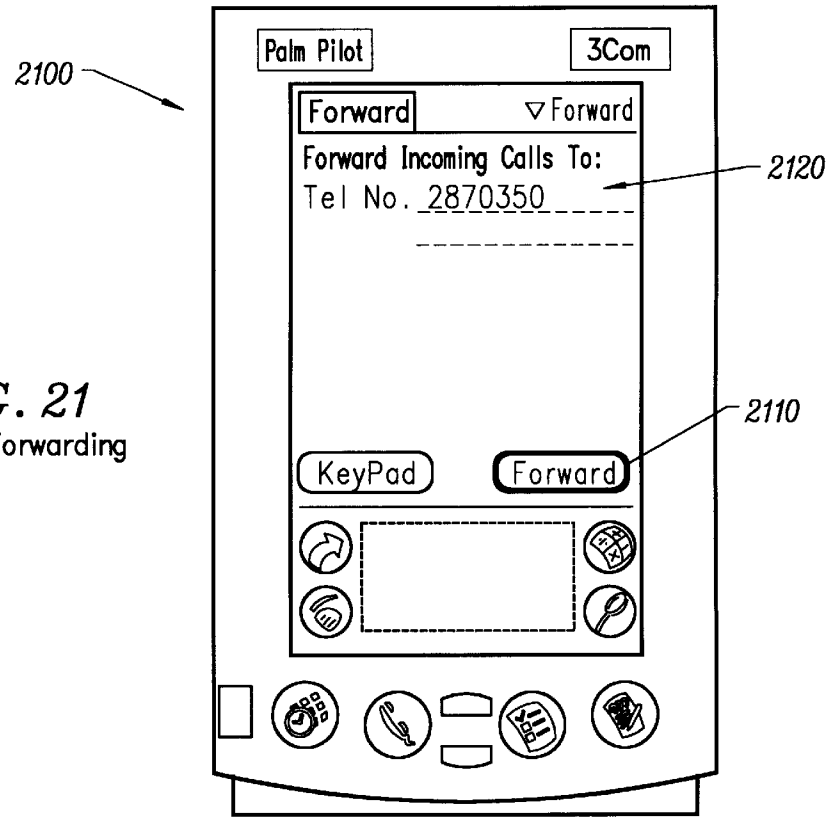



*FIG. 21*
First Forwarding

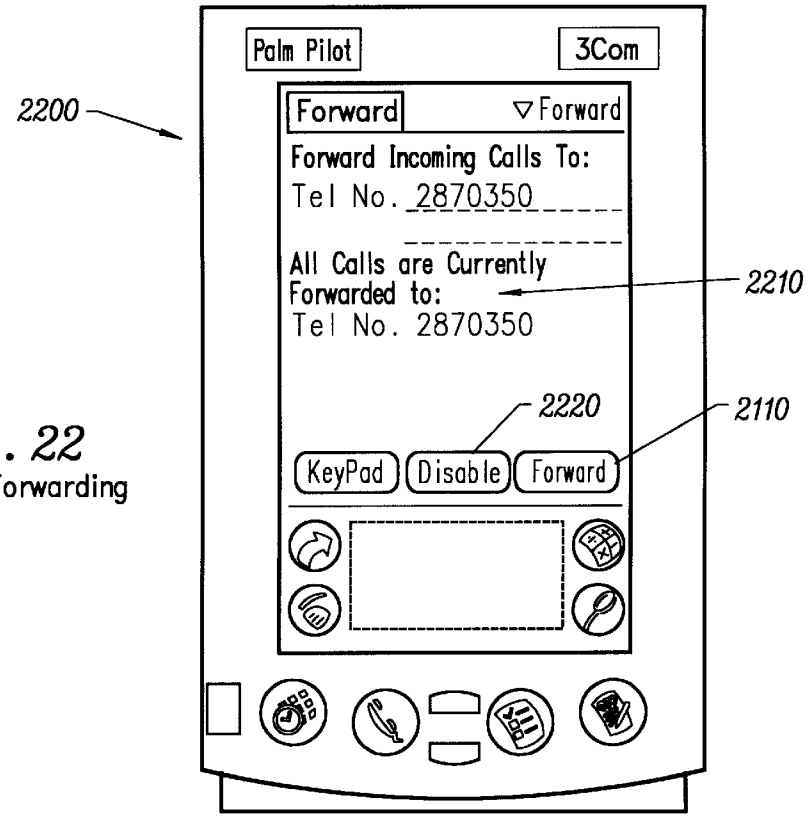



*FIG. 22*
Second Forwarding

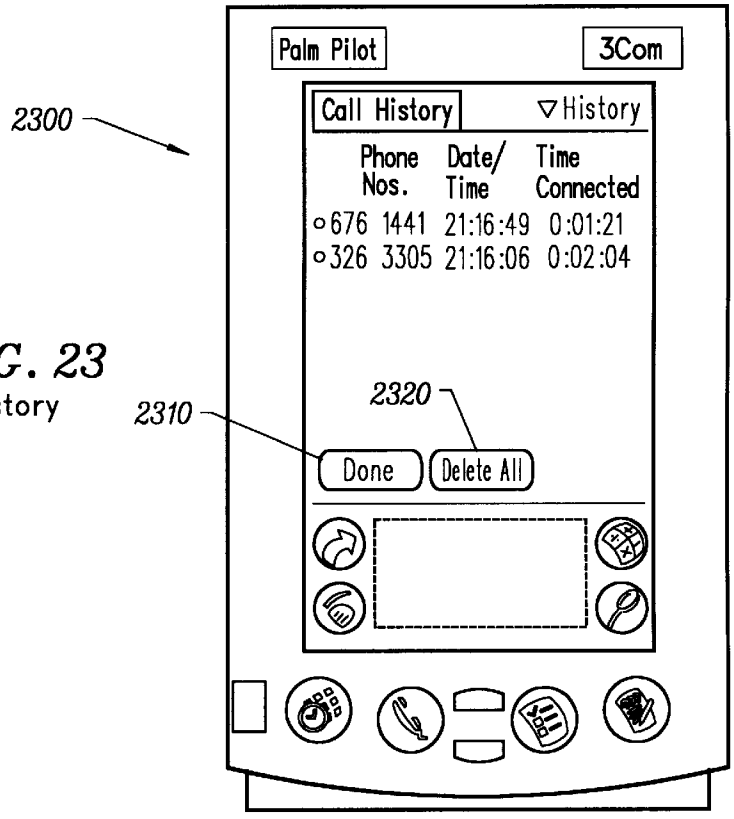



FIG. 23
History

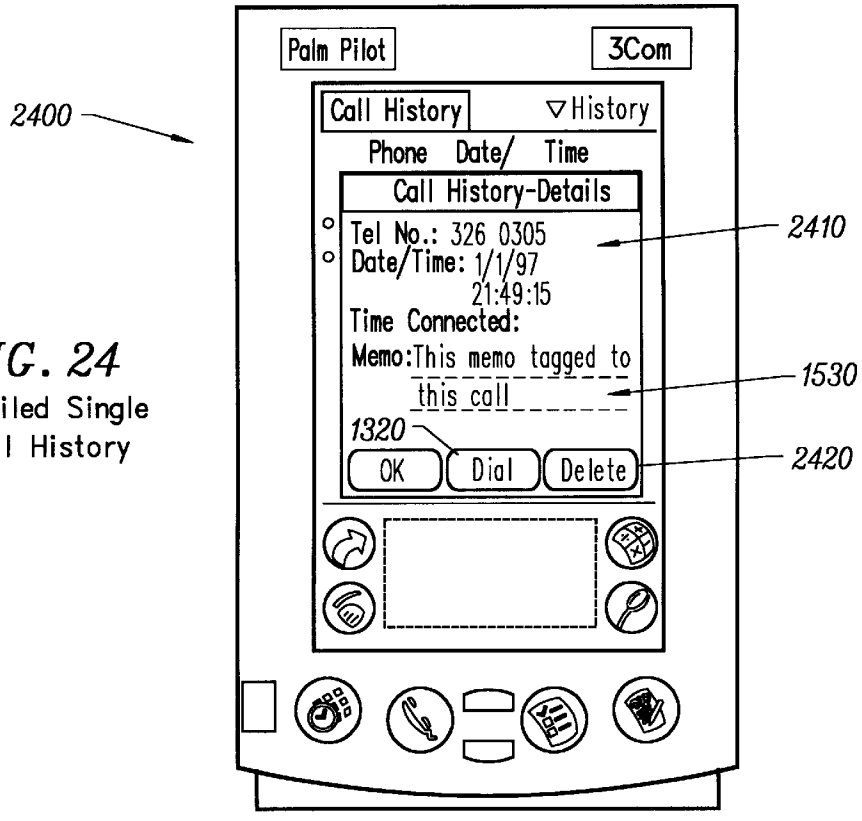



FIG. 24
Detailed Single
Call History

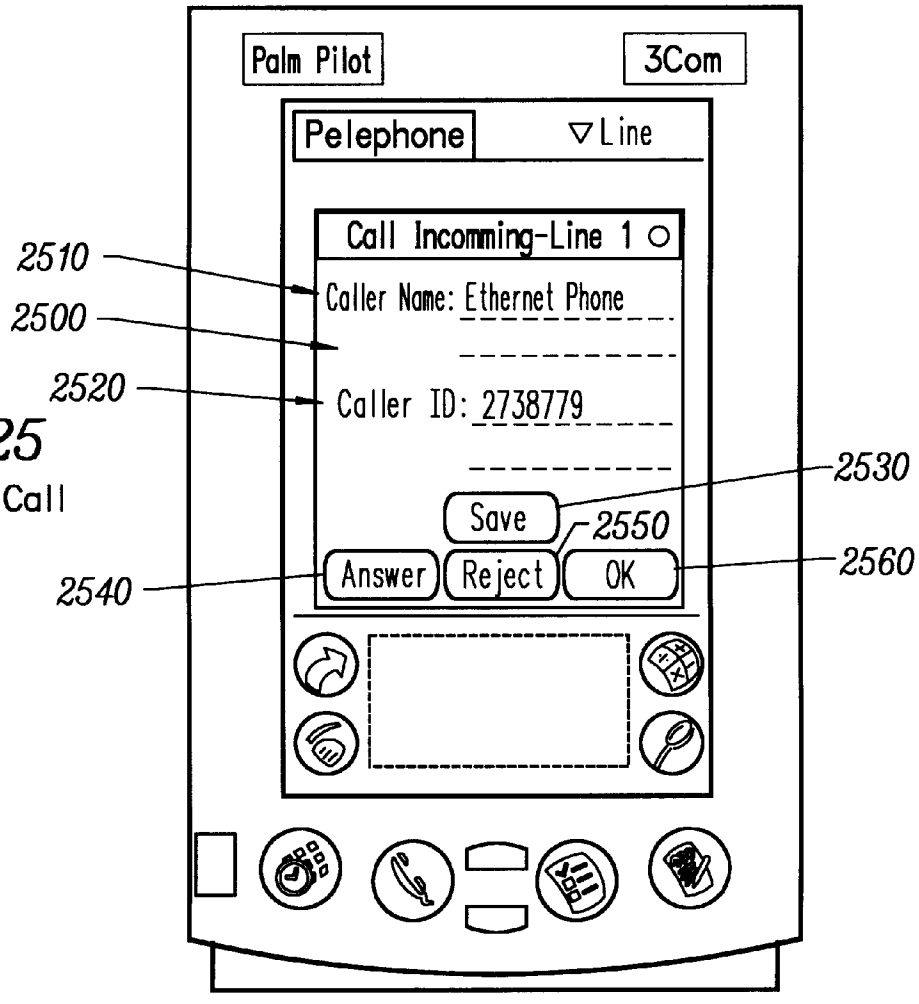



FIG. 25
Incomming Call

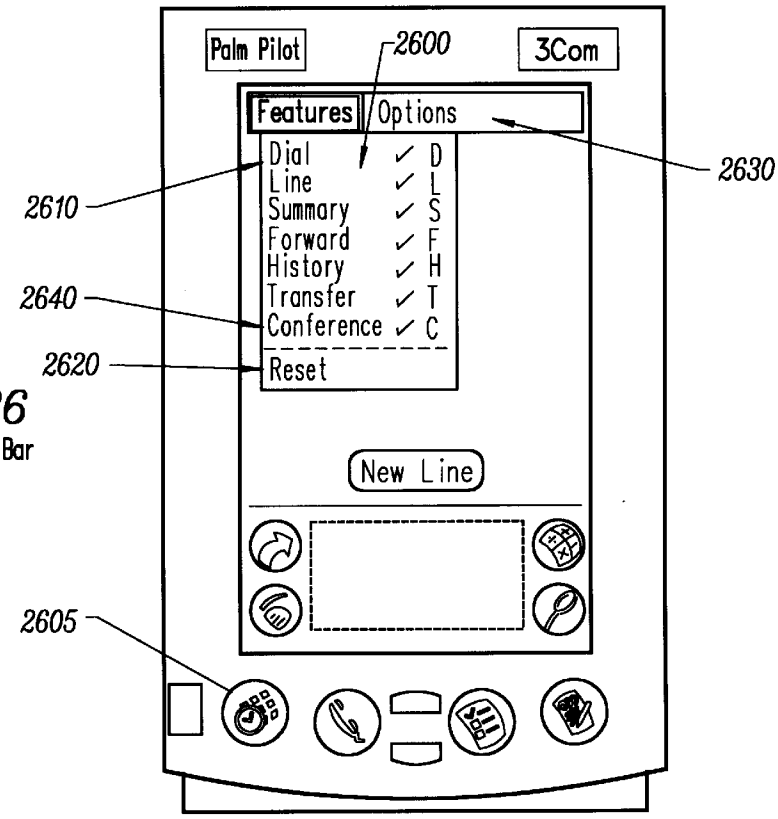



*FIG. 26*
Features Menu Bar

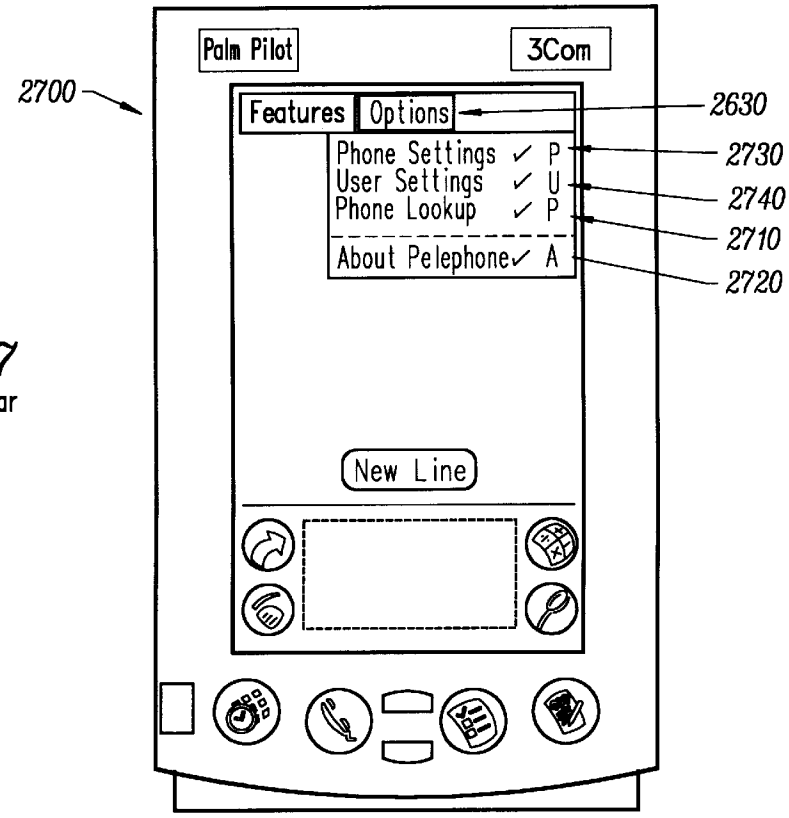



*FIG. 27*
Options Menu Bar

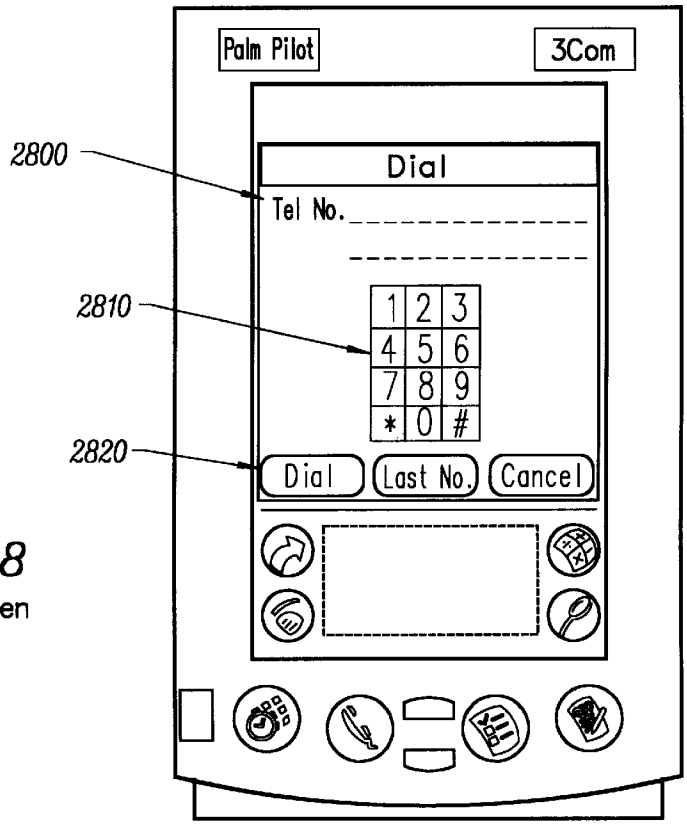



*FIG. 28*
Dial Screen

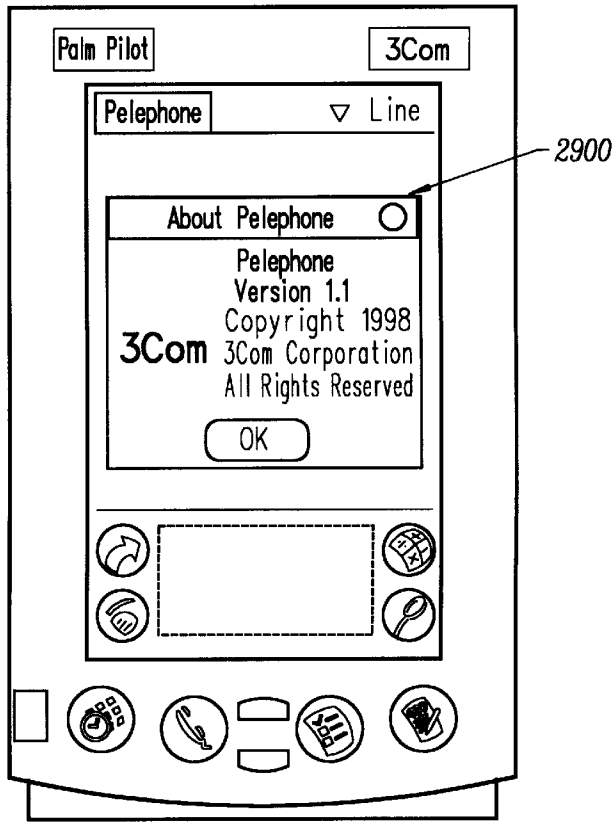



*FIG. 29*
Copyright Information

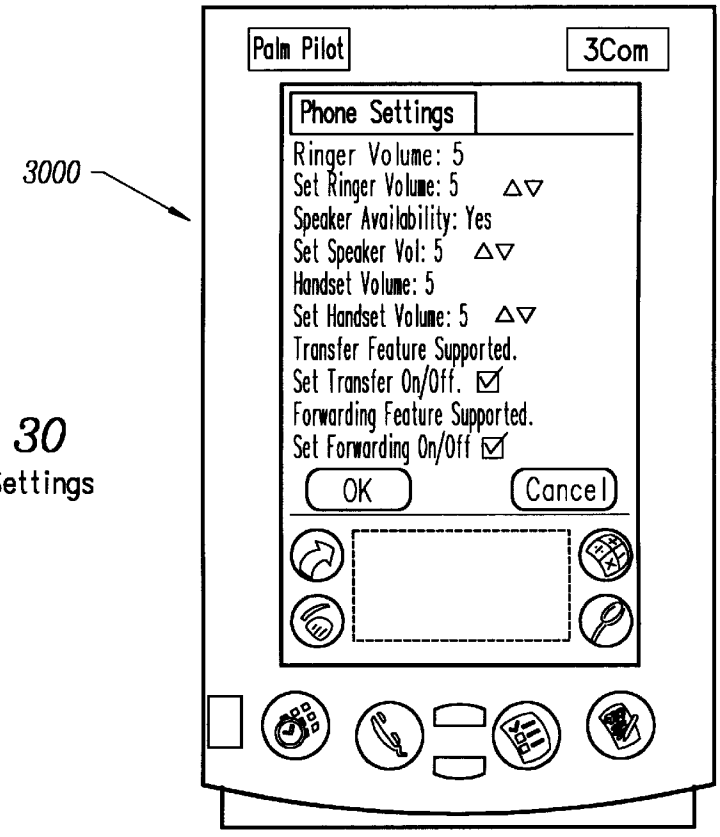



*FIG. 30*
Phone Settings

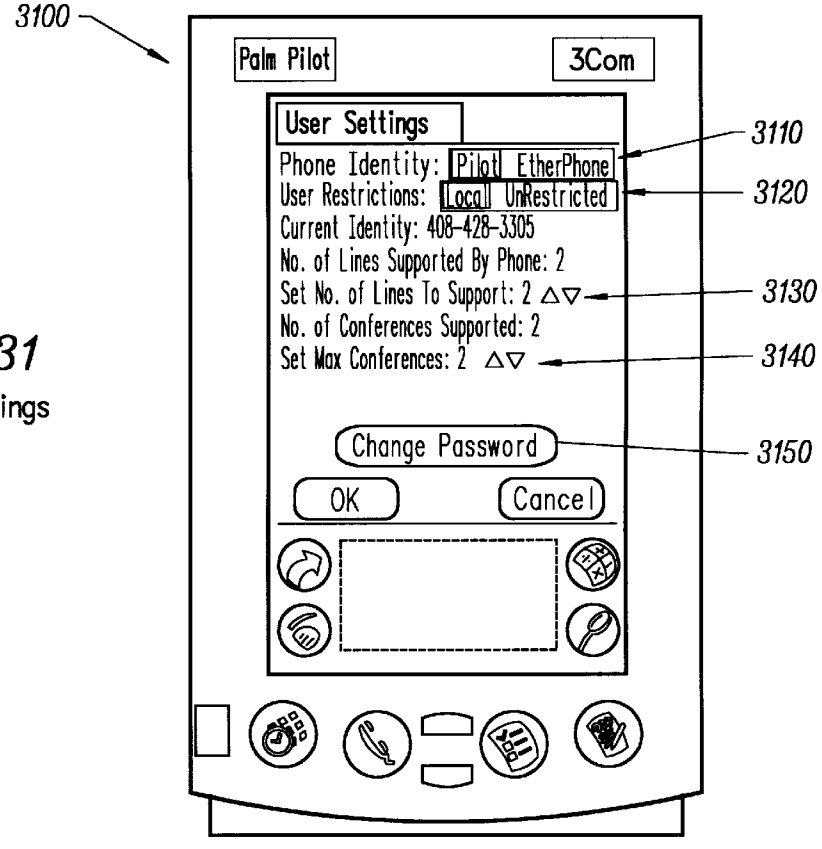



*FIG. 31*
User Settings

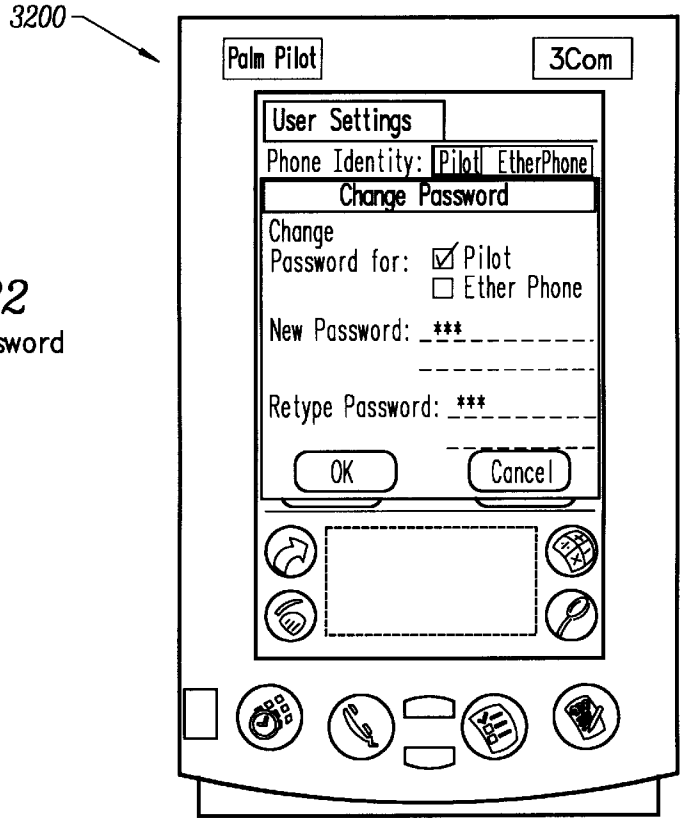



*FIG. 32*
Change Password

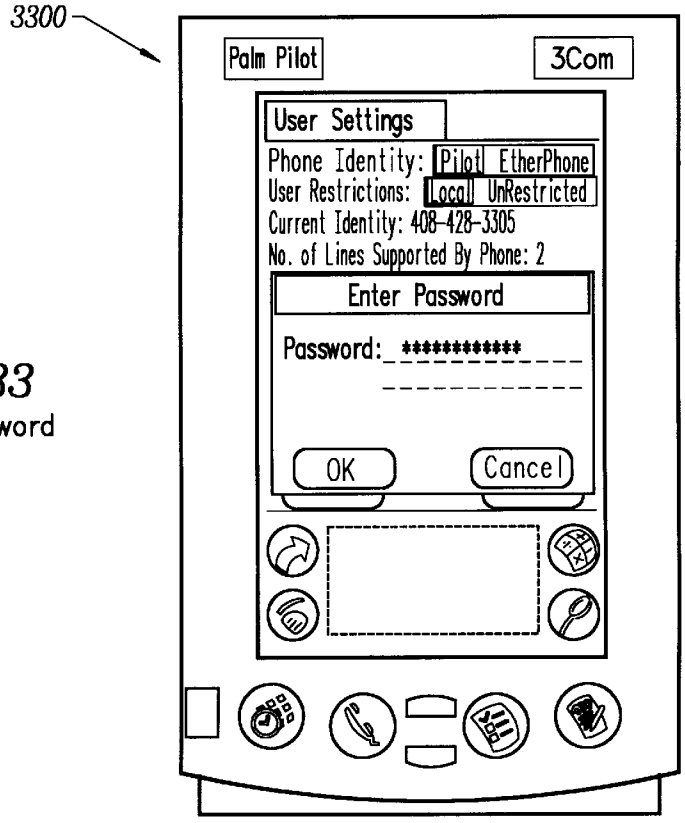



*FIG. 33*
Enter Password

*FIG. 34*
Conferencing Screen

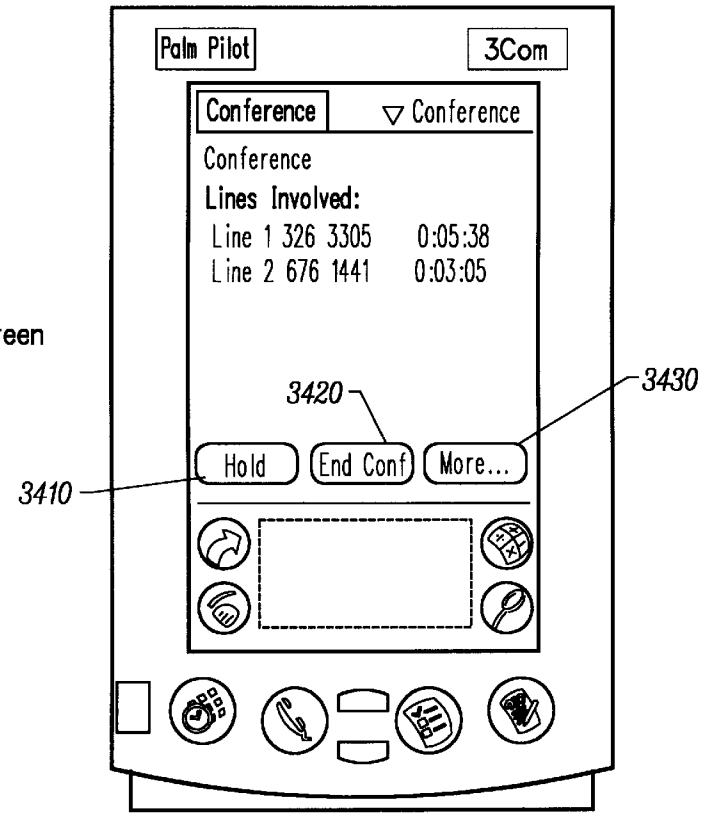
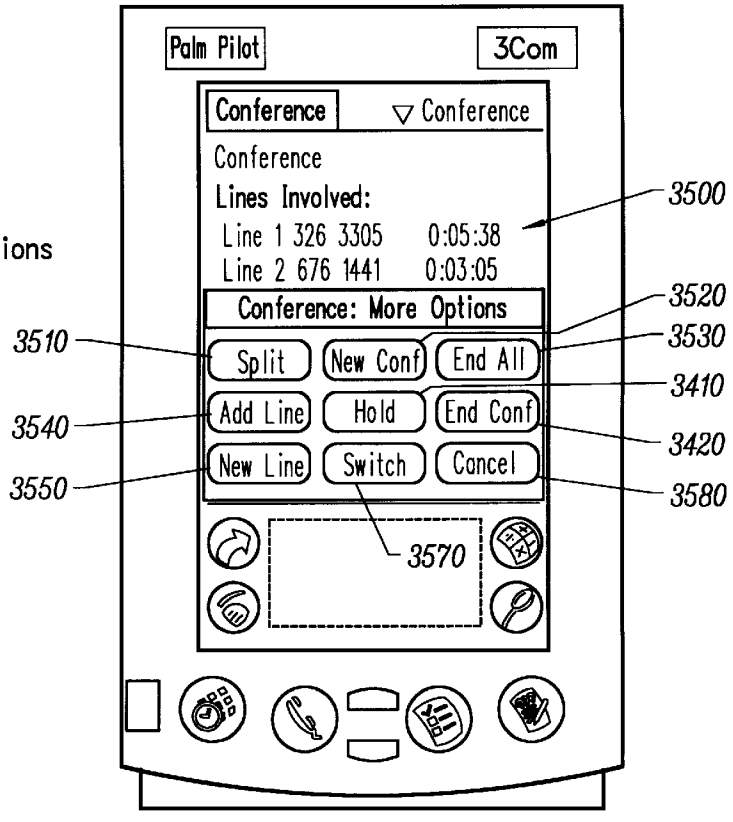



*FIG. 35*
Conference Options



# METHOD, APPARATUS AND COMMUNICATIONS SYSTEM FOR COMPANION INFORMATION AND NETWORK APPLIANCES

## BACKGROUND OF THE INVENTION

1. Field of Invention

The invention generally relates to network communications devices. More specifically, the invention relates to the combination of a portable computer with a communications device to form a more capable compound network apparatus.

2. Description of Related Art

Recent advances in the manufacture and design of integrated circuits have enabled technology producers to provide portable instruments with ever-increasing processing capabilities. Advances in liquid crystal diode displays, stylus based input devices, and handwritten character recognition have also resulted in the availability of palm-sized computers [or personal digital assistants (PDAs)], such as the Palm III and PalmProfessional from Palm Computing, Inc., Mountain View, Calif. The primary advantage of these devices is the combination of small size, lightweight, and stored information that can be customized for a particular user. These computers provide functions such as note taking, data retrieval and storage, application program execution, and interfacing with external devices. The palm-sized computers have been very successful in calendar and telephone directory utilities, and also enable users to have access to e-mail, and to even play games.

The prior art includes accessories that allow a portable computer to become part of a telecommunications device. One such accessory is described in U.S. Pat. No. 5,606,594, granted to Register et al. on Feb. 25, 1997, entitled "Communication Accessory and Method of Telecommunicating for a PDA". A top-edge view of the PDA **100** adapted for insertion into the accessory is provided in FIG. **1**A. The PDA **100** has one or more buttons **110** and an electronic link connector **120**. As shown in FIG. **1**B, the accessory **150** is specially adapted to receive a particular PDA. The PDA **100** can be releasably inserted into the accessory **150**. The PDA **100** electronic link connector **120** mates with the accessory **150** electronic link connector **160**. The external surfaces of the PDA **100** fit within the retaining wall **170**, and concave surface **180** of the accessory **150**. The retention ridges **190** are disposed to cover the top and bottom portion of the exterior of the PDA **100** by rotating the rotatable body extensions **195** of the accessory **150**.

The accessory **150** allows the PDA to play a part in managing voice communications for the user, and to send and receive data. Similarly, U.S. Pat. No. 5,497,339, granted to Bernard on Mar. 5, 1996 provides for PDA that mounts within a communications device. However, none of the communications devices in the prior art provide methods for software implementation of telephone call processing functions. Also missing from the prior art is the method for storing the phone number and user parameters in the PDA and then deploying the communications device with the PDA/user phone number and user characteristics.

Accordingly, what is needed in the art is a method and apparatus for companion information and network appliances that incorporates software implementation of telephone call processing functions, and storage of phone number and user parameters in the PDA for network appliance deployment.

## SUMMARY OF THE INVENTION

The invention provides an information appliance and a network appliance that function independently as well as



with each other. The information appliance stores information corresponding to a particular user. The network appliance is linked to a local area network and is capable of simultaneously exchanging voice and data messages with devices connected to the local area network.

The appliances are connected to each other physically through a communications port, and exchange specially formatted data corresponding to user personalized information, commands from the user, and responses including message status information from the network connected devices. The user personalized information enables the network appliance to perform network communications according to user specified settings and enables the network appliance to assume the user specific information appliance identification. The information appliance is typically a portable computer and in some embodiments is a palm-sized computer. The network appliance is typically a network attached phone and in some embodiments is an Ethernet telephone.

A first aspect of the invention provides a communications system comprising a telephone having capabilities, a portable computer connected to the telephone, and a network link connecting the telephone to network connected devices. The portable computer includes a port for connecting to the telephone, a memory storing user information corresponding to a user; and processing resources adapted to exchange data with the telephone. The data includes the user information and data corresponding to the telephone capabilities. The exchange of the data enables the portable computer to: discover capabilities of the telephone; provide the user information to the telephone; and establish telephone operating parameters for telephone communications with devices connected to the telephone based on the user information and the telephone capabilities.

In some embodiments, the communications system includes a gateway server connected to the network link, and switched circuit network devices connected to the gateway server.

In some embodiments, the communications system includes a router connected to the network link, and packet based network devices connected to the router. For some of these embodiments, the portable computer includes processing resources for Internet access, and the telephone includes processing resources for Internet access.

For some of the embodiments with Internet access capability, the portable computer includes processing resources for Internet access including Internet applications, transmission control software, and Internet protocol software. The telephone includes processing resources for Internet access including an Internet access application, transmission control software, Carrier Sense Multiple Access/Collision Detection software, and Internet protocol software.

For some of the embodiments with Internet access capability, the portable computer includes processing resources for Internet access including Internet display applications and display/user input transfer software. The telephone includes processing resources for Internet access including Internet applications, display/user input transfer software, transmission control software, Internet protocol software, and Carrier Sense Multiple Access/Collision Detection software.

In some embodiments, the portable computer comprises a palm-sized computer; and the telephone comprises an Ethernet telephone. In some embodiments, the data exchanged with the telephone corresponding to the telephone capabili-

ties and the user information are formatted according to an applications layer protocol. The applications layer protocol has frame formats for telephony functions.

In some embodiments, the portable computer includes processing resources for user interface support of video data. The telephone includes a display, and processing resources for video display and capture. In some embodiments, the portable computer includes processing resources for user interface support of video data, video data decoding, and video display. In some embodiments, the portable computer includes processing resources for user interface support of video data, video data decoding, video display, and video camera image data.

A second aspect of the invention provides a method for transmitting data from a portable computer to a telephone. The telephone has operating capabilities. The telephone is connected to network connected devices. The method comprises connecting the portable computer with the telephone, supplying the portable computer with telephone operating data, the portable computer exchanging the telephone operating parameter data and the operating capabilities with the telephone, and the portable computer establishing telephone operating parameters for a communications sessions. In some embodiments, the method includes the user starting a telephony program with the portable computer controlling execution of the telephony program.

The telephone operating parameter data is for a communications session including an exchange of messages with one or more of the network connected devices. In some embodiments, the communications session includes simultaneous exchanges of voice and packet data messages.

The telephone operating parameters for the communications session are based on the telephone operating parameter data and the operating capabilities. The telephone operating parameters provide options and features for the communications session. In some embodiments, the operating parameter data comprises constructs formatted according to an applications layer protocol, the applications layer protocol having frame formats for telephony functions.

In some embodiments, prior to connecting the portable computer with the telephone, the portable computer stores user information. The user information can include an identification corresponding to the portable computer, user access parameters, and user characteristics corresponding to the telephone operating parameter data. For some of these embodiments, establishing telephone operating parameters includes the user selecting user setting inputs. The user setting inputs corresponding to the portable computer identification, user access parameters, and user characteristics, the user selecting change the corresponding telephone operating parameter data. In one embodiment, the user setting inputs include the network address of the telephone, so that the user can change the network address provided by the telephone to be the network address of the portable computer.

In some embodiments, after the establishing step, the method includes one or more of the following programs: conferencing, dialing, receiving an incoming call, forwarding, transferring, and placing a call. For some of these embodiments, the telephone receives input data from the portable computer. The input data is formatted according to a data link layer protocol. The data link layer protocol encapsulates frames formatted according to an application layer protocol adapted for telephony functions. The telephone transforms the input data into transport data formatted according to a transport protocol for a packet switched network. The telephone transmits the transport data to a gateway server. The gateway server is connected by a local area network link to at least one switched circuit network including a public switched telephone network.

In some embodiments, the network connected devices include a gateway server. The gateway server provides access for the user to a public switched telephone network. For some of these embodiments, the telephone is also connected to a gatekeeper and a directory server by a local area network link. Communications between the telephone and the gatekeeper, gateway server, and directory server are formatted according to a soft private branch exchange telephony application layer protocol.

In some embodiments, the telephone is connected by a local area network link to a router. The router is connected to at least one packet based network including an Internet source. Communications between the router and the telephone are formatted according to packet based network application protocols.

A third aspect of the invention includes a method for exchanging voice and data messages between a telephone and devices connected to a network. The telephone is connected to the network. The method starts by connecting the telephone with a portable computer. The portable computer then exchanges telephone operating parameter data with the telephone. The operating parameter data provides options for communications between the telephone and the network connected devices.

Then, in response to a user indication of a desired communication, the portable computer exchanges call data with the telephone. The call data corresponds to the desired communication. The call data is formatted according to an application layer protocol, and the underlying transport, network, and data link layer protocols. The application layer protocol has frame formats for telephony functions.

The telephone then exchanges messages with an addressed network connected device. The messages correspond to the desired communication. The addressed network connected device has a network address. The message includes data corresponding to the address of the addressed network connected device.

In some embodiments, the method includes, prior to connecting the portable computer with the telephone, the portable computer storing user information. The operating parameter data comprises the user information. The user information comprises an identification corresponding to the portable computer and user access parameters. For some of these embodiments, the telephone has an identification. The method includes the telephone presenting and the identification corresponding to the portable computer to the network connected devices in place of the telephone identification.

In some embodiments, the telephone comprises an Ethernet telephone, and the portable computer comprises a palm-sized computer.

In some embodiments, the telephone is connected to a gatekeeper, a directory server and a gateway server by a local area network link. Communications between the telephone and the gatekeeper, the gateway server, and the directory server are formatted according to a soft private branch exchange telephony application layer protocol.

In some embodiments, the telephone is connected by a local area network link to a router. The router is connected to at least one packet based network including an Internet source. Communications between the router and the telephone are formatted according to packet based network application protocols.

In some embodiments, the exchange of messages includes simultaneous exchanges of voice and packet data messages.

A fourth aspect of the invention provides a portable computer adapted for connection to a telephone. The telephone has capabilities. The portable computer comprises a port for connecting to the telephone, a memory storing user information corresponding to a user; and processing resources adapted to exchange data with the telephone. The data exchanged with the telephone includes the user information and data corresponding to the telephone capabilities. The exchange of the data enables the portable computer to discover capabilities of the telephone, provide the user information to the telephone; and establish telephone operating parameters for telephone communications with devices connected to the telephone based on the user information and the telephone capabilities.

In some embodiments, the portable computer includes a display providing user interface graphic elements corresponding to data exchanged with the telephone, and a user interface enabling the user to input data supplementing the user information provided to the telephone. For some of these embodiments, the data exchanged with the telephone includes data corresponding to portable computer control of telephony programs, and data corresponding to the status of the devices connected to the telephone.

In some embodiments, the user information comprises an identification corresponding to the portable computer, user characteristics, and user access parameters. For some of these embodiments, the telephone has an identification, and the identification corresponding to the portable computer is presented by the telephone instead of the telephone identification to devices connected to and communicating with the telephone.

In some embodiments, the data exchanged with the telephone corresponding to portable computer control of the execution of the telephony programs, the telephone capabilities, and the user information are formatted according to an applications layer protocol. The applications layer protocol has frame formats for telephony functions.

In some embodiments, the portable computer comprises a palm-sized computer. In some embodiments, the portable computer is adapted to provide data processing and user interface functions without connection to the telephone. In some embodiments, the exchange of the data enables the portable computer to control execution of telephony programs.

In some embodiments, the portable computer includes processing resources for Internet access. The processing resources for Internet access can include Internet applications, transmission control software, and Internet protocol software. Alternatively, the processing resources for Internet access can include Internet display applications and display/user input transfer software.

In some embodiments, the portable computer includes processing resources for user interface support of video data. The processing resources for user interface support of video data can include video data decoding, and video display. Alternatively, the processing resources for user interface support of video data, video data decoding, video display, and video camera image data.

A fifth aspect of the invention provides a telephone adapted for connection to a portable computer. The portable computer has user information corresponding to a user. The telephone comprises a port for connecting to the portable computer, network communication capabilities, portable computer companion capabilities, and processing resources adapted to exchange data with the portable computer. The network communication capabilities include a communication port. The data includes the user information, data corresponding to the network communication capabilities; and the portable computer companion capabilities. The exchange of data enables the telephone to: discover user information and capabilities of the portable computer, provide the network communication capabilities and the portable computer companion capabilities to the portable computer, and indicate the network communication capabilities to devices connected to the telephone via a network.

In some embodiments, the portable computer is adapted to control execution of telephony programs. The data exchanged with the portable computer includes data corresponding to portable computer control of the telephony programs. Responsive to commands from the portable computer, the exchange of the data enables the telephone to communicate with devices connected to the telephone.

In some embodiments, the telephone has an identification and the portable computer has an identification. The portable computer identification is presented by the telephone in place of the telephone identification to devices connected to and communicating with the telephone.

In some embodiments, the telephone comprises an Ethernet telephone.

In some embodiments, the data exchanged with the portable computer corresponding to the telephone capabilities and the user information are formatted according to an applications layer protocol, the applications layer protocol having frame formats for telephony functions.

In some embodiments, the telephone includes processing resources adapted to receive incoming call data from a gateway server indicating that a first network connected device is waiting to start a call with a user, and processing resources adapted to transform the incoming call data into an incoming call message formatted in a data link layer protocol for transmission to the portable computer. The data link layer protocol encapsulates frames formatted according to the application layer protocol.

In some embodiments, the telephone provides the network communication capabilities to a user without connection to the portable computer.

In some embodiments, the telephone includes processing resources for Internet access. The processing resources for Internet access can include Internet applications, display/user input transfer software, transmission control software, Internet protocol software, and Carrier Sense Multiple Access/Collision Detection software. Alternatively, the processing resources for Internet access can include an Internet access application, transmission control software, Carrier Sense Multiple Access/Collision Detection software, and Internet protocol software.

In some embodiments, the telephone includes a display; and processing resources for video display and capture.

## BRIEF DESCRIPTION OF THE FIGURES

FIG. **1**A is a top-edge view of a portable computer adapted for insertion into a prior art telephone accessory.

FIG. **1**B is a perspective view of a prior art telephone accessory adapted to receive a portable computer.

FIG. **2** is a schematic diagram illustrating the connections between the telephone, the portable computer, the local area network, and services connected to the local area network.

FIG. **3**A is communications protocol hierarchy for an embodiment of the invention with Application Program

Interface (API), Point to Point protocol (PPP), and High-level Data Link Control (HDLC) layers for telephony applications.

FIG. **3**B is a communications protocol hierarchy for an embodiment of the invention with Ethernet Telephone Management Protocol (EMP) and data link layer protocol (DLLP) layers for telephony applications.

FIG. **3**C is a protocol stack for the companion appliances for an embodiment where the palm-sized computer runs the Internet applications protocol stack.

FIG. **3**D is a protocol stack for the companion appliances for an embodiment where the Ethernet telephone is running the Internet applications protocol stack.

FIG. **4** illustrates a frame format according to one embodiment of the invention, referred to as the Data Link Layer Protocol.

FIGS. **5**A, **5**B, **5**C, **5**D, **5**E, **5**F, **5**G, **5**H, **5**I, **5**J, and through **5**K illustrate a plurality of Ethernet Telephone Management Protocol (EMP) frame body formats according to one embodiment of the invention.

FIG. **6** provides a state diagram for a palm-sized computer dialing a phone number according to one embodiment of the invention.

FIG. **7** provides a state diagram for conferencing according to one embodiment of the invention.

FIG. **8** provides a state diagram for call forwarding according to one embodiment of the invention.

FIG. **9** provides a state diagram for call transfer according to one embodiment of the invention.

FIG. **10** shows an initialization in progress screen for a palm-sized computer according to one embodiment of the invention.

FIG. **11** shows an initialization completed screen for a palm-sized computer according to one embodiment of the invention.

FIG. **12** shows a call placement screen for a palm-sized computer according to one embodiment of the invention.

FIG. **13** shows a user dialing screen for a palm-sized computer according to one embodiment of the invention.

FIG. **14** shows a telephone dialing screen for a palm-sized computer according to one embodiment of the invention.

FIG. **15** shows a connected line screen for a palm-sized computer according to one embodiment of the invention.

FIG. **16** shows a connected line screen with a line pop-up menu window for a palm-sized computer according to one embodiment of the invention.

FIG. **17** shows a transfer dialog screen for a palm-sized computer according to one embodiment of the invention.

FIG. **18** shows a transfer waiting screen for a palm-sized computer according to one embodiment of the invention.

FIG. **19** shows a transfer completed screen for a palm-sized computer according to one embodiment of the invention.

FIG. **20** shows an active call summary list screen for a palm-sized computer according to one embodiment of the invention.

FIG. **21** shows a first forwarding screen for a palm-sized computer according to one embodiment of the invention.

FIG. **22** shows a second forwarding screen for a palm-sized computer according to one embodiment of the invention.

FIG. **23** shows a call history screen for a palm-sized computer according to one embodiment of the invention.

FIG. **24** shows a detailed single call history screen for a palm-sized computer according to one embodiment of the invention.

FIG. **25** shows an incoming call window for a palm-sized computer according to one embodiment of the invention.

FIG. **26** shows a features menu bar for a palm-sized computer according to one embodiment of the invention.

FIG. **27** shows an options menu bar for a palm-sized computer according to one embodiment of the invention.

FIG. **28** shows a dial screen for a palm-sized computer according to one embodiment of the invention.

FIG. **29** shows a copyright information screen for a palm-sized computer according to one embodiment of the invention.

FIG. **30** shows a phone settings screen for a palm-sized computer according to one embodiment of the invention.

FIG. **31** shows a user settings screen for a palm-sized computer according to one embodiment of the invention.

FIG. **32** shows a change password screen for a palm-sized computer according to one embodiment of the invention.

FIG. **33** shows an enter password screen for a palm-sized computer according to one embodiment of the invention.

FIG. **34** shows a conferencing screen for a palm-sized computer according to one embodiment of the invention.

FIG. **35** shows a conference option window for a palm-sized computer according to one embodiment of the invention.

## DETAILED DESCRIPTION

### Connection Scheme for Communications System

A first aspect of the invention provides a communications system for companion information and network appliances. The information appliance is typically a portable computer (shown in FIG. **3**A as reference number **320**), and the network appliance is typically a network attached, or connected telephone **240**. A connection scheme **200** for one embodiment of the communications system is shown in FIG. **2**. The communications system includes a network appliance shown in FIG. **2** as a telephone **240**, a information appliance **210** (e.g., a portable computer) connected to the telephone **240**, and a network link connecting the telephone **240** to network connected devices.

The network appliance is typically a network connected or attached telephone **240**, and can be an Ethernet telephone (shown in FIG. **3**A as reference number **310**), a cable television set top box, a personal computer, a workstation, or any other network connected device that communicates with other network connected devices providing telephony communications. The telephone **240** has capabilities such as a maximum number of connected lines, and a maximum number of conference lines.

The network link is shown in FIG. **2** as a local area network link **250**. The portable computer **320** includes a physical layer communications port [shown in FIG. **3**A through FIG. **3**D as an Electronic Industries Association/Telecommunications Industry Association (EIA/TIA) 232 serial port **323**] for connecting to the telephone **240**, a memory storing user information corresponding to a user; and processing resources adapted to exchange data with the telephone **240**.

The data includes the user information and data corresponding to the telephone **240** capabilities. The exchange of the data enables the portable computer **320** to discover

capabilities of the telephone **240**, provide the user information to the telephone **240**, and establish telephone **240** operating parameters for telephone communications with devices connected to the telephone **240** based on the user information and the telephone capabilities. The telephone **240** capabilities are typically transferred from the telephone **240** to the information appliance **210** during initialization of the companion appliances. Initialization typically occurs upon connecting and power-up of the companion appliances.

The different types of data exchanged between the telephone **240** and the information appliance **210** of the communications system are discussed in greater detail below in the Data Link Layer Protocol section in conjunction with FIG. **4**, and in the Ethernet Telephone Management Protocol Frame Descriptions section in conjunction with FIGS. **5**A through **5**K. State diagrams illustrating selected exchanges are provided in FIGS. **6** through **9** and are discussed below in the Interactions between the Telephone and the Information Appliance section. In some embodiments of the communication system, the data exchanged between the telephone **240** and the information appliance corresponds to the telephone **240** capabilities and the user information, and is formatted according to an applications layer protocol having frame formats for telephony functions.

FIG. **2** illustrates the connections between the telephone, the portable computer **320**, the telephone, the local area network, and services connected to the local area network. The connection scheme **200** illustrates that for some embodiments, the information appliance **210** provides a user interface **220** and a primary control function **230**.

The information appliance **210** can be any device capable of storing user information and exchanging information with a network connected appliance according to the communications protocol hierarchy with Application Program Interface (API), Point to Point protocol (PPP), and High-level Data Link Control (HDLC) layers for telephony applications **300** described in conjunction with FIG. **3**A below. More typically the information appliance **210** is a portable computer **320** (such as a palm-sized computer shown in FIG. **3**B as reference number **343**) or a desktop computer.

The user interface **220** typically comprises a display, however any device, or element thereof, that can provide sensory cues adapted for perception by the user can be used as a user interface according to the invention. The user can provide inputs for the display by tapping a user interface graphic element image on the screen with a stylus, pressing a button or key on the information appliance **210**, or by any other means known in the art. Details of the display and certain user interface graphical elements and user inputs related thereto for some embodiments are illustrated in FIGS. **10** through **35** below and are discussed in the User Interface Graphical Elements and Inputs section below.

In some embodiments the telephone **240** provides simultaneous data and telephony communications. In order for the telephone **240** to act simultaneously as an Internet access device and a telephone **240**, the information appliance provides multiprocessing.

While the telephony application is running in the foreground, a packet data communications program runs in the background to check if any packets have been received on the telephone **240** communications port. If any packets have been received, the packet data communications program forwards the packets to the appropriate application depending on whether the packets are formatted according to the Ethernet Telephone Management Protocol (EMP) **333** (discussed below with reference to FIGS. **3** through **5**) or IP. If the received packet is an Internet Protocol (IP) packet, then the program forwards it to the appropriate network application corresponding to the application protocol, such as simple mail transfer protocol (SMTP) for email packets, or hyper text transfer protocol (HTTP) for packets received from the World Wide Web.

The primary control function **230** enables the user of the information appliance **210** to establish telephone operating parameters for the telephone **240**, and to control the execution of telephony programs with network connected devices. The advantages of placing the primary control function **230** a portable information appliance **210**, such as a palm-sized computer **343** (sometimes referred to as personal digital assistant, or a PDA) are commensurate with the portability of the palm-sized computer **343** and the personalization of the telephone operating parameters that can be accomplished for a palm-sized computer **343** that is used by a single user. The information appliance **210** communicates user settings for telephony operations to the telephone **240** during initialization of the companion appliances. The user settings established during initialization can be supplemented by the user entering user settings for an upcoming session before beginning a particular set of communications with network connected devices using the telephone **240**.

The communications protocols used for data exchanged between the information appliance **210** and the telephone **240** are discussed in more detail in the "protocol design" and "protocol layer scheme" sections of this application, in conjunction with FIGS. **3**A and **3**B.

In some embodiments, the communications system includes a gateway server **270** connected to the network link, and switched circuit network devices connected to the gateway server **270**. In some embodiments, as shown in FIG. **2**, the telephone **240** is connected to network services and network connected devices through a local area network (LAN) link **250**. The LAN link **250** connects the telephone **240** to a directory server **260**, a gateway server **270**, a router **275**, and a gatekeeper **280**.

The LAN link can be through a digital subscriber line (DSL), a twisted-pair cable, an integrated services digital network (ISDN) link, or any other link that supports packet switched communications with a LAN, including Internet Protocol (IP)/Transmission Control Protocol (TCP) communications using an Ethernet. The gateway server **270** is connected to regional, national, and global services across wide area network links to public switched telephone networks (PSTN) **290**, and other switched circuit networks (SCNs), included in the other communications networks **296** shown in FIG. **2**. The other communications networks **296** can include, broadband distribution channels, wireless networks, restricted access government and corporate networks, or any other communications network capable of transmitting data formatted for SCNs or packet based networks (PBNs).

In some embodiments, the telephone **240** is an Ethernet telephone (shown in FIG. **3**A as reference number **310**) and the gateway server **270** transforms the data formatted for a packet based network received from the telephone **240** (or any other gateway server **270** client or terminal), to data formatted for a switched circuit network for transmission to the PSTN **290** or any other SCN. The gateway server **270** also transforms the data formatted for switched circuit network devices, such as the data received from the PSTN **290** or any other SCN, to data formatted for a packet based network device such as the telephone **240**.

In some embodiments, the communications system includes a router connected to the network link, and packet based network (PBN) devices connected to the router. For the PBN connected devices no gateway server **270** data transformation is needed. Therefore, data transmitted from the telephone **240** proceeds from the LAN link **250** to a router **275**, and then to the desired PBN such as an Internet source **293** or other PBN **294** and then to network connected devices accessible therefrom. The telephone **240** can also transmit the data directly through the router **275** to devices connected directly to the router **275**. Network and transmission layer formats for these communications can be according to the IP/TCP protocols.

The Ethernet telephone **310** communicates with the gatekeeper **280**, the directory server **260**, the gateway server **270**, and other Ethernet telephones using a telephony application layer protocol, otherwise referred to as a soft private branch exchange (PBX), for example an protocol compliant with the International Telecommunication Union ITU-T recommendation H.323 "Packet-based multimedia communication systems", or a Session Initiation Protocol (SIP).

The information appliance **210** stores address information according to a particular user database. The address information stored in the user database and address information entered by the information appliance **210** user is provided to the telephone **240** as an alias (or high-level) address such as a telephone number using the protocols discussed in the protocol design section below. The telephone **240** transmits the alias address to the gatekeeper **280** using a registration, admission and status (RAS) compliant protocol. Certain details of an RAS protocol are provided by the International Telecommunication Union (ITU) in the ITU-T recommendation H.323 and for transmission formats in the ITU-T recommendation H.225 "Media stream packetization and synchronization on non-guaranteed quality of service LANs". The RAS signaling function performs registration, admission, bandwidth changes, status and disengagement procedures between endpoints (e.g., the telephone **240**) and the Gatekeeper **280**.

For embodiments operating according to the H.323 recommendation, a gatekeeper **280** can service endpoints such as gateways (such as the gateway server **270**), terminals (also referred to as client terminals, e.g., the telephone **240**), and multipoint control units. Each multipoint control unit supports conferences between three or more endpoints. The collection of all terminals, gateways, and multipoint control units managed by a single gatekeeper **280** operating according to the H.323 protocol is referred to as an H.323 zone. The gatekeeper **280** acts as the central point for all calls within its zone and provides call control services to a plurality of registered endpoints.

Call control function communications between the telephone **240** and the gatekeeper **280** include control messages governing operation of the telephone **240**. These messages address capabilities exchange, opening and closing of logical channels, preference requests, flow control messages, and general commands and indications and are transmitted over a reliable ITU H.245 control channel. The companion appliances enable the user to provide appropriate inputs into the control channel messages using communications from the information appliance **210** to the telephone **240** in messages formatted according to the data link layer protocol (DLLP **328**) and EMP discussed below.

For H.323 embodiments, the telephone **240** uses an ITU Q.931 call signaling channel to establish a connection with another network connected device through the gatekeeper **280**.

The gatekeeper **280** performs two important call control functions. The first is address translation from LAN aliases, such as those provided by the telephone **240**, to Internet Protocol (IP) or Internet Packet Exchange (IPX) addresses, as defined in the RAS specification. The gatekeeper **280** transmits a message including the LAN alias addresses provided by the telephone **240** to the directory server **260**.

The directory server **260** includes a registry table having alias addresses and corresponding network (e.g., SCN, IP or IPX) addresses for the registered network connected devices. In response to the message from the gatekeeper, the directory server **260** accesses the registry table and transmits a message including the corresponding network addresses to the gatekeeper **280**. The gatekeeper **280** then provides the network addresses to the telephone **240**. The telephone **240** then places the network address in the message to be sent to the network connected device and transmits the message to the device through the gateway server **270** or router **275**.

The directory server **260** also enables the user to properly address messages sent to network connected device addresses that are not included in the address information stored in the information appliance **210**. The user can retrieve and store such addresses in the information appliance **210** for future use. Similarly, the user can provide new address information for inclusion in the directory server **260** registry table, so that other users can determine the corresponding network addresses for network connected devices that were not previously included in the directory server **260** database.

### Method for Transmitting Data from a Portable Computer to a Telephone

The second aspect of the invention provides a method for transmitting data from a portable computer **320** to a telephone **240**. The telephone **240** has operating capabilities. The telephone **240** is connected to network connected devices. The method comprises connecting the portable computer **320** with the telephone **240**, supplying the portable computer with telephone operating data, the portable computer exchanging the telephone operating parameter data and the operating capabilities with the telephone, and the portable computer establishing telephone operating parameters for a communications session.

In some embodiments, the method includes the user starting a telephony program with the portable computer **320** controlling execution of the telephony program. In some embodiments, the telephone **240** accepts the telephone operating parameters after the establishing step. In other embodiments, the telephone **240** can accept or reject the telephone operating parameters after the establishing step, depending on network conditions or whether more than one portable computer **320** is connected to the telephone.

The telephone **240** operating parameter data is for a communications session including an exchange of messages with one or more of the network connected devices. In some embodiments, the communications session includes simultaneous exchanges of voice and packet data messages.

The telephone **240** operating parameters for the communications session are based on the telephone operating parameter data and the operating capabilities. The telephone **240** operating parameters provide options and features for the communications session. In some embodiments, the operating parameter data comprises constructs formatted according to an applications layer protocol, the applications layer protocol having frame formats for telephony functions. In some embodiments, the operating parameter data com-

prises constructs formatted according to a high-level data link control protocol (shown in FIG. **3**A as reference number **326**).

In some embodiments, prior to connecting the portable computer **320** with the telephone **240**, the portable computer stores user information. The user information can include an identification corresponding to the portable computer **320**, user access parameters, and user characteristics corresponding to the telephone **240** operating parameter data. For some of these embodiments, establishing telephone **240** operating parameters includes the user selecting user setting inputs. The user setting inputs corresponding to the portable computer **320** identification, user access parameters, and user characteristics, the user selecting change the corresponding telephone **240** operating parameter data. In one embodiment, the user setting inputs include the network address of the telephone, so that the user can change the network address provided by the telephone to be the network address of the portable computer.

In some embodiments, after the establishing step, the method includes one or more of the following programs: conferencing, dialing, receiving an incoming call, forwarding, transferring, and placing a call. For some of these embodiments, the telephone **240** receives input data from the portable computer **320**.

The input data is formatted according to a data link layer protocol (shown in FIG. **3**B as reference number **328**). The data link layer protocol **328** encapsulates frames formatted according to an application layer protocol adapted for telephony functions, i.e., the Ethernet telephone management protocol (EMP) shown in FIG. **3**B as reference number **333**. The telephone **240** transforms the input data into transport data formatted according to a transport protocol for a packet switched network. The telephone **240** transmits the transport data to a gateway server **270**. The gateway server **270** is connected by a local area network link **250** to at least one switched circuit network including a public switched telephone network **290**.

In some embodiments, the network connected devices include a gateway server **270**. The gateway server **270** provides access for the user to a public switched telephone network **290**. For some of these embodiments, the telephone **240** is also connected to a gatekeeper **280** and a directory server **260** by a local area network link **250**. Communications between the telephone **240** and the gatekeeper **280**, gateway server **270**, and directory server **260** are formatted according to a soft private branch exchange telephony application layer protocol.

In some embodiments, the telephone **240** is connected by a local area network link **250** to a router **275**. The router **275** is connected to at least one packet based network including an Internet source **293**. Communications between the router **275** and the telephone **240** are formatted according to packet based network application protocols.

In some embodiments the method includes a user placing a phone call after the establishing telephone **240** operating parameters step. Placing the phone call includes the user starting a dialing program and the user inputting values to the portable computer **320**. The values correspond to a recipient network connected device. The portable computer **320** displays the values and phone call status information. The portable computer **320** transforms the values into input data formatted according to a data link layer protocol **328**. The data link layer protocol **328** encapsulates frames formatted according to an application layer protocol (such as the EMP **333**). The application layer protocol is adapted for telephony functions. The portable computer **320** transmits the input data to the telephone **240**.

For some of the embodiments including a dialing program, the user enters text data to form a memo corresponding to the telephone **240** call after the transmitting step. The portable computer **320** creates a data record corresponding to the telephone **240** call, and the portable computer attaching the memo to data record.

For some of the embodiments including a dialing program, the portable computer **320** includes a user interface **220** and a display (such as the palm-sized computer **343** display **1005** shown in FIG. **10**). The inputting is accomplished through the user interface **220**. The portable computer **320** displays a telephone number entry field in which the user inputs the values.

In some embodiments the method includes a user placing a conference call after the establishing telephone **240** operating parameters step. Placing the conference call includes the user starting a conferencing program and the user inputting values to the portable computer **320**. The values correspond to a plurality of conference participant network connected devices. The portable computer **320** displays the values and conference call status information. As for placing the call, the portable computer **320** transforms the values into input data formatted according to a data link layer protocol **328**. The data link layer protocol **328** encapsulates frames formatted according to an application layer protocol. The application layer protocol is adapted for telephony functions. The portable computer **320** transmits the input data to the telephone **240**.

For some of the embodiments including a conferencing program, the portable computer **320** includes a display **1005**. The starting includes a user selection of a user interface element for a conferencing feature (such as the "conference option" element shown in FIG. **26** as reference number **2640**). The user interface element is disposed on the display **1005**. In response to the user selection, the portable computer **320** displays a list of conference actions (such as those shown in FIG. **34**) for subsequent user selection.

In some embodiments the method includes a user forwarding a call after the establishing telephone operating parameters step. The forwarding includes the user starting a forwarding program, and the user inputting a number to the portable computer **320**. The number corresponds to a forwarding destination network connected device. The portable computer **320** displays the number and forwarding status information. The portable computer **320** transforms the values into input data formatted according to a data link layer protocol **328**. The data link layer protocol **328** encapsulates frames formatted according to an application layer protocol. The application layer protocol is adapted for telephony functions. The portable computer **320** transmits the input data to the telephone **240**.

In some embodiments the method includes connecting a user to a first network connected device after the establishing telephone **240** operating parameters step. The first network connected device having a first number. The user transfers a call from the first network connected device to a second network connected device. The transferring includes the user inputting a second number into the portable computer **320** corresponding to the second network connected device. The portable computer **320** then displays the first and second numbers, and status information corresponding to the first network connected device and the second network connected device. The portable computer **320** then transforms into input data formatted according to a data link layer

protocol **328**. The data link layer protocol **328** encapsulates frames formatted according to an application layer protocol. The application layer protocol is adapted for telephony functions. The portable computer **320** transmits the input data to the telephone **240**.

In some embodiments, the portable computer **320** corresponds to a user and has a display **1005**. After the establishing telephone operating parameters step, the method includes the portable computer **320** receiving an incoming call. Receiving the incoming call includes the portable computer **320** receiving an incoming call message from the telephone **240**, the incoming call message (such as the incoming call message **632** for the second 02 line, as shown in FIG. **6**) indicating that a first network connected device is waiting to start a call with the user. The portable computer **320** displays an incoming call screen (such as the call incoming window shown in FIG. **25** as reference number **2500**) on the display **1005**. For some of these incoming call embodiments, the portable computer **320** includes an address database. The incoming call message includes a caller name, and a caller identification. The incoming call screen includes a user selection for saving the caller name and the caller identification to the address database (such as the "save" button shown in FIG. **25** as reference number **2530**). For some of these incoming call embodiments, the incoming call screen includes user selections for processing the incoming call. The user selections include rejecting the incoming call (shown in FIG. **25** as the "reject" button **2550**), answering the incoming call (shown in FIG. **25** as the "answer" button **2540**), and answering the call at a later time (shown in FIG. **25** as the "OK" button **2560**).

In some embodiments, after the establishing telephone **240** operating parameters step, the method includes a user placing a phone call. Placing the phone call includes the telephone **240** receiving input data from the portable computer **320**. In some embodiments, after the establishing telephone **240** operating parameters step, the method includes a user placing a conference call. Placing the conference call includes the telephone **240** receiving input data from the portable computer **320**. In some embodiments, after the establishing telephone **240** operating parameters step, the method includes a user forwarding a call. Forwarding the call includes the telephone **240** receiving input data from the portable computer **320**. In some embodiments, after the establishing telephone **240** operating parameters step, the method includes connecting a user to a first line, the first line having a first number. The user then transfers a call from the first line to a second line. The transferring includes the telephone **240** receiving input data from the portable computer **320**.

For the embodiments described in the preceding paragraph, the input data is formatted according to a data link layer protocol **328**. The data link layer protocol **328** encapsulates frames formatted according to an application layer protocol. The application layer protocol is adapted for telephony functions. The telephone **240** transform is the input data into transport data formatted according to a transport protocol for a packet switched network. The telephone **240** transmits the transport data to a gateway server **270**. The gateway server **270** is connected to at least one switched circuit network including a public switched telephone network **290**.

In some embodiments, after the establishing telephone **240** operating parameters step, the method includes the telephone **240** receiving an incoming call from a first network connected device. The receiving includes the telephone **240** receiving data from a gateway server **270** indicating that a first network connected device is waiting to start a call with a user. The telephone **240** transforms the data into an incoming call message formatted in the data link layer protocol **328**. The data link layer protocol **328** encapsulates frames formatted according to an application layer protocol. The application layer protocol is adapted for telephony functions. The telephone **240** transmits the incoming call message to the portable computer **320**.

In some embodiments, after the connecting, the method includes powering up the portable computer **320**. In response to the powering up of the portable computer **320**, the portable computer and the telephone **240** are initialized. The initializing include the exchanging and establishing steps.

In some embodiments, the portable computer includes a display **1005**. After the establishing step, the method includes a user starting a telephony program. The starting includes the portable computer displaying a user interface element corresponding to a first menu (such as the line pop-up menu shown in FIG. **16** as reference number **1610**) on the display **1005**. The first menu includes a list of telephony programs available for a particular connected line. The user selects the first menu user interface element (such as the "line" prompt in FIG. **16**). The portable computer **320** displays a first (line pop-up) menu **1610** list, the first menu list including user interface elements corresponding to the telephony programs. The user selects a program from the list. For some of these embodiments, the portable computer **320** simultaneously displays information corresponding to the connected line and the connection thereto on the display **1005** with the first (line pop-up) menu **1610** list.

In some embodiments, the portable computer **320** includes a display **1005**. After the establishing step, the method includes the user starting a telephony program. The starting includes the user selecting a button corresponding to a second menu. In one embodiment, the second menu is the features bar menu (shown in FIG. **26** as reference number **2600**) and the button is the features bar. The button is provided on the display **1005**. The second menu includes a list of programs. Execution of the programs is controlled by the portable computer **320**. The user then selects a user interface element corresponding to the program (such as the "dial" option shown in FIG. **26** as reference number **2610**) from the list of programs.

In some embodiments, the method includes prior to connecting the portable computer **320** with the telephone **240**, the portable computer **320** storing user information. The user information includes an identification corresponding to the portable computer **320**, user access parameters, and user characteristics corresponding to the telephone **240** operating parameter data. Establishing telephone **240** operating parameters includes the user selecting user setting inputs. The user setting inputs corresponding to the portable computer **320** identification, user access parameters, and user characteristics, the user selecting change the corresponding telephone **240** operating parameter data. For some of these embodiments, the portable computer **320** includes a display **1005**. The user selecting of user setting inputs includes the portable computer **320** providing user interface elements corresponding to the user setting inputs on the display **1005**. The user interface elements include level indicators, selection buttons, and a set button. The user raises and lowers the level indicators, selects the selection buttons; and the set button. For some of these embodiments, the user setting inputs include the network address of the telephone **240**.

In some embodiments, establishing telephone **240** operating parameters includes the user selecting phone setting

inputs. For some of these embodiments, the portable computer includes a display **1005**. The user selecting phone setting inputs includes the portable computer **320** providing user interface elements corresponding to the phone setting inputs on the display **1005**. The user interface elements including level indicators, selection buttons, and an OK button. The user raising and lowering the level indicators, selecting the selection buttons, and selecting the OK button.

In some embodiments, the portable computer includes a display **1005**. The display **1005** has a features menu bar. In response to user selection of the features menu bar, a selection list having a plurality of features is provided on the display **1005**.

In some embodiments, the portable computer includes a display **1005**. The display has an options menu bar. In response to user selection of the options menu bar, a selection list having a plurality of options is provided on the display **1005**.

In some embodiments, the network connected devices include a gateway server **270**, the gateway server provides access to a public switched telephone network **290**.

In some embodiments, the method includes, prior to the connecting step, the telephone **240** exchanging voice messages with at least one of the network connected devices.

In some embodiments, the telephone **240** is connected to a gatekeeper **280**, a directory server **260** and a gateway server **270** by a local area network link **250**. Communications between the telephone **240** and the gatekeeper **280**, gateway server **270**, and directory server **260** are formatted according to a soft private branch exchange telephony application layer protocol.

In some embodiments, the telephone **240** is connected by a local area network link **250** to a router **275**. The router **275** is connected to at least one packet based network including an Internet source **293**. Communications between the router **275** and the telephone **240** are formatted according to packet based network application protocols. For some of these embodiments, the portable computer **320** includes processing resources for Internet access and the telephone **240** includes processing resources for Internet access.

For some of the packet based network connected embodiments as shown in FIG. **3**C, the portable computer **320** includes processing resources for Internet access including Internet applications **367**, transmission control **359** software, and Internet protocol **356** software. The telephone **240** includes an Internet access application **369**, transmission control **359** software, carrier sense multiple access/collision detection **368** software, and Internet protocol **356** software.

For some of the packet based network connected embodiments as shown in FIG. **3**D, the portable computer **320** includes processing resources for Internet access including Internet display applications **375** and display/user input transfer software **373**. The telephone **240** includes processing resources for Internet access including Internet applications **367**, display/user input transfer software **373**, transmission control **359** software, Internet protocol **356** software, and carrier sense multiple access/collision detection **368** software.

In some embodiments, the telephone **240** is connected to a gatekeeper **280**, a directory server **260** and a gateway server **270** by a local area network link **250**. Communications between the telephone **240** and the gatekeeper **280** are formatted according to registration admission and status signaling function control. Communications between the telephone **240** and the gateway server **270** and the directory server **260** are formatted according to an H.323 compliant protocol.

In some embodiments, the method includes the user starting a telephony program. The portable computer **320** controls execution of the telephony program.

### Method for Exchanging Voice and Data Messages Between a Companion Telephone and Devices Connected to the Network

The third aspect of the invention provides a method for exchanging voice and data messages between a telephone **240** and devices connected to a network. The telephone **240** is connected to the network. The method comprises connecting the telephone **240** with a portable computer **320**. The portable computer **320** exchanges telephone **240** operating parameter data with the telephone. The operating parameter data provides options for communications between the telephone **240** and the network connected devices. Responsive to a user indication of a desired communication, the portable computer **320** exchanges call data with the telephone **240**. The call data corresponds to the desired communication. The call data is formatted according to an application layer protocol, and the underlying transport, network, and data link layer protocols. The application layer protocol has frame formats for telephony functions. The telephone **240** exchanges messages with an addressed network connected device. The messages corresponding to the desired communication. The addressed network connected device has a network address. The message includes data corresponding to the address of the addressed network connected device.

In some embodiments, the method includes, prior to connecting the portable computer **320** with the telephone **240**, the portable computer storing user information. The operating parameter data comprises the user information. The user information comprises an identification corresponding to the portable computer **320** and user access parameters.

In some embodiments, the method includes the telephone **240** requesting a connection to a first network connected device. The first network connected device responds to the connection request. In response to a user input, the message data comprise a phone number corresponding to the first network connected device transmitted from the portable computer **320** to the telephone **240**. Upon receipt by the telephone **240** of the first network connected device response to the connection request, the message data comprise a first connection made response transmitted from the telephone **240** to the portable computer **320**. For some of these embodiments, the portable computer **320** further comprises a display **1005**. The method further comprises, upon receipt of the first connection made response, the portable computer **320** providing on the display **1005** a representation of a date/time connected, and a connected time corresponding to the first network connected device response.

In some embodiments, the telephone **240** comprises an Ethernet telephone **310**.

In some embodiments, the telephone **240** is connected to a gatekeeper **280**, a directory server **260** and a gateway server **270** by a local area network link **250**. Communications between the telephone **240** and the gatekeeper **280**, the gateway server **270**, and the directory server **260** are formatted according to a soft private branch exchange telephony application layer protocol.

In some embodiments, the telephone **240** connected by a local area network link **250** to a router **275**. The router **275** is connected to at least one packet based network including an Internet source **293**. Communications between the router **275** and the telephone **240** are formatted according to packet based network application protocols.

In some embodiments, the telephone **240** is connected to a gatekeeper **280**, a directory server **260** and a gateway server **270** by a local area network link **250**. Communications between the telephone **240** and the gatekeeper **280** are formatted according to a registration admission and status signaling function control. Communications between the telephone **240** and the gateway server **270** and the directory server **260** are formatted according to an H.323 compliant protocol.

In some embodiments, the exchange of messages includes simultaneous exchanges of voice and packet data messages.

In some embodiments, the telephone **240** has an identification, and an identification corresponding to the portable computer **320** is presented to the network connected devices by the telephone in place of the telephone identification.

Protocol Design

A communications protocol hierarchy with API/PPP/HDLC layers for telephony applications **300** for companion information and network appliances is provided below in FIG. **3**A. The communications protocol communications protocol hierarchy with API/PPP/HDLC layers for telephony applications **300** can be implemented for any information appliance **210** combined with any telephone **240**. The telephone **240** can be an Ethernet telephone **310** as shown in FIG. **3**A. The information appliance **210** is typically a portable computer **320** as shown in FIG. **3**A. The portable computer **320** can be a laptop, note book, or palm-size computer. Exemplary palm-sized computers **343** for which this invention is particularly well-suited include the PalmPilot Professional, and the Palm III, available from Palm Computing, Mountain View, California.

The communications protocol communications protocol hierarchy with API/PPP/HDLC layers for telephony applications **300** is specially adapted for implementation with a palm-sized computer **343** and an Ethernet telephone **310**.

The communications protocol communications protocol hierarchy with API/PPP/HDLC layers for telephony applications **300** enables the telephone **240** and the information appliance **210** to carry out several telephony features, including call forwarding and conferencing. In order to establish the capabilities of the combined companion appliances, the information appliance **210** is connected to the telephone **240** according to a physical layer protocol.

The information appliance **210** exchanges operating parameter data with telephone **240**. For some embodiments, the operating parameter data include the portable computer **320** identification and user information. The identification and user access information establish a network address for the combined companion appliances, so that messages transmitted to the user have a network destination address that corresponds to the information appliance **210**, not the telephone **240**.

As the user moves among many different locations, the use of the information appliance **210** destination address allows network connected devices to contact the user as soon as the information appliance **210** is connected to the telephone **240**, and the information appliance **210** exchanges the operating parameter data with the telephone **240**. Use of the information appliance **210** destination address is especially useful for embodiments where the information appliance **210** comprises a portable computer **320**, or a palm-sized computer **343**.

The operating parameter data includes user information that describes other user characteristics. User characteristics can relate to user access, security and service level profiles, smart card functionality for purchases, and/or financial account information. The profiles can be used to determine user access to long distances services, firewall protected data, or user access to secure communication networks. Prior to connecting information appliance **210** the with the telephone **240**, the information appliance **210** stores the user information.

Companion Appliance Communications Protocol Hierarchy

The communications protocol communications protocol hierarchy with API/PPP/HDLC layers for telephony applications **300** (or software architecture) for one embodiment of the invention is shown in FIG. **3**A. The physical layer communications port connecting the Ethernet telephone **310** and the portable computer **320** is shown in FIG. **3**A as an EIA/TIA-232 serial port **323** (formerly RS-232-C) serial port. The invention works with other ports including EIA/TIA-422 and EIA/TIA-423 serial ports, parallel ports, or wireless connections such as infrared ports, connecting the two companion appliances.

For this embodiment, the data link layer protocol comprises the high-level data link control (HDLC) protocol **326** and the Point-to-Point Protocol (PPP) **330**. Typically, for the purposes of HDLC the information appliance **210** is designated as the primary station and the network connected telephone **240** is designated as the secondary device. The information appliance is shown in FIG. **3**A as a portable computer **320**, and the network connected telephone **240** is shown in FIG. **3**A as an Ethernet telephone **310**. The companion appliances can operate in a normal unbalanced mode, an asynchronous mode, or an asynchronous balanced mode.

The Point-to-Point Protocol (PPP) **330** part of the data link protocol, as described in the Internet Engineering Task Force Request for Comments **1661**, provides a method for encapsulating multi-protocol datagrams, a link control protocol for establishing, configuring, and testing the data-link connection, and a family of network control protocols for establishing and configuring different network-layer protocols. PPP **330** supports simultaneous multi-protocol transport of TCP/IP, Internetwork Packet Exchange (IPX), DECnet, and Appletalk traffic on the same connection. The Point to Point protocol (PPP) **330** layer provides a method for connecting the information appliance **210** to an Internet source **293**.

An Application Program Interface (API) **336** layer acts as a boundary across which application software available to the companion appliances uses facilities of programming languages to invoke services provided by the network connected servers. The API **336** layer specification provides a mapping of functions that are made available by the network connected service providers into the syntax and semantics of the programming languages used by the application platform. The API **336** layer thereby provides methods enabling the telephone **240** to connect the information appliance **210** to the Internet, or an Internet Source **293** and the other LAN link **250** connected devices, services, and networks.

In one embodiment, the communications protocol hierarchy is as shown in FIG. **3**B. In this embodiment's communications protocol hierarchy with EMP/DLLP **328** for telephony applications **340**, data link layer protocol (DLLP) **328** communications are formatted as shown in FIG. **4**. The DLLP **328** transforms data provided via the communication port into data formatted for processing by the applications

layer protocol also referred to herein as the Ethernet Telephone Management Protocol (EMP) **333**. The EMP is discussed in detail below.

Internet Access

The combination of the information appliance **210** and the telephone **240** can also be used to provide Internet access. The communications protocol hierarchy for Internet access, otherwise referred to as the software architecture, used to support Internet access depends on the capabilities that exist in the information appliance **210**. In one embodiment, the information appliance **210** is a palm-sized computer **343** that includes a Transmission control protocol (TCP)/Internet Protocol (IP)/PPP stack (as is the case for the **3**Com Palm III and the PalmPilot Professional). This embodiment is referred to herein as the palm-sized computer **343** Internet access execution option. For the first case, as shown in FIG. **3**C, the protocol stack can be represented as a palm-sized computer **343** running the Internet applications protocol stack **350**. The protocol stack can be located in any information appliance **210** to provide Internet access according to the invention.

The palm-sized computer **343** running the Internet applications protocol stack **350** includes the following software layers, in descending order, for Internet access for the palm-sized computer **343**: an Internet applications **367** layer, a TCP **359**/User Datagram Protocol (UDP) layer, an Internet protocol **356** layer, a PPP **330** layer, and an HDLC **326** layer. The Internet applications **367** include electronic mail, web browsing, terminal emulation (telnet), file transfer protocol (ftp) and other applications providing access to data provided by the Internet. The palm-sized computer **343** running the Internet applications protocol stack **350** for the Ethernet telephone **310** is the same as the protocol stack for the palm-sized computer except that: (1) the PPP **330** and HDLC layers are replaced by an IEEE 802-3 Carrier Sense Multiple Access/Collision Detection (CSMA/CD) **368** layer, and (2) the top layer of the Ethernet telephone **310** stack includes only Internet access applications **369**.

As before the Ethernet telephone **310** is shown as connected to the palm-sized computer **343** by an EIA/TIA-232 serial port **323**. The Ethernet telephone **310** is shown as connected to the network connected devices by an Ethernet link **353**. More generally a telephone **240** connected to a switched circuit network (SCN) by any appropriate LAN link will work according to the invention.

The palm-sized computer **343** running the Internet applications **367** protocol stack **350** shown in FIG. **3**C also includes the following software layers for access to telephony applications: a phone applications layer **365**, a phone API **336**/EMP layer, a PPP **330** layer, and an HDLC layer **326**. Note that the phone API **336**/EMP layer is shown to cover both the communications protocol hierarchy with API/PPP/HDLC for telephony applications **300**, and the communications protocol hierarchy with EMP/DLLP **328** for telephony applications **340**.

However, the communications protocol hierarchy with EMP/DLLP **328** for telephony applications **340** actually has DLLP **328** replacing the PPP **330** layer and the HDLC layer **326**. For Internet access using the DLLP **328**, an additional field is added to the DLLP frame format shown in FIG. **4** below, to indicate whether the next upper layer protocol is IP **356**, or EMP **333**.

Given a palm-sized computer **343** with multitasking capability, the Internet access (or other data communications) and telephony communications (including voice communications) can occur simultaneously using the software provided in the palm-sized computer **343** running the Internet applications **367** protocol stack **350**.

Another option for providing Internet access to the user is to have the Ethernet telephone **310** run the Internet applications **367** while the palm-sized computer act as a user interface. This option is referred to herein as the Ethernet telephone **310** Internet access execution option. The Ethernet telephone **310** Internet access execution option arrangement can be advantageous for palm-sized computers having very limited storage capacity to accommodate the TCP **359**/IP **356** stack and the Internet applications **367**. In one embodiment, the Ethernet telephone **310** Internet access execution option is achieved by providing another protocol next to EMP **333**. This protocol is shown in the Ethernet telephone **310** running the Internet applications **367** protocol stack **370** as the display/user input transfer protocol **373**. The display/user input transfer protocol **373** sends display information to the palm-sized computer **343** from the telephone **240** and sends user inputs (such as entered text, selected links, selected buttons, etc.) to the Internet application **368** running on the telephone **240**. Note also that an Internet display application **375** is the top level software operating on the palm-sized computer **343** for the Ethernet telephone **310** Internet access execution option.

Operations

The EMP **333** and DLLP **328** hierarchy supports a number of operations and features related thereto including those listed below.

1) Placing a phone call: telephone **240** number autodialing from the address book;

2) Receiving an incoming call: caller identification (ID) and caller name, interrupt other applications with "HotSync" key, answer, reject, cancel (ignore), save (record to "Address" application);

3) A user interface for PBX-like features such as:
   a) Forwarding a call: when forwarding is set, all calls are automatically diverted to the forwarded phone (both to one or more phone numbers and from another phone, i.e., go to roaming mode), Features: activate/de-activate, forwarded information
   b) Conference calls: Features include conference, add parties, hang up, split conference, hold conference, switch;
   c) Transferring a call (i.e., during a call, after the parties have conversed for a period of time);

4) Keeping a history of past numbers communicated with (both incoming and outgoing calls), which can also be used for redialing;

5) Voice mail user interface;

6) Capability exchange with the network appliance, e.g., the telephone **240** and the subsequent adjustment of the user interface features during initialization, information including the number of lines and conferences supported; speaker, ringer and handset volume; transfer and forward feature support; Ethernet telephone **310** and Palm-sized computer **343** Ids; call restrictions for the user; and line status are exchanged;

7) Changes to the user interface and the telephone **240** operating parameters can also be made by user adjustment of user settings through the information appliance user interface after initialization for earphone/ringer volume levels, etc.;

8) Internet access;

9) Simultaneous transmission of Internet, e-mail, and other non-telephony data with the telephony voice data using the companion appliances; and

10) Incorporating video data in received and transmitted messages.

Feature Sets

A large number of feature sets can be implemented for a variety of voice and data communications using the companion information appliance **210** and the telephone **240**. Five of these feature sets are described briefly below for the following telephony operations: placing a phone call, receiving an incoming call, forwarding a call, conference calls, and transferring a call. User interface displays corresponding to the feature sets are described in the "User Interface Description" section of this application.

A first feature set enables the information appliance **210** user to direct the telephone **240** to place a phone call. For one embodiment, as the call is placed, information is transferred from the telephone **240** to the information appliance **210** so images are shown on the information appliance display to inform the user of call status information. The call status information includes dialing, idle, no dial tone, ringing, connected, busy, on hold, disconnected, hang-up, and re-dialing. The user can respond to the status information display and provide input through the information appliance **210** to cause the telephone **240** to re-dial, switch a connected line to on hold, switch calls (e.g., hold to active for line 1 and active to hold for line 2), place a phone call using an address book application data entry, or transmit a memo to the recipient of the phone call over a data network link.

The memo and the phone call can be transmitted simultaneously by the companion information appliance **210** and the telephone **240**, thus providing an example of the appliances capability to transmit both voice and data communications. User input to the information appliance **210** communicated to the telephone **240** can cause the telephone to provide connection time and date data, and/or connected time data for display on the information appliance display.

A second feature set enables the information appliance **210** user to respond to incoming calls received by the telephone **240**. After the telephone **240** detects an incoming call, the telephone transmits a message to the information appliance **210** indicating that a incoming call has been received. The information appliance **210** then provides the message information to the user on the display. The information provided can include the Caller ID and the Caller Name.

When establishing the telephone **240** operating parameters, the user can establish that any incoming call will result in an interrupt of other applications, or that an incoming call from a particular network connected device will interrupt the other applications. For one embodiment, where the PalmPilot, PalmProfessional or Palm III is the information appliance **210**, the incoming call interrupt can be provided through a "HotSync" key.

The user can respond to the incoming call information provided on the information appliance display by entering a response through the information appliance user interface. Such responses include answering the incoming call, rejecting the incoming call, canceling (or ignoring) the incoming call, and saving the incoming call (i.e., recording the alias address information corresponding to the incoming caller to the information appliance address database).

A third feature set enables the information appliance **210** user to put call forwarding (or call diversion) in effect for selected lines on the telephone **240**. The call forwarding automatically diverts all calls to the forwarded phone. The forwarding can be to more than one forwarded number, and can continue forwarding from another phone, i.e., go to a roaming mode. Other call diversion services include call forwarding busy, call forwarding unconditional, call forwarding no reply, and call deflection. In one embodiment these services are provided as defined by the ITU H.450 series standards.

A fourth feature set enables the information appliance **210** user to control the execution of conference calls through the telephone **240**. The user can add parties to the conference, hang-up on the conference, place connected conference lines on hold, switch from one conference to another, and provide white board type information to conference participants.

A fifth feature set enables the information appliance **210** user to control the transfer of a connected call.

Video Capability

Communications including video data can be exchanged with network connected devices and displayed using the combined information appliance **210** and the telephone **240**. If the telephone **240** has video display and capture capabilities, the information appliance **210** can be used as an interface to control the video aspects of the communication.

In one embodiment, the EMP **333** protocol is extended to support video capability exchanges and commands to control the video, such as turning the video on and off, panning, zooming, etc. For this embodiment, the information appliance **210** can be a palm-sized computer **343**. The user interface on the palm-sized computer **343** also provides support for such capabilities.

In another embodiment, the palm-sized computer **343** has sufficient computing and display capabilities; as well as sufficient communications capacity on the link (e.g., the EIA/TIA 232 serial port **323** link) between the palm-sized computer **343** and the telephone **240**; to decode and display the video on the palm-sized computer's **343** own screen, or a screen corresponding to a peripheral device connected to the palm-sized computer **343**. In this embodiment the palm-sized computer's **343** screen provides video display and user interface functionality.

The video camera for sending video information to network connected devices can reside either on the palm-sized computer **343** or the telephone **240**. For embodiments where the video camera resides on the palm-sized computer **343**, sufficient computing resources are provided in the palm-sized computer **343** to capture and encode the video (e.g., for transmission as an MPEG formatted data stream), and sufficient communications capacity between the palm-sized computer **343** and the telephone **240** to transfer the captured video information.

Data Link Layer Protocol Frame Format

The DLLP **328** frame **400** format is illustrated in FIG. **4**. The frame is the unit of transmission at the data link layer. The frame includes a header and/or a trailer, along with some number of units of data. Each box in the frame format represents four binary digits (bits), or a nibble. Basically, DLLP **328** serves the combined roles of the HDLC **326** and PPP **330** layers in the communications protocol communications protocol hierarchy with API/PPP/HDLC layers for telephony applications **300** with respect to the API **336** data. DLLP **328** encapsulates an applications layer EMP frame and provides error detection as described below.

The basic unit of encapsulation that is passed across the interface between the network layer and the data link layer is referred to as a packet. Each packet is typically mapped to a frame. The exceptions to this mapping are when data link layer fragmentation is being performed, or when multiple packets are incorporated in a single frame.

Frame delimiters are flag sequences that indicate the beginning or the end of a frame. The frame delimiters **410** used in the DLLP frame **400** format are hexadecimal 0x7E, or binary 01111110, like those used for Point to Point Protocol (PPP) packets.

A message, or EMP frame **420** having variable length is placed in the DLLP frame **400** after the left, or first, frame delimiter **410**. The EMP frame **420** can be according to any of the byte descriptions provided in Tables 1 through 5 below, or any other byte description that corresponds to information exchanged between the companion appliances.

Each transmitted DLLP frame **400** includes a numerical value calculated using a formula applied to the EMP frame **420**. The calculated value formatted for the DLLP frame **400**, as shown in FIG. **4**, is referred to as a frame check sequence (FCS), **430**. The FCS **430** is used as checksum for error-detection. The FCS **430** is similar to that used for PPP frames. After calculating the FCS **430** value, the bits are reversed (XOR-ed) and the least significant byte is sent out first. The receiving station then applies the same calculation to the EMP frame **420** and checks to make sure the accompanying numerical value of the FCS **430** is the same. If not, the receiver can assume that the message has been garbled, and proceed to ensure that the transmitting device resends the garbled frame.

For embodiments that use octet stuffing, a control escape octet is defined as hexadecimal 0x7D, or binary 01111101. Also similar to PPP frames, each 0x7D or 0x7E byte in the EMP frame **420** or FCS **430**, is replaced by a two byte sequence <0x7D><original byte XOR 0x7E>.

## Ethernet Telephone Management Protocol Frame Descriptions

In this section, descriptions of EMP frame **420** formats are provided for the data types listed in each of the following tables. Tables 1–5 provide status titles for operations, information types for capabilities, byte descriptors, and comments for some of the different data types contemplated for the Ethernet Management Protocol.

Duration fields, conference numbers, line numbers, sequence numbers, and other number fields (shown as encapsulated by' 'in the frames shown in FIGS. **4**, and **5**A through **5**K) are formatted as integers. Telephone numbers, passwords, and the command/status are formatted as ASCII codes (shown with no encapsulation). For one embodiment, conference numbers are integers starting from 64, while line numbers start from 1.

Table 1 lists information types corresponding to the exchange of get/set capability information from a palm-sized computer **343** to the Ethernet telephone **310**. Table 2 lists information types corresponding to the exchange of send capability information from the Ethernet telephone **310** to a palm-sized computer **343**. Table 3 lists status types for data sent from a palm-sized computer **343** to the Ethernet telephone **310**. Table 4 lists status types for data sent from the Ethernet telephone **310** to a palm-sized computer **343**. Table 5 lists information types corresponding to error codes along with the action taken by one embodiment of the invention.

Different types of information describing some of the get/set capabilities and preferred settings for a palm-sized computer **343** that are exchanged with a connected Ethernet telephone **310** are shown in Table 1. The EMP frame **420** formats for some of the information types are described in the following paragraphs. Other information types corresponding to get/set capabilities not included in Table 1, will have similar formats to those discussed below, and will have differences according the nature of the information required to be exchanged.

The format of the EMP frame **420** for get/set capability types indicated by a superscript "1", in Table 1 is shown in FIG. **5**A, as reference number **501**. There are two byte descriptions in each of the EMP frames formatted according to FIG. **5**A for the get/set capabilities. The first byte description **503** is provided in the first two EMP frame **420** nibbles and typically corresponds to the get (AC) and set (AB) status byte descriptions shown in Table 3. The second byte description **505** is provided in the third and fourth EMP frame **420** nibbles and corresponds to the byte descriptions provided in Table 1. For example, the first four nibbles for a get number of lines exchange of capabilities from the palm-sized computer are ACC0.

TABLE 1

Capabilities Exchanged from Palm-sized Computer to Ethernet telephone Get/Set (Capabilities)

| Type of Information | Byte Description | Comments | Get | Set |
|---|---|---|---|---|
| Number of lines | C0[1] | To get/set number of lines to support. Currently, "Get" is sent to denote initialization. | ✓ | ✓ |
| Speaker | C1[2] | To get/set speaker settings of Ethernet telephone. | ✓ | ✓ |
| Conference Call | C2[1] | To get/set number of conferences to support. | ✓ | |
| Call Transfer | C3[1] | To get/set transfer capability. ('0' for disable, '1' for enable.) | ✓ | ✓ |
| Call Forward | C4[1] | To get/set forwarding capability. ('0' for disable, '1' for enable.) | ✓ | ✓ |
| Call Restriction | C5[1] | To get/set user's restriction. (Integer '0' for local, '1' for unrestricted access. Internal calls are possible without the password.) | ✓ | ✓ |
| Phone Number | C6[3] | For "Get": Gets the Ethernet telephone's 'ID' (phone no). When this packet is sent, phone assumes its own 'ID'. For "Set": Sets the Palm-sized computer's 'ID' on the phone. | ✓ | ✓ |
| Password | C7[4] | Sent before some of the settings are possible. Integer '00' for Ethernet telephone password, and '01' for Palm-sized computer's, placed before the ASCII formatted password. "Get": Used for sending original password. "Set": Used for setting new password. | ✓ | ✓ |
| Ringer Volume | C8[2] | To get/set ringer volume of Ethernet telephone. | ✓ | ✓ |
| Handset Volume | C9[2] | To get/set handset volume of Ethernet telephone. | ✓ | ✓ |

The sequence number (Seq. no.) **507** corresponds to the placement order of a frame in a sequence of frames used for a particular operation, such as dialing by the palm-sized computer **343**. A detailed discussion of the frames

exchanged in a palm-sized computer **343** dialing operation is provided in conjunction with the dialing state diagram shown in FIG. **6** below. The sequence number **507** is placed as the fifth and sixth nibbles in the get/set capability type **501** EMP frame **420** format.

The EMP frame **420** format for the number of lines (C0) and conference call (C2) capability types includes the number of lines that the user is allowed or that the Ethernet telephone **310** supports, as a one byte integer. These numbers are placed in the numbers ("Nos.") field **508** of the get/set capability type **501** EMP frame **420** format.

The format of the EMP frame **420** for capability types indicated by a superscript "2", in Table 1 is similar to the format for the capability types indicated by a superscript "1". The key difference is that the numbers [i.e., data placed in the numbers ("Nos.") portion **508**] are in ASCII code format. A character of"0" means that the speaker, ringer, or handset is off, or the volume adjustment capability is not supported by the Ethernet telephone **310**. A character indicating a value in the range of "1"through "9" sets the speaker, ringer, or handset volume.

The format of the EMP frame **420** for capability types indicated by a superscript "3", in Table 1 is similar to the format for the capability types indicated by a superscript "1". The key differences are that the integers representing the phone number in the "Nos." field **508** are in ASCII code format, and the phone number field can be of varying length. Note that for the purposes of the "Nos" field **508**, phone numbers are restricted to numerals.

When the "Get" indication is provided for the phone number (C6) information type, the Ethernet telephone **310** will assume its own identification. When this occurs, a single Ethernet telephone **310** can act as the network appliance companion for a plurality of palm-sized computers **343**. When the "Set" indication is provided, the palm-sized computer's **343** is used by the Ethernet telephone **310**, enabling others to contact the palm-sized computer user using the same identification, or phone number, without concern for the user's actual location, i.e., analogous to a roaming cellular phone.

The format of the EMP frame **420** for get/set capability types indicated by a superscript "4", in Table 1 is shown in FIG. **5**B, as reference number **509**. The FIG. **5**B EMP frame **509** format is particularly well-suited for the password capability type (C7) and includes the first byte description **503**, followed by the second byte description **505**, and the sequence number. After the sequence number **507**, an integer flag **510** is provided to indicate which password is included in the FIG. **5**B EMP frame **509**. An integer flag **510** value of "00" indicates that the Ethernet telephone **310** password is included and a value of "01" indicates that the palm-sized computer **343** password is included. The password is then provided in the password field **511** as a variable length alpha-numeral. After the password field **511**, the last field in the FIG. **5**B EMP frame **509** is an end of transmission indication **512**, shown in FIG. **5**B as "00".

Different types of information describing the some of the send capabilities and preferred settings for an Ethernet telephone **310** that are exchanged with a connected palm-sized computer **343** are shown in Table 2. The EMP frame **420** formats for the information types in Table 2 are indicated by the superscripts following the byte descriptions. The formats are essentially the same as for the information types having the same superscripts in Table 1 above.

Some of the different types of data transmitted from a palm-sized computer **343** to an Ethernet telephone **310** for one embodiment of the invention are listed in Table 3. The EMP frame **420** formats for these types of data are discussed in the following paragraphs. Other data types transmitted from a palm-sized computer **343** to an Ethernet telephone **310** not included in Table 3, will have similar formats to those discussed below, and will have differences therefrom according the nature of the transmitted data. Many of the formats that are used for transmitting data from the palm-sized computer **343** to the Ethernet telephone **310**, are also used for transmitting similar data from the Ethernet telephone **310** to the palm-sized computer **343**. These data types are referred to herein as palm/phone transmitted EMP data types.

The format of the EMP frame **420** for first types of data transmitted from a palm-sized computer **343** to an Ethernet telephone **310** indicated by a superscript[1], in Table 3 is shown in FIG. **5**C, as reference number **513**. The first palm/phone transmitted EMP data type **513** format includes a second byte description **505**, followed by a sequence number **507**, and a line number **514**. Status types having the first palm/phone transmitted EMP data type **513** format include new line/query (A0), hang-up (A2), switch calls (A3), answer (A4), and put on hold (A5).

The second palm/phone transmitted EMP data type **515** format, shown in FIG. **5**D, is indicated by a superscript[2], in Table 3 and includes a second byte description **505**, followed by a sequence number **507**, a line number **514**, a telephone number **517** having variable length, and an end of transmission indication **512**. The telephone number **517** field supports the use of numerals and the "#", "*", and "!" characters. The second palm/phone transmitted EMP data type **515** format is used for dialing numbers (A1).

The third palm/phone transmitted EMP data type **521** format, shown in FIG. **5**E, is indicated by a superscript[3], in Table 3 and includes a second byte description **505**, followed by a sequence number **507**, one or more conference numbers in a conference number **523** field, one or more line numbers **514**, and an end of transmission indication **512**. This format is used to split a conference (A8). The first numbers listed in the conference number **523** field are the new conference numbers if another conference is started. The numbers that follow the new conference numbers in the conference number **523** field are the line numbers affected by the split.

TABLE 2

Capabilities exchanged from Ethernet telephone to Palm-sized Computer
Send Capabilities

| Type of Information | Byte Description | Bytes Following |
|---|---|---|
| No. of lines | 30[1] | 1 byte integers to give number of lines supported |
| Speaker | 31[2] | Character "0" to indicate speaker off, "1"–"9" to indicate speaker volume. ASCII Code NAK (0x15) means no speaker on phone. |
| Conference Call | 32[1] | 1 byte integer to give number of conferences supported. |
| Call Transfer | 33[1] | To indicate if such feature is supported. (Integer '0' indicates non-support, '1' for supported.) |
| Call Forward | 34[1] | To indicate if such capability is supported. (Integer '0' for non-support, '1' for supported, '2' for enabled.) |

TABLE 2-continued

Capabilities exchanged from Ethernet telephone to Palm-sized Computer
Send Capabilities

| Type of Information | Byte Description | Bytes Following |
|---|---|---|
| Call Restriction | 35[1] | User's restriction of calls (Integer '0' for local, '1' for unrestricted access. Internal calls are possible without the password.) |
| Phone No | 36[3] | For sending the Ethernet telephone's identity to Palm-sized computer. |
| Password | 37[3] | For password requests (Integer '0' indicates request, '1' indicates password error, '2' indicates password is correct.) |
| Ringer Volume | 38[1] | Character "0"–"9" to indicate ringer volume. |
| Handset Volume | 39[1] | Character "0"–"9" to indicate handset volume. |

TABLE 3

Protocol for Data Sent from Palm-sized Computer to Ethernet telephone
Palm-sized Computer → Ethernet-Phone

| Status | Byte Description | Comments |
|---|---|---|
| New Line/Query Status | A0[1] | To call another party (phone should put the current active line, if any, on hold.) |
| Dial | A1[2] | Supports numerals, "#", "*", "!". |
| Hang-up | A2[1] | |
| Switch calls/line | A3[1] | |
| Answer | A4[1] | |
| Put on hold | A5[1] | |
| Off-Hook | A6 | |
| Conference Call | A7[3] | The numbers that follow the first (new conference number) number can be conference numbers (to combine conferences) or simply line numbers. |
| Split Conference | A8[3] | Split the stated lines from the current conference. Fields that follow include (in the indicated order) new conference numbers (if starting another conference) and line numbers affected. |
| Call Transfer | A9[4] | Two line numbers should be present in the packets transferred. The line to be transferred precedes. |
| Call Forwarding | AA[5] | Negative acknowledgement ASCII code NAK (0x15) signifies disabling the feature. |
| Set | AB[6] | See Table 1 for more information. |
| Get | AC[6] | See Table 1 for more information. |
| Conference Phone Nos. | AD | Getting phone numbers of other parties involved in the conference. |
| Data | AE | Data transfer |
| Dual Tone Multi-Frequency (DTMF) | AF[7] | |
| EOT | 00 | To signify end of message/transmission. |
| Reset | F0 | Effectively resets the phone. |
| Acknowledge | F1[8] | For error control. Packets ID from 1–255(1 byte). Time-out set at approximately 3 seconds. |
| Reject | F2[9] | For error control. See Table 5 for descriptions of the codes. |
| Escape | FF | |

The fourth palm/phone transmitted EMP data type **525** format, shown in FIG. **5**F, is indicated by a superscript[4], in Table 3 and includes a second byte description **505**, followed by a sequence number **507**, a first line number **527**, and a second line number **529**.

The fifth palm/phone transmitted EMP data type **531** format, shown in FIG. **5**G, is indicated by a superscript[5], in Table 3 and includes a second byte description **505**, followed by a sequence number **507**, one or more telephone numbers **517**, and the end of transmission (EOT) indication 00, indicated in FIG. **5**G as reference number **512**.

The sixth palm/phone transmitted EMP data type is indicated by a superscript[6], in Table 3 and has the format described above for FIG. **5**A, i.e. reference number **501**.

The seventh palm/phone transmitted EMP data type **533** format, shown in FIG. **5**H, is indicated by a superscript[7], in Table 3 and includes a second byte description **505**, followed by a sequence number **507**, a digit pressed **535**, and a duration **537**. The digit pressed **535** is a one-byte value, and the duration **537** is a two byte hexadecimal number corresponding to the duration in milliseconds.

The eighth palm transmitted EMP data type **539** format, shown in FIG. **5**I, is indicated by a superscript[8], in Table 3 and includes a second byte description **505**, followed by a sequence number **507**.

The ninth palm/phone transmitted EMP data type is indicated by a superscript[9], in Table 3 and has the format described below in conjunction with FIG. **5**K and Table 5. This data type is also referred to as the EMP error code data type **547**.

The format of the EMP frame **420** for first palm/phone transmitted EMP data type **513** transmitted from an Ethernet telephone **310** to a palm-sized computer **343** is indicated by a superscript[1] in Table 4, and is shown in FIG. **5**C. As discussed above, the EMP frames **420** for the first palm/phone transmitted EMP data type **513** have the same format whether the frame is transmitted from the Ethernet telephone **310** or from the palm-sized computer **343**. The key differences associated with source of the message are the byte descriptions and the sequence numbers. The formats for the EMP frames **420** for the second through ninth phone transmitted EMP data types, indicated by superscripts[2-9] in Table 4, are also the same as for the palm/phone transmitted EMP data types having the same superscript designations in Table 3, above.

TABLE 4

Protocol for Data Sent from Ethernet telephone to Palm-Sized Computer
Ethernet-Phone → Palm-Sized Computer

| Status | Byte Description | Comments |
|---|---|---|
| New Line | 10[1] | |
| Incoming Call | 11[2] | |
| Idle | 12[1] | |
| No Dial Tone | 13[1] | |
| Ringing | 14[1] | |
| Connected | 15[1] | |
| Busy | 16[1] | |
| Speaker Answer | 17 | Answering using Speaker. The palm-sized computer program assumes this automatically unless the "Using Handset" frame is sent. |
| Using Handset | 18 | Answering using the handset. |
| On Hold | 19[1] | |
| Disconnected | 1A[1] | |
| Hang-up | 1B[1] | |
| Re-dial | 1C[1] | |

TABLE 4-continued

Protocol for Data Sent from Ethernet telephone to Palm-Sized Computer
Ethernet-Phone → Palm-Sized Computer

| Status | Byte Description | Comments |
|---|---|---|
| Conference Call | $1D^{3}$ | Procedure is same as for present PBX phone, i.e. multiple conferences are set up individually. |
| Incoming Caller ID | $1E^{10}$ | Unknown number represented by ASCII character NAK (0x15). Line number precedes telephone number in the packet. Caller Name follows the telephone number. |
| Call Transfer | $1F^{4}$ | ASCII code NAK (0x15) indicates canceling. If only one line number is sent, it indicates that the user had pressed the transfer button on the phone - this is to enable the palm-sized computer to go to the transfer screen. |
| Call Forward | $20^{5}$ | ASCII code NAK (0x15) indicates disabling. If no telephone number is sent, it indicates that the user had pressed the forward button on the phone - this is to enable the palm-sized computer to go to the forward screen. |
| Send | $21^{6}$ | See Table 2 for more information |
| Phone No. | $22^{5}$ | Sends telephone numbers of other lines in the conference to the Palm-Sized Computer. |
| Data | 23 | Data Transfer. |
| DTMF | $24^{7}$ | |
| Switch Line | $25^{1}$ | To change to another line. |
| EOT | 00 | End of message. |
| Acknowledge | $F1^{8}$ | For error control. Each packet has an ID in the range from 1 to 127. |
| Reject | $F2^{9}$ | For error control. See Table 5 for descriptions for the codes. |
| Reset | F0 | |
| Escape | FF | |

TABLE 5

Error codes
Error Specifications

| Type of Information | Byte Description | Current Action Implemented On Palm-Sized Computer |
|---|---|---|
| Default/Unknown | 90 | Warning Message to User |
| Server not ready | 91 | Warning Message to User |
| Capability not supported | 92 | Ignored |
| Packet/Bit Error | 93 | Re-send Packet (and those with Sequence Number after it) |
| Repeated/Duplicate Message | 94 | Check if message was already acknowledged |
| Repeated/Duplicate Acknowledgment | 95 | Ignored |
| Password not set yet | 96 | Ignored |
| Line/Conference already in use | 97 | Warning Message - Recommend Reset of Palm-Sized Computer |
| Missing Sequence No | 98 | Re-send Packet (and those with Sequence Number after it) |

The format of the EMP frame **420** for the tenth phone transmitted EMP data type is indicated by a superscript$^{10}$ in Table 4, and is shown in FIG. **5**J, as reference number **541**. The tenth phone transmitted EMP data type **541** includes a second byte description **505**, followed by a sequence number **507**, a telephone numbers **517** field, an end of transmission field **512**, a caller name field **543**, and a second end of transmission field **545**. If the caller name is not available, the caller name field will have a zero length, but the "EOT" will still be present, i.e. two "EOT"s will be transmitted next to each other.

The format of the EMP error code data type **547** used for the error messages listed in Table 5 is shown in FIG. **5**K. The error code data is typically transmitted from the Ethernet telephone **310** to the palm-sized computer **343**. The EMP error code data type **547** format includes a second byte description **505**, followed by an error code **549** and an error sequence number **551**.

## Interactions Between the Telephone and the Information Appliance

Many types of communications between the telephone **240** and the information appliance **210** are possible. Using the EMP frame **420** formats described above, state diagrams describing four types of exchanges between the telephone **240** and the information appliance **210** are provided in FIGS. **6** through **9**. Each of these state diagrams is discussed in detail below.

As shown in the dialing state diagram **600**, the conferencing state diagram **700**, the call forwarding state diagram **800** and the call transfer state diagram **900** below, the packets, formatted according to the EMP and DLLP **328** protocols, are exchanged though a communications port that connects the telephone **240** and the information appliance **210**. In FIGS. **6** through **9**, the communications port is shown as a serial EIA/TIA-232 port, the information appliance **210** is shown as a palm-sized computer (or PSC) **343**, and the telephone **240** is shown as an Ethernet telephone **310**. In the descriptions below, the two character values in parenthesis after each message provide the corresponding byte description **503** corresponding to the message. The palm-sized computer **343** sequence numbers for the exchange begin with '01', while the Ethernet telephone **310** sequence numbers begin with '50'.

## Palm-Sized Computer Dialing

FIG. **6** provides a state diagram illustrating the DLLP **328** formatted packets of data exchanged between the telephone **240** and the information appliance **210** when the information appliance **210** dials a phone number to place a call through the telephone **240** to a device connected to the LAN link **250**.

The dialing session begins when the user starts the dialing program **602**. The steps required to start the dialing program **602** are discussed in detail below in conjunction with FIGS. 10–13. The palm-sized computer **343** sends a new line/status query (A0) message for the first line **604** formatted according to FIG. **5**C to the Ethernet telephone **310**. The new line/status query (A0) message for the first line **604** requests access to line 01 on the Ethernet telephone **310** for communication with a network connected device.

The Ethernet telephone **310** checks the status of the first 01 line **606** and returns an idle (12) message **608** to the palm-sized computer **343** indicating that line 01 is available for dialing, or other telephony operations controllable by the palm-sized computer **343**. The idle (12) frame body is formatted according to FIG. **5**C.

Note that an Ethernet telephone **310** acknowledgement (F1) message **610** indicating receipt by the Ethernet telephone **310** of the previous packet from palm-sized computer is sent in the same data stream as the idle message. The simultaneous acknowledgement is well known in the art as "piggybacking" and reduces the number of message

exchanges required for a particular telephony operation. The acknowledgement packet is formatted according to FIG. **5**I.

As described in greater detail below in conjunction with FIGS. **13** and **14**, the palm-sized computer **343** displays the idle status **612** of line 01 on the palm-sized computer **343** screen, e.g., as "not in use". The palm-sized computer **343** then sends a dial (A1) message **614** to the Ethernet telephone **310**. The dial message **614** is formatted according to FIG. **5**D, and provides a command to the Ethernet telephone **310** to dial the number corresponding to the desired network connected device, e.g., **1234**. Note that a simultaneous palm-sized computer **343** acknowledgement (F1) message **616** indicating receipt by the palm-sized computer **343** of the previous frame from the Ethernet telephone **310** is sent in the same data stream as the dial message.

The Ethernet telephone **310** acknowledgement messages **610** and the palm-sized computer **343** acknowledgement messages **616** are typically sent in a piggyback fashion. However, there are certain exceptions that will be noted herein where the acknowledgement messages are sent by themselves.

In response to the dial message **614**, the Ethernet telephone **310** dials the "1234" number **618** indicated therein, i.e., in the telephone numbers **517** field of the second palm/phone-transmitted EMP data type **515** as shown in FIG. **5**D, corresponding to the network connected device. Also in the Ethernet telephone **310** dials the "**1234**" number **618** block, the Ethernet telephone **310** detects that the network-connected device is ringing and then sends a line 01 ringing (14) message **620** to the palm-sized computer **343**. The line 01 ringing (14) message **620** is formatted according to the first palm/phone transmitted EMP data type **513** as shown in FIG. **5**C. Upon receipt of the line 01 ringing (14) message by the palm-sized computer **343**, an indication of the ringing status is provided **622** on the display.

When the network connected device **1234** picks up **624** its phone receiver, or otherwise indicates that the communication can begin, the Ethernet telephone **310** sends a line 01 connected (15) message **626** to the palm-sized computer **343** for network-connected device **1234**. The line 01 connected (15) message **626** is formatted according to the first palm/phone transmitted EMP data type **513** as shown in FIG. **5**C. Upon receipt of the line 01 connected (15) message **626** by the palm-sized computer **343**, an indication of the connected status of line 01 is provided **628** on the display.

Note that two uncoupled palm-sized computer acknowledgement messages **616** are sent back to the Ethernet telephone **310**. These uncoupled palm-sized computer acknowledgement messages **616** are sent because there is no intervening "dialing" protocol message from the palm-sized computer **343** upon which they can readily piggyback before the next message is sent by the Ethernet telephone **310**.

The Ethernet telephone **310** receives an incoming call **630** for the user on line 02 from a network-connected device having a number 5678. The Ethernet telephone **310** responds to the incoming call by sending an incoming call (11) message **632**. The incoming call (11) message **632** is formatted according to the second palm/phone-transmitted EMP data type **515** as shown in FIG. **5**D. The number of the network connected device making the call, 5678, is indicated by the telephone number **517** portion of the second palm/phone-transmitted EMP data type **515**.

Upon receipt of the incoming call (11) message **632** by the palm-sized computer **343**, an indication of the incoming call on line 02 from the network connected device having the 5678 number is provided **634** on the display. The palm-sized computer **343** also sends an answer (A4) message **636** to the Ethernet telephone **310**. The answer (A4) message **636** is formatted according to the first palm/phone transmitted EMP data type **513** as shown in FIG. **5**C. The Ethernet telephone **310** responds to the answer (A4) message **636** by connecting **638** the 5678 network connected device to line 02. The Ethernet telephone **310** response to the answer (A4) message **636** is set to place line 01 on hold before switching to line 02, because for this embodiment only one Ethernet telephone **310** line can be active at a particular time.

The Ethernet telephone **310** then sends a line 02 connected (15) message **640** to the palm-sized computer **343**. The line 02 connected (15) message **640** is formatted according to the first palm/phone transmitted EMP data type **513** as shown in FIG. **5**C. Upon receipt of the line 02 connected (15) message **640** by the palm-sized computer **343**, an indication of line 02 connected status and the line 01 on hold status are provided **642** on the display.

After completing the conversation or other communication on line 02, the user hangs-up **643** line 02. The palm-sized computer **343** then sends a line 02 hang-up (A2) message **644** to the Ethernet telephone **310**. The hang-up (A2) message **644** is formatted according to the first palm/phone transmitted EMP data type **513** as shown in FIG. **5**C. In response to the line 02 hang up (A2) message, the Ethernet telephone **310** disconnects **646** the network connected device having the number **5678** from line 02.

The Ethernet telephone **310**, then sends a line 02 disconnected (1A) message **648** to the palm-sized computer **343**. The line 02 disconnected (1A) message **648** is formatted according to the first palm/phone transmitted EMP data type **513** as shown in FIG. **5**C.

The palm-sized computer **343** the switches **650** to line 01 and sends a switch calls/line (A3) message **652** to the Ethernet telephone **310**. The switch calls/line (A3) message **652** is formatted according to the first palm/phone transmitted EMP data type **513** as shown in FIG. **5**C. The Ethernet telephone **310** the connects **654** line 01, and sends a line 01 connected (15) message **656** to the palm-sized computer **343**. The line 01 connected (15) message **656** is formatted according to the first palm/phone transmitted EMP data type **513** as shown in FIG. **5**C. Upon receipt of the line 01 connected (15) message **656** by the palm-sized computer **343**, an indication of line 01 connected status is provided **658** on the display.

After completing the conversation or other communication on line 01, the user hangs-up **660** line 01The palm-sized computer **343** then sends a line 01 hang-up (A2) message **662** to the Ethernet telephone **310**. The hang-up (A2) message **662** is formatted according to the first palm/phone transmitted EMP data type **513** as shown in FIG. **5**C. In response to the line 01 hang up (A2) message **662**, the Ethernet telephone **310** disconnects **664** the network connected device having the number **1234** from line 01.

The Ethernet telephone **310**, then sends a line 01 disconnected (1A) message **666** to the palm-sized computer **343**. The line 02 disconnected (1A) message **648** is formatted according to the first palm/phone transmitted EMP data type **513** as shown in FIG. **5**C. Then the user ends the "dialing" program **668**.

Conferencing

FIG. **7** provides a state diagram illustrating the DLLP **328** formatted packets of data exchanged between the Ethernet telephone **310** and the palm-sized computer **343** when the palm-sized computer **343** requests the Ethernet telephone

310 to connect two lines to a conference call. First, the two Ethernet telephone 310 lines are connected to LAN link 250 connected devices.

The conferencing session begins when the user starts the conferencing program 705. The steps required to start the conferencing program 705 are described in detail below in conjunction with FIGS. 16, 26, 34, and 35. The palm-sized computer 343 and the Ethernet telephone 310 then proceed to exchange the same messages as described above for the dialing state diagram 600 including: the new line/Status Query (A0) message for the first line 604, the idle (12) message 608, the dial (A1) message 614, the ringing (14) message 620, and the connected (15) message 626, along with the accompanying Ethernet telephone 310 acknowledgement (F1) messages 610 and the palm-sized computer 343 acknowledgement (F1) messages 616.

The user then starts a second call 710 for the conference by sending a second call new line/Status Query (A0) message 715 formatted according to FIG. 5C to the Ethernet telephone 310. The new line/status query (A0) message 710 requests access to line 02 on the Ethernet telephone 310 for communication with a network connected device.

The Ethernet telephone 310 puts the first 01 line on hold and checks the status of second 02 line 720. Upon finding that line 02 is idle, the Ethernet telephone 310 transmits a line 02 idle (12) message 725 formatted according to FIG. 5C. The palm-sized computer 343 then provides information on the screen informing the user that line 01 is on hold and that line 02 is idle 730. The user then inputs (dials) the number "5678"732 to place a call to the corresponding network connected device on line 02. The palm-sized computer 343 then sends a dial message (A1) corresponding to network connected device "5678" 734 formatted according to FIG. 5D.

The Ethernet telephone 310 dials the 5678 number on the second 02 line 738 and detects a ring tone from the 5678 device. The Ethernet telephone 310 then sends a line 02 ringing (14) message 740 formatted according to FIG. 5C to the palm-sized computer 343. The palm-sized computer 343 then displays the line 02 status as ringing 742.

When the network connected device 5678 picks up its phone receiver, or otherwise connects the second 02 line 744 for communication, the Ethernet telephone 310 sends a line 02 connected (15) message 746. formatted according to FIG. 5C. The palm-sized computer 343 then displays the connected status of second 02 line 748.

The user then initiates the conference 749 by tapping either the conference prompt (shown in FIG. 16 as reference number 1650) or the "Conference" option (shown in FIG. 26 as reference number 2640). The palm-sized computer 343 then sends a PSC conference call (A7) message 750 formatted according to FIG. 5E to the Ethernet telephone 310. Note that the first conference number 523 as previously discussed is provided a number of "64" that as shown in both the PSC conference call message 750, and the Ethernet telephone 310 (ET) conference call message 754 discussed below.

The Ethernet telephone 310 then starts the conference 752 and sends an ET conference call (1D) message 754 formatted according to FIG. 5E to the palm-sized computer 343.

The conference call communications progress 756 under the control of the palm-sized computer 343 until the user hangs up both the first 01 line and the second 02 line 758. The palm-sized computer 343 then sends a line 01 hang-up (A2) message 760 and a line 02 hang-up (A2) message 762 to the Ethernet telephone 310. Both of the hang-up messages are formatted according to FIG. 5C.

The Ethernet telephone 310 then disconnects both the first 01 and the second 02 lines 764, and sends a first 01 line disconnected (1A) message 766 and second 02 line disconnected message 768 to the palm-sized computer 343, and the conferencing program is thereby ended 770. Note that the hang-up messages are sent to the Ethernet telephone 310 in response to the user tapping the end conference button 3420.

Call Forwarding

FIG. 8 provides a state diagram illustrating the DLLP 328 formatted packets of data exchanged between the Ethernet telephone 310 and the palm-sized computer 343 when the palm-sized computer 343 requests the Ethernet telephone 310 to forward a call to another device connected to the LAN link 250.

The forwarding begins when the user starts the forwarding program 805. The steps required for the user to start the forwarding program 805 are described in detail below in conjunction with FIGS. 16, 21, 22, and 26. As was done for the previous two exchanges the program begins with the palm-sized computer 343 sending a new line/Status Query (A0) message for the first line 604 to the Ethernet telephone 310. As before for the dialing and conferencing sequences, the Ethernet telephone 310 checks the status of the first 01 line 606 and we assume, for the purposes of this discussion, that line 01 is idle. Therefore, the Ethernet telephone 310 responds by sending an idle (12) message 608 to the palm-sized computer 343.

The user then keys in the number "9876" for forwarding 810 in the forward incoming calls line shown in FIG. 21 as reference number 2120. The palm-sized computer 343 then sends a call forwarding (AA) message 812 formatted according to FIG. 5G to the Ethernet telephone 310.

The Ethernet telephone 310 then forwards all calls to the "9876" device 814 through line 01, and sends a call forward (20) message 816 formatted according to FIG. 5G to the palm-sized computer 343. The palm-sized computer 343 then displays the call forwarded status 818 as shown in FIG. 22 including the currently forwarded line 2210.

Call Transfer

FIG. 9 provides a state diagram illustrating the DLLP 328 formatted packets of data exchanged between the telephone 240 and the information appliance 210 when the information appliance 210 requests the telephone 240 to transfer a call to another device connected to the LAN link 250.

The transfer begins when the user starts the transfer program 902 to transfer a call connected to line 01 to line 02. The steps required for the user to start the transfer program 902 are described in detail below in conjunction with FIGS. 16 through 19. As indicated in FIG. 9, line 01 is already connected when the user starts the transfer program 902.

The palm-sized computer 343 sends a new line/Status Query (A0) message for the second line 904 formatted according to FIG. 5C to the Ethernet telephone 310. The Ethernet telephone 310 checks the status of the second line 906 and finds that line 02 is idle. The Ethernet telephone 310 then sends a second line Idle (12) message 907 formatted according to FIG. 5C.

The user then keys in "5432" 908 as the number to which the call connected on line 01 will be transferred. The palm-sized computer 343 then sends a dial (A1) "5432" message 910 formatted according to FIG. 5D to the Ethernet telephone 310. The Ethernet telephone 310 then connects line 02 to the "5432" device 912 and sends a "5432" connected (15) to line 02 message 914 formatted according to FIG. 5C to the palm-sized computer 343.

The palm-sized computer **343** displays the connected status **916** and the user selects the "5432" device for transferring the call on line 01. The palm-sized computer **343**, then sends a PSC call transfer (A9) message from the first 01 line to the second 02 line **918** formatted according to FIG. **5**F to the Ethernet telephone **310**.

The Ethernet telephone **310** then transfers the call from line 01 to the 5432 device **920**, and sends an ET call transfer (1F) message **922** formatted according to FIG. **5**F to the palm-sized computer **343**. The palm-sized computer then displays the transferred status of the call **924**.

The Portable Computer

The fourth aspect of the invention provides a portable computer **320** adapted for connection to a telephone **240**. The portable computer **320** comprises a port for connecting to the telephone **240**, a memory storing user information corresponding to a user, and processing resources adapted to exchange data with the telephone. The telephone **240** has capabilities. The data includes the user information and data corresponding to the telephone **240** capabilities. The exchange of the data enables the portable computer **320** to discover capabilities of the telephone **240**, provide the user information to the telephone, and establish telephone operating parameters for telephone communications with devices connected to the telephone based on the user information and the telephone capabilities.

In some embodiments, the telephone **240** capabilities comprise network communication capabilities, and portable computer **320** companion capabilities.

In some embodiments, the portable computer **320** includes a display **1005** providing user interface **220** graphic elements corresponding to data exchanged with the telephone **240**, and a user interface enabling the user to input data supplementing the user information provided to the telephone.

In some embodiments, the user information comprises an identification corresponding to the portable computer **320**, user characteristics; and user access parameters.

In some embodiments, the portable computer **320** comprises a palm-sized computer **343**.

In some embodiments, the data exchanged with the telephone **240** corresponding to portable computer **320** control of the execution of the telephony programs, the telephone capabilities, and the user information are formatted according to an applications layer protocol. The applications layer protocol having frame formats for telephony functions.

In some embodiments, the portable computer **320** is adapted to provide data processing and user interface **220** functions without connection to the telephone **240**.

In some embodiments, the portable computer **320** includes processing resources for Internet access. For some of these embodiments, the processing resources for Internet access include Internet applications **367**, transmission control **359** software, and Internet protocol **356** software. For some of these embodiments, the processing resources for Internet access include Internet display applications **375** and display/user input transfer **373** software.

In some embodiments, the portable computer includes processing resources for user interface **220** support of video data. For some of these embodiments, the processing resources for user interface **220** support of video data include video data decoding, and video display. For some of these embodiments, the processing resources for user interface **220** support of video data, video data decoding, video display, and video camera image data.

For some embodiments, the exchange of the data enables the portable computer **320** to control execution of telephony programs.

For some embodiments, the data exchanged with the telephone **240** includes data corresponding to portable computer control of telephony programs, and data corresponding to the status of the devices connected to the telephone.

For some embodiments, the telephone **240** has an identification, and the identification corresponding to the portable computer **320** is presented in place of the telephone identification to devices connected to and communicating with the telephone **240**.

User Interface Graphical Elements and User Inputs

A user interface provided by the information appliance **210** enables users to control various telephone **240** features. These features include conferencing, transfer, and forwarding (diversion). A variety of screens provided for one embodiment of the invention including a palm-sized computer **343** and an Ethernet telephone **310** are described below. The screens provide user interface graphic elements that can be manipulated by the user through actions such as providing key strokes, tapping, clicking a mouse or comparable device, or providing voice entered data or commands. Similar screens could be provided on any other information appliance **210** display. The information could also be provided through user interface audio elements depending on the user's preferences.

As shown in FIG. **10**, the palm-sized computer **343** displays user interface graphic elements on a display **1005**. In the following user interface description, the displays provided at particular moments during a telephony operation are referred to as "screens".

When the user starts the telephone **240** control program on the palm-sized computer **343**, the first screen that greets the user on the palm-sized computer display is the initialization in progress screen **1000** as shown in FIG. **10**. During initialization, the palm-sized computer **343** queries the Ethernet telephone **310** and determines the Ethernet telephone's capabilities. The palm-sized computer **343** then establishes telephone **240** operating parameters based on the received capabilities. During initialization, information such as the number of lines and conferences supported, speaker, ringer and handset volume, transfer and forward feature support, Ethernet telephone **310** and Palm-sized computer **343** IDs, call restrictions for the user, and line status are exchanged.

The "Initializing" box **1010** disappears after the initialization is complete. The "New Line" button **1020** is also shown on the initialization in progress screen **1000**. The initialization completed screen **1100** is shown in FIG. **11**. The following description of the "New Line" button **1020** and placing a call feature includes references to messages described in the palm-sized computer **343** dialing state diagram section above.

When the user taps the "New Line" button **1020** on the initialization completed screen **1100**, the palm-sized computer **343** sends a new line/status query message (such as the new line/status query message for the first 01 line **604**) to the Ethernet telephone **310**. If line 01 is idle, the Ethernet telephone **310** sends a line 01 idle message **608** to the palm-sized computer **343** which causes the display of the call placement screen **1200**, including "not in use" at the status prompt **1220**.

The user can either enter the phone number, or network address alias, by using a stylus in conjunction with a handwriting recognition application, such as "Graffiti" or by

using the soft keypad after tapping on the "KeyPad" button **1210** so the keypad **1310** appears on the user dialing screen **1300** as shown in FIG. **13**. The user can also provide the network address alias through the user address database in the palm-sized computer **343**.

When the user taps the "Dial" button **1320** after entering the phone number **1330** in the "Tel. No." line **1340**, the palm-sized computer **343** sends a dial message (such as the dial message corresponding to the **1234** network device **614**). Note that alphabet entries in the "Tel. No." line **1340** will be converted by the palm-sized computer **343** to numbers before the dial message is sent to the Ethernet telephone **310**.

If calls were made using the palm-sized computer **343** telephone application before, the "Last No." button (shown in FIG. **28** as reference number **2820**) would also appear. In that case, the user can also dial the last number by tapping the "Last No." button **2820**. Tapping the "Cancel" button **1345** in the user dialing screen **1300** returns the user to the call placement screen **1200**.

A call status icon **1350** and a sound interface icon **1360** are disposed at the top right corner of the user dialing screen **1300**. The call status icon **1350** indicates whether the call has been hung up. A "hang up" message will also be indicated at the status prompt **1220**. The sound interface icon **1360** indicates whether the user is using a handset or a speaker.

In response to the dial message, the Ethernet telephone **310** dials the indicated number and sends a ringing message (such as the line 01 ringing message **620**) to the palm-sized computer **343**. The telephone **240** dialing screen **1400**, shown in FIG. **14**, appears after the "Dial" button **1320** or the "Last No." button **2820** is pressed by the user. After receiving the ringing message, the "ringing" status is provided on the display **1005**, as shown in FIG. **14**.

When the other party answers, the Ethernet telephone **310** sends a line connected message (such as the line 01 connected message **626** for the **1234** network connected device) to the palm-sized computer **343**, which responds by displaying the connected line screen **1500**, shown in FIG. **15**. The "Connection Time" line **1510** shows the time connected for the particular call, while the "Date/Time Connected" line **1520** shows the date and time that the call was connected. In addition, the user can write a short message down in the "Memo" field **1530** by means of "Graffiti" or by using a soft keyboard. This message can be retrieved when the user views the "Call History" details window (reference number **2410**, in FIG. **24**).

In the connected line screen **1500**, the user can choose to place another call (thereby placing the current one on hold naturally) by tapping the "New Line" button **1540**. The "Hold" button **1550** and the "Hang Up" button **1560** hold and hang up the call respectively. If there are two or more calls active at the same time, the "Switch" button **1570** will also appear on the connected line screen **1500** so that the user can switch from one active call to another active call.

The line pop-up menu button **1580** is disposed at the top right comer of the connected line screen **1500**, and appears as a downward arrow next to and to the left of "Line". When the line pop-up menu button **1580** is tapped, a line pop-up menu **1610** list of choices appears, as shown in the connected line screen with line pop-up menu window **1600**, shown in FIG. **16**. User selection of the "transfer" prompt **1620** will result in the display of the transfer dialog screen **1700**, shown in FIG. **17**.

The transfer feature is described here while the other features are explained later in the document. In the transfer dialog screen **1700**, the user is prompted to select the number corresponding to the line(s) to which the call is to be transferred in the "transfer to" prompts **1710**. Alternatively, the line to which the call is to be transferred can be dialed by entering the entire phone number in the "transfer to" telephone number field **1720**. The following description of the transfer feature user interface element interaction includes references to messages described in the call transfer state diagram section above.

If the user clicks the transfer dialog "OK" button **1730**, the appropriate lines are connected and placed on hold per the dial message sent from the palm-sized computer **343** to the Ethernet telephone **310** (such as the dial **5432** message **910**). When the appropriate line is connected to effect the transfer, the Ethernet telephone **310** sends a connected to message (such as the connected to second 02 line message **914**). Upon receipt of the connected to message, the palm-sized computer **343** displays the transfer waiting screen **1800**, shown in FIG. **18** with the status lines **1370** in the transfer waiting screen **1800** indicating that both line 1 and line 2 are waiting for their respective transfer to be completed. The palm-sized computer **343** then sends a call transfer message (such as the PSC **343** call transfer message from the first 01 line to the second 02 line **918**) to the Ethernet telephone **310**.

Once the transfer is complete, the Ethernet telephone **310** sends an ET call transfer message **922** to the palm-sized computer **343** and the transfer status display indication is updated. This is seen in the transfer completed screen **1900**, shown in FIG. **19**, where the status lines **1370** for both line 1 and line 2 indicate that their respective transfers have been completed.

An active call summary list screen **2000**, shown in FIG. **20**, summarizes all the active calls for the information appliance **210** at a given moment. Tapping the active call summary "OK" button **2005** returns the user to the previous screen. Tapping on the record itself for a particular line will allow the user to browse the call information corresponding to the selected call. For example, a connected line screen **1500** for line 01 will appear in response to tapping the "line 1" record **2010**, and a connected line screen **1500** for line 02 will appear in response to tapping the "line 2" record **2020**.

Choosing the forward prompt **1630** from the connected line pop-up menu **1610** will lead the user into either the first forwarding screen **2100**, shown in FIG. **21**, if there are no calls being forwarded currently. If calls are already being forwarded when the user chooses the forward prompt **1630** from the connected line pop-up menu **1610**, the second forwarding screen **2200** appears, as shown in FIG. **22**.

To forward a call, the user enters the number and taps the "Forward" button **2110** on the first forwarding screen **2100** or the second forwarding screen **2200**. An example of the call forwarding is shown in FIG. **8**'s DLLP call forwarding state diagram **800**. In response to a user inputting a number of "9876" **810** as the number for the forwarded to network connected device, the palm-sized computer **343** sends a call forwarding message **812** to the Ethernet telephone **310**. The Ethernet telephone **310** establishes the call forwarding feature with the gateway server **270**. For this example, the gateway server **270** then indicates its acceptance of the forwarding request to the Ethernet telephone **310**. The Ethernet telephone **310** responds by sending a call forward message **816** to the palm-sized computer **343**. The palm-sized computer **343** then displays the call forwarded status **818**, as shown in the currently forwarded line **2210**. From the second forwarding screen **2200**, the user can also choose

to disable the feature by tapping the "Disable" button **2220**. The "KeyPad" button **1210** performs essentially the same function as described in conjunction with the call placement screen **1200**.

The call history screen **2300**, shown in FIG. **23**, appears when the user chooses the history prompt **1640** from the connected line pop-up menu **1610**. Information about the calls made is summarized in the list provided on the call history screen **2300**. In the first column, "O" indicates outgoing calls while "I" (not shown) indicates incoming calls. The second column displays the phone number for each call listed. The third column shows the time the corresponding call was made, or if the call was made more than a day before the history prompt **1640** was selected, the third column will show the date of the corresponding call instead. Finally, in the last column, the duration of each call is displayed.

Tapping the "Done" button **2310** returns the user to the previous screen, i.e., the screen having the connected line pop-up menu **1610**. To delete all the records, the user taps the "Delete All" button **2320**. A warning screen will appear first before the user is allowed to delete all the records.

If the user taps on the record itself, a detailed single call history window **2410** corresponding to the tapped record will appear, as seen in the detailed single call history screen **2400**, shown in FIG. **24**. Detailed information, including the memo **1530** that had been written for the call, is displayed. The user can choose to dial the number by tapping the "Dial" button **1320**, or delete the record by tapping the "Delete" button **2420**.

Whenever there is an incoming call, the "Call Incoming" window **2500** will pop-up as shown in FIG. **25**. One example of the incoming call process is shown in the DLLP palm-size computer **343** dialing state diagram **600** in FIG. **6**. Upon receiving an incoming call from a network connected device on line 02, the Ethernet telephone **310** sends an incoming call message **632** for the second 02 line to the palm-sized computer **343**. Upon receiving the incoming call message **632** for the second 02 line, the palm-sized computer **343** displays the "Caller Name" **2510** and "Caller ID" **2520**. Tapping the "Save" button **2530** will save the record to the Address database. Tapping the "Answer" button **2540** or the "Reject" button **2550** answers or rejects the call respectively. For example, in response to the user tapping the "Answer" button **2540**, the palm-sized computer sends an answer message **636** for the second 02 line to the Ethernet telephone **310**, and the Ethernet telephone connects the network connected device to line 02. The call incoming "OK" button **2560** is used if the user decides to answer the call at a later and more convenient time.

A features menu bar **2600**, shown in FIG. **26**, is also available for several functions. The features menu bar **2600** provides most of the features that are available in the connected line pop-up menu **1610** list. These features are repeated to allow added convenience to the user. To access the features menu bar **2600**, the user taps the silkscreen menu button **2605**. The information appliance then displays a plurality of graphical user interfaces (not shown) including an image corresponding to the features menu bar **2600** on the screen. The user then taps the appropriate image to display the features menu bar **2600**.

The "Dial" option **2610** displays a dial screen **2800** with a larger keypad **2810**, but performs the same functions as described in conjunction with FIG. **13** for placing a call section. This dial screen **2800** is shown in FIG. **28**. A "Reset" option **2620** is also available to reset the palm-sized computer **343** telephone program.

Tapping the "Options" bar **2630** results in display of the options menu bar **2700** as shown in FIG. **27**. A "Phone Lookup" option **2710** provided in the options menu bar **2700** listing, allows the user to look up a certain person from an Address application/database in the palm-sized computer **343**. The phone lookup application performs the same function as phone lookup applications in many other standard palm-sized computer **343** applications, including the PalmPilot. The "About" option **2720** shows the Copyright information as shown in the copyright information screen **2900**, in FIG. **29**. The rest of the choices are further described later in this section.

After selecting the "Phone Settings" option **2730**, the user is allowed to adjust the Ethernet telephone's **310** ringer volume, speaker volume (where applicable) and handset volume by means of tapping the up or down arrowhead displayed on the phone settings screen **3000**, shown in FIG. **30**. If the transfer and forwarding feature are available, the user can also choose to turn them on or off.

By selecting the "User Settings" option **2740**, the user can "fine tune" the operation of the Ethernet telephone **310** beyond the settings established during initialization. The user can choose to use the telephone's **240** identity or the palm-sized computer's **343** identity (i.e. the user's mobile identity) by selecting the corresponding indication on the phone identity prompts **3110** as shown on the user settings screen **3100**, shown in FIG. **31**. The access level of the user can also be adjusted to local calls only or unrestricted calls by selecting the corresponding indication on the user restrictions prompts **3120**. The number of lines to support for the user can be set by pressing up and/or down on the set number of lines to support arrows **3130**. The number of conferences to support can be set up and/or down using the set max conferences arrows **3140**. Since the maximum number of conferences and the number of lines to be supported settings are somewhat more sensitive to resource restraints, a password will be required and the user will be prompted to enter it in an enter password screen **3300**, such as that shown in FIG. **33**.

If the user decides to change the password, he/she can tap the "Change Password" button **3150**. A change password screen **3200**, shown in FIG. **32**, then pops up asking the user for the new Password. The change is double confirmed by requiring the user to enter the new password twice.

A conferencing screen **3400** is shown in FIG. **34**. The "Hold" button **3410** is used to put the entire conference on hold, while the "End Conf" button **3420** ends the conference. The "More" button **3430** summons more commands from a conferencing options window **3500** as shown in FIG. **35**. The options window **3500** enables the user to select commands corresponding to the following: a "Split" button **3510** (to split the conference), a "New Conf" button **3520** (to start a new conference), an "End All" button **3530** (to end all the current conferences), an "Add Line" button **3540** (to add another party to the conference), a "Hold" button **3410**, an "End Conf" button **3550** (to end the conference), a "New Line" button **3560** (to make a new, separate call) and a "Switch" button **3570** (to switch to another active line or conference). Tapping the "Cancel" button **3580** returns the user to the previous screen.

The companion appliance telephone **240** program can be used in conjunction with voice mail messages, to allow the user to access voice mail with a touch of the screen. Voice mail information (user name, phone number and date/time called) can be viewed from the companion appliance telephone **240** program whereby users can sort or search for a particular message.

The companion appliance telephone **240** program can be used in conjunction with a Smart Card to access the user's billing or charging information stored and viewed in the palm-sized computer. Access to such information can require user access "tokens" and security information. The charging information can be updated on a per call basis.

Another reset option that resets the Ethernet telephone **310** as well as the companion appliance telephone **240** program can be provided.

A "dialog" window or a "white-board" window can be provided to share and transmit messages and drawings across the network.

A pop-up window to generate a Keypad entry screen can be provided.

The "Call History" information generated by the companion appliance telephone **240** program can be transmitted from the information appliance **210** to a personal computer for storage through a synchronization process such as the HotSync process for the PalmPilot.

The memo field text related to the call can be cut and pasted into a Memo application in the portable computer **320**.

The Telephone

The fifth aspect of the invention provides a telephone **240** adapted for connection to a portable computer **320**. The telephone **240** comprises a port for connecting to the portable computer **320**, network communication capabilities including a communication port, portable computer companion capabilities, and processing resources adapted to exchange data with the portable computer. The portable computer **320** has user information corresponding to a user. The data includes the user information, data corresponding to the network communication capabilities, and the portable computer companion capabilities. The exchange of data enables the telephone **240** to discover user information and capabilities of the portable computer **320**, provide the network communication capabilities and the portable computer companion capabilities to the portable computer **320**, and indicate the network communication capabilities to devices connected to the telephone via a network.

In some embodiments, the portable computer **320** is adapted to control execution of telephony programs. The data exchanged with the portable computer **320** includes data corresponding to portable computer control of the telephony programs. Responsive to commands from the portable computer **320**, the exchange of the data enables the telephone **240** to communicate with devices connected to the telephone.

In some embodiments, the network communication capabilities include a number of communications lines supported, a number of conferences supported, forwarding feature support, call transfer feature support, voice mail support, an identification corresponding to the telephone **240**. The portable computer **320** companion capabilities comprise audible component volumes.

In some embodiments, the telephone **240** has an identification and the portable computer **320** has an identification. The portable computer **320** companion capabilities include the telephone **240** presenting the portable computer identification to the network connected devices in place of the telephone identification.

In some embodiments, the telephone **240** comprises an Ethernet telephone **310**.

In some embodiments, the data exchanged with the portable computer **320** corresponding to the telephone **240** capabilities and the user information are formatted according to an applications layer protocol, the applications layer protocol having frame formats for telephony functions.

In some embodiments, the telephone **240** includes processing resources adapted to receive incoming call data from a gateway server **270** indicating that a first network connected device is waiting to start a call with a user. The telephone **240** also includes processing resources adapted to transform the incoming call data into an incoming call message formatted in a data link layer protocol **328** for transmission to the portable computer **320**. The data link layer protocol **328** encapsulates frames formatted according to the application layer protocol.

In some embodiments, the telephone **240** provides the network communication capabilities to a user without connection to the portable computer **320**.

In some embodiments, the telephone **240** includes processing resources for Internet access. For some of these embodiments, the processing resources for Internet access include Internet applications **367**, display/user input transfer software **373**, transmission control **359** software, Internet protocol **356** software, and carrier sense multiple access/collision detection **368** software. For some of these embodiments, the processing resources for Internet access include an Internet access application **369**, transmission control **359** software, carrier sense multiple access/collision detection **368** software, and Internet protocol **356** software.

In some embodiments, the telephone **240** includes a display **1005**, and processing resources for video display and capture.

The foregoing description of embodiments of the invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Obviously, many modifications and variations will be apparent to practitioners skilled in this art. It is intended that the scope of the invention be defined by the following claims and their equivalents.

What is claimed is:

**1**. A method for transmitting data from a portable computer to a telephone comprising:

connecting the portable computer with the telephone, the telephone having operating capabilities, the telephone connected to network connected devices;

supplying the portable computer with telephone operating parameter data for a communications session between the telephone and one or more of the network connected devices, the communications session including an exchange of messages with the one or more of the network connected devices;

the portable computer exchanging the telephone operating parameter data and the operating capabilities with the telephone; and

the portable computer establishing telephone operating parameters for the communications session based on the telephone operating parameter data and the operating capabilities, the telephone operating parameters providing options and features for the communications session.

**2**. The method of claim **1**, wherein after the establishing telephone operating parameters step, the method includes a user placing a phone call, the placing including:

the user starting a dialing program;

the user inputting values to the portable computer, the values corresponding to a recipient network connected device;

the portable computer displaying the values and phone call status information;

the portable computer transforming the values into input data formatted according to a data link layer protocol, the data link layer protocol encapsulating frames formatted according to an application layer protocol, the application layer protocol adapted for telephony functions; and

the portable computer transmitting the input data to the telephone.

**3**. The method of claim **2**, wherein after the transmitting step the method includes:

the user entering text data to form a memo corresponding to the phone call;

the portable computer creating a data record corresponding to the phone call; and

the portable computer attaching the memo to data record.

**4**. The method of claim **2**, wherein the portable computer includes a user interface and a display, the inputting is accomplished through the user interface, and the portable computer displays a telephone number entry field in which the user inputs the values.

**5**. The method of claim **1**, wherein:

the telephone connected by a local area network link to a router;

the router connected to at least one packet based network including an Internet source; and

communications between the router and the telephone formatted according to packet based network application protocols.

**6**. The method of claim **5**, wherein:

the portable computer includes processing resources for Internet access; and

the telephone includes processing resources for Internet access.

**7**. The method of claim **5**, wherein:

the portable computer includes processing resources for Internet access including Internet applications, transmission control software, and Internet protocol software; and

the telephone includes an Internet access application, transmission control software, carrier sense multiple access/collision detection software, and Internet protocol software.

**8**. The method of claim **5**, wherein:

the portable computer includes processing resources for Internet access including Internet display applications and display/user input transfer software; and

the telephone includes processing resources for Internet access including Internet applications, display/user input transfer software, transmission control software, Internet protocol software, and carrier sense multiple access/collision detection software.

**9**. The method of claim **1**, wherein after the establishing telephone operating parameters step, the method includes a user placing a conference call, the placing including:

the user starting a conferencing program;

the user inputting values to the portable computer, the values corresponding to a plurality of conference participant network connected devices;

the portable computer displaying the values and conference call status information;

the portable computer transforming the values into input data formatted according to a data link layer protocol, the data link layer protocol encapsulating frames formatted according to an application layer protocol, the application layer protocol adapted for telephony functions; and

the portable computer transmitting the input data to the telephone.

**10**. The method of claim **9**, wherein:

the portable computer includes a display;

the starting includes a user selection of a user interface element for a conferencing feature, the user interface element disposed on the display;

in response to the user selection, the portable computer displays a list of conference actions for subsequent user selection.

**11**. The method of claim **1**, wherein:

the portable computer corresponds to a user and has a display; and

after the establishing telephone operating parameters step, the method includes the portable computer receiving an incoming call, the receiving includes:

the portable computer receiving an incoming call message from the telephone, the incoming call message indicating that a first network connected device is waiting to start a call with the user; and

the portable computer displaying an incoming call screen on the display.

**12**. The method of claim **11**, wherein:

the portable computer includes an address database;

the incoming call message includes a caller name, and a caller identification;

the incoming call screen includes a user selection for saving the caller name and the caller identification to the address database.

**13**. The method of claim **1**, wherein the method includes:

prior to connecting the portable computer with the telephone, the portable computer storing user information, the user information includes an identification corresponding to the portable computer, user access parameters, and user characteristics corresponding to the telephone operating parameter data; and

establishing telephone operating parameters includes the user selecting user setting inputs, the user setting inputs corresponding to the portable computer identification, user access parameters, and user characteristics, the user selecting changing the corresponding telephone operating parameter data.

**14**. The method of claim **13**, wherein the user setting inputs include the network address of the telephone.

**15**. The method of claim **1**, wherein the exchange of messages includes simultaneous exchanges of voice and packet data messages.

**16**. The method of claim **1**, wherein the method includes, prior to connecting the portable computer with the telephone, the portable computer storing user information, the user information includes user characteristics, the operating parameter data includes user information.

**17**. The method of claim **1**, wherein the method includes, prior to connecting the portable computer with the telephone, the portable computer storing user information, the user information includes an identification corresponding to the portable computer and user access parameters.

**18**. The method of claim **1**, wherein the operating parameter data comprises constructs formatted according to an applications layer protocol, the applications layer protocol having frame formats for telephony functions.

19. The method of claim 1, wherein the telephone comprises an Ethernet telephone.

20. The method of claim 1, wherein after the establishing telephone operating parameters step, the method includes a user forwarding a call, the forwarding including:

the user starting a forwarding program; and

the user inputting a number to the portable computer, the number corresponding to a forwarding destination network connected device;

the portable computer displaying the number and forwarding status information;

the portable computer transforming the number into input data formatted according to a data link layer protocol, the data link layer protocol encapsulating frames formatted according to an application layer protocol, the application layer protocol adapted for telephony functions; and

the portable computer transmitting the input data to the telephone.

21. The method of claim 1, wherein after the establishing telephone operating parameters step, the method includes a user placing a phone call, the placing including:

the telephone receiving input data from the portable computer, the input data formatted according to a data link layer protocol, the data link layer protocol encapsulating frames formatted according to an application layer protocol, the application layer protocol adapted for telephony functions; and

the telephone transforming the input data into transport data formatted according to a transport protocol for a packet switched network; and

the telephone transmitting the transport data to a gateway server, the gateway server connected to at least one switched circuit network including a public switched telephone network.

22. The method of claim 1, wherein after the establishing telephone operating parameters step, the method includes a user placing a conference call, the placing including:

the telephone receiving input data from the portable computer, the input data formatted according to a data link layer protocol, the data link layer protocol encapsulating frames formatted according to an application layer protocol, the application layer protocol adapted for telephony functions; and

the telephone transforming the input data into transport data formatted according to a transport protocol for a packet switched network; and

the telephone transmitting the transport data to a gateway server, the gateway server connected to at least one switched circuit network including a public switched telephone network.

23. The method of claim 1, wherein after the establishing telephone operating parameters step, the method includes a user forwarding a call, the forwarding including:

the telephone receiving input data from the portable computer, the input data formatted according to a data link layer protocol, the data link layer protocol encapsulating frames formatted according to an application layer protocol, the application layer protocol adapted for telephony functions; and

the telephone transforming the input data into transport data formatted according to a transport protocol for a packet switched network; and

the telephone transmitting the transport data to a gateway server, the gateway server connected to at least one switched circuit network including a public switched telephone network.

24. The method of claim 1, wherein after the connecting, the method includes:

powering up the portable computer; and

in response to the powering up of the portable computer, initializing the portable computer and the telephone, the initializing including the exchanging and establishing steps.

25. The method of claim 1, wherein:

the portable computer includes a display;

after the establishing step, the method includes a user starting a telephony program, the starting including:

the portable computer displaying a user interface element corresponding to a first menu on the display, the first menu including a list of telephony programs available for a particular connected line;

the user selecting the first menu user interface element;

the portable computer displaying a first menu list, the first menu list including user interface elements corresponding to the telephony programs; and

the user selecting a program from the list.

26. The method of claim 1, wherein establishing telephone operating parameters includes the user selecting phone setting inputs.

27. The method of claim 1, wherein the network connected devices include a gateway server, the gateway server providing access to a public switched telephone network.

28. The method of claim 1, wherein the method includes, prior to the connecting step, the telephone exchanging voice messages with at least one of the network connected devices.

29. The method of claim 1, wherein:

the telephone connected to a gatekeeper, a directory server and a gateway server by a local area network link; and

communications between the telephone and the gatekeeper, gateway server, and directory server formatted according to a soft private branch exchange telephony application layer protocol.

30. The method of claim 1, wherein:

the method includes the user starting a telephony program; and

the portable computer controls execution of the telephony program.

31. A method for exchanging voice and data messages between a telephone and devices connected to a network, the telephone connected to the network, the method comprising:

connecting the telephone with a portable computer;

the portable computer exchanging telephone operating parameter data with the telephone, the operating parameter data providing options for communications between the telephone and the network connected devices; and

responsive to a user indication of a desired communication, the portable computer exchanging call data with the telephone, the call data corresponding to the desired communication, the call data formatted according to an application layer protocol, and the underlying transport, network, and data link layer protocols, the application layer protocol having frame formats for telephony functions;

the telephone exchanging messages with an addressed network connected device, the messages corresponding to the desired communication, the addressed network connected device having a network address, the mes-

sage including data corresponding to the address of the addressed network connected device.

**32**. The method of claim **31**, wherein, the method includes, prior to connecting the portable computer with the telephone, the portable computer storing user information, the operating parameter data comprises the user information, the user information comprises an identification corresponding to the portable computer and user access parameters.

**33**. The method of claim **32**, wherein:

the telephone has an identification; and

the method includes the telephone presenting the identification corresponding to the portable computer in place of the telephone identification to devices connected to and communicating with the telephone.

**34**. The method of claim **31**, the method includes:

the telephone requesting a connection to a first network connected device; and

the first network connected device responding to the connection request; wherein the message data comprise:

in response to a user input, a phone number corresponding to the first network connected device transmitted from the portable computer to the telephone; and

upon receipt by the telephone of the first network connected device response to the connection request, a first connection made response transmitted from the telephone to the portable computer.

**35**. The method of claim **31**, wherein the telephone comprises an Ethernet telephone, and the portable computer comprises a palm-sized computer.

**36**. The method of claim **31**, wherein:

the telephone is connected to a gatekeeper, a directory server and a gateway server by a local area network link; and

communications between the telephone and the gatekeeper, the gateway server, and the directory server formatted according to a soft private branch exchange telephony application layer protocol.

**37**. The method of claim **31**, wherein:

the telephone connected by a local area network link to a router;

the router connected to at least one packet based network including an Internet source; and

communications between the router and the telephone formatted according to packet based network application protocols.

**38**. The method of claim **31**, wherein the exchange of messages includes simultaneous exchanges of voice and packet data messages.

**39**. A portable computer adapted for connection to a telephone, the portable computer comprising:

a port for connecting to the telephone, the telephone having capabilities;

a memory storing user information corresponding to a user; and

processing resources adapted to exchange data with the telephone, the data including the user information and data corresponding to the telephone capabilities;

the exchange of the data enabling the portable computer to:

discover capabilities of the telephone;

provide the user information to the telephone; and

establish telephone operating parameters for telephone communications with devices connected to the telephone based on the user information and the telephone capabilities.

**40**. The portable computer of claim **39** including:

a display providing user interface graphic elements corresponding to data exchanged with the telephone; and

a user interface enabling the user to input data supplementing the user information provided to the telephone.

**41**. The portable computer of claim **40**, wherein the data exchanged with the telephone includes:

data corresponding to portable computer control of telephony programs; and

data corresponding to the status of the devices connected to the telephone.

**42**. The portable computer of claim **39**, wherein the user information comprises:

an identification corresponding to the portable computer; user characteristics; and

user access parameters.

**43**. The portable computer of claim **42**, wherein:

the telephone has an identification, and

the identification corresponding to the portable computer presented by the telephone in place of the telephone identification to devices connected to and communicating with the telephone.

**44**. The portable computer of claim **39**, wherein the portable computer comprises a palm-sized computer.

**45**. The portable computer of claim **39**, wherein the data exchanged with the telephone corresponding to portable computer control of the execution of the telephony programs, the telephone capabilities, and the user information formatted according to an applications layer protocol, the applications layer protocol having frame formats for telephony functions.

**46**. The portable computer of claim **39**, wherein the portable computer adapted to provide data processing and user interface functions without connection to the telephone.

**47**. The portable computer of claim **39** includes processing resources for Internet access.

**48**. The portable computer of claim **39** including processing resources for Internet access including Internet applications, transmission control software, and Internet protocol software.

**49**. The portable computer of claim **39** including processing resources for Internet access including Internet display applications and display/user input transfer software.

**50**. The portable computer of claim **39** including processing resources for user interface support of video data.

**51**. The portable computer of claim **39** including processing resources for user interface support of video data including video data decoding, and video display.

**52**. The portable computer of claim **39** including processing resources for user interface support of video data, video data decoding, video display, and video camera image data.

**53**. The portable computer of claim **39**, wherein the exchange of the data enables the portable computer to control execution of telephony programs.

**54**. A telephone adapted for connection to a portable computer, the telephone comprising:

a port for connecting to the portable computer, the portable computer having user information corresponding to a user;

network communication capabilities including a communication port;

portable computer companion capabilities;

processing resources adapted to exchange data with the portable computer, the data including:

the user information,

data corresponding to the network communication capabilities; and

the portable computer companion capabilities;

the exchange of data enabling the telephone to:

discover user information and capabilities of the portable computer;

provide the network communication capabilities and the portable computer companion capabilities to the portable computer; and

indicate the network communication capabilities to devices connected to the telephone via a network.

**55**. The telephone of claim **54**, wherein:

the portable computer adapted to control execution of telephony programs;

the data exchanged with the portable computer includes data corresponding to portable computer control of the telephony programs; and

responsive to commands from the portable computer, the exchange of the data enabling the telephone to communicate with devices connected to the telephone.

**56**. The telephone of claim **54**, wherein:

the telephone has an identification;

the portable computer has an identification; and

the portable computer identification presented by the telephone in place of the telephone identification to devices connected to and communicating with the telephone.

**57**. The telephone of claim **54**, wherein the telephone comprises an Ethernet telephone.

**58**. The telephone of claim **54**, wherein the data exchanged with the portable computer corresponding to the telephone capabilities and the user information formatted according to an applications layer protocol, the applications layer protocol having frame formats for telephony functions.

**59**. The telephone of claim **54**, including processing resources adapted to:

receive incoming call data from a gateway server indicating that a first network connected device is waiting to start a call with a user;

transform the incoming call data into an incoming call message formatted in a data link layer protocol for transmission to the portable computer, the data link layer protocol encapsulating frames formatted according to the application layer protocol.

**60**. The telephone of claim **54**, wherein the telephone provides the network communication capabilities to a user without connection to the portable computer.

**61**. The telephone of claim **54** including processing resources for Internet access.

**62**. The telephone of claim **54**, including processing resources for Internet access including Internet applications, display/user input transfer software, transmission control software, Internet protocol software, and Carrier Sense Multiple Access/Collision Detection software.

**63**. The telephone of claim **54**, including processing resources for Internet access including an Internet access application, transmission control software, Carrier Sense Multiple Access/Collision Detection software, and Internet protocol software.

**64**. The telephone of claim **54**, including:

a display; and

processing resources for video display and capture.

**65**. A communications system comprising:

a telephone having capabilities;

a portable computer connected to the telephone, the portable computer including:

a port for connecting to the telephone;

a memory storing user information corresponding to a user; and

processing resources adapted to exchange data with the telephone, the data including the user information and data corresponding to the telephone capabilities;

the exchange of the data enabling the portable computer to:

discover capabilities of the telephone;

provide the user information to the telephone; and

establish telephone operating parameters for telephone communications with devices connected to the telephone based on the user information and the telephone capabilities; and

a network link connecting the telephone to network connected devices.

**66**. The communications system of claim **65** including a router connected to the network link, and packet based network devices connected to the router.

**67**. The communications system of claim **66**, wherein:

the portable computer includes processing resources for Internet access; and

the telephone includes processing resources for Internet access.

**68**. The communications system of claim **66**, wherein:

the portable computer includes processing resources for Internet access including Internet applications, transmission control software, and Internet protocol software; and

the telephone includes processing resources for Internet access including an Internet access application, transmission control software, Carrier Sense Multiple Access/Collision Detection software, and Internet protocol software.

**69**. The communications system of claim **65**, wherein:

the portable computer comprises a palm-sized computer; and

the telephone comprises an Ethernet telephone.

**70**. The communications system of claim **69**, wherein:

the portable computer includes processing resources for Internet access including Internet display applications and display/user input transfer software; and

the telephone includes processing resources for Internet access including Internet applications, display/user input transfer software, transmission control software, Internet protocol software, and Carrier Sense Multiple Access/Collision Detection software.

**71**. The communications system of claim **65** including a gateway server connected to the network link, and switched circuit network devices connected to the gateway server.

**72**. The communications system of claim **65**, wherein the data exchanged with the telephone corresponding to the telephone capabilities and the user information formatted

according to an applications layer protocol, the applications layer protocol having frame formats for telephony functions.

**73**. The communications system of claim **65**, wherein:

the portable computer includes processing resources for user interface support of video data; and

the telephone includes:

a video display; and

processing resources for video display and capture.



**74**. The communications system of claim **65**, wherein the portable computer includes processing resources for user interface support of video data, video data decoding, and video display.

**75**. The communications system of claim **65**, wherein the portable computer includes processing resources for user interface support of video data, video data decoding, video display, and video camera image data.

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**FORM 19. Certificate of Compliance with Type-Volume Limitations** **Form 19**
**July 2020**

# UNITED STATES COURT OF APPEALS
# FOR THE FEDERAL CIRCUIT

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**Case Number:** 21-1555

**Short Case Caption:** Uniloc USA, Inc. v. Motorola Mobility LLC

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