

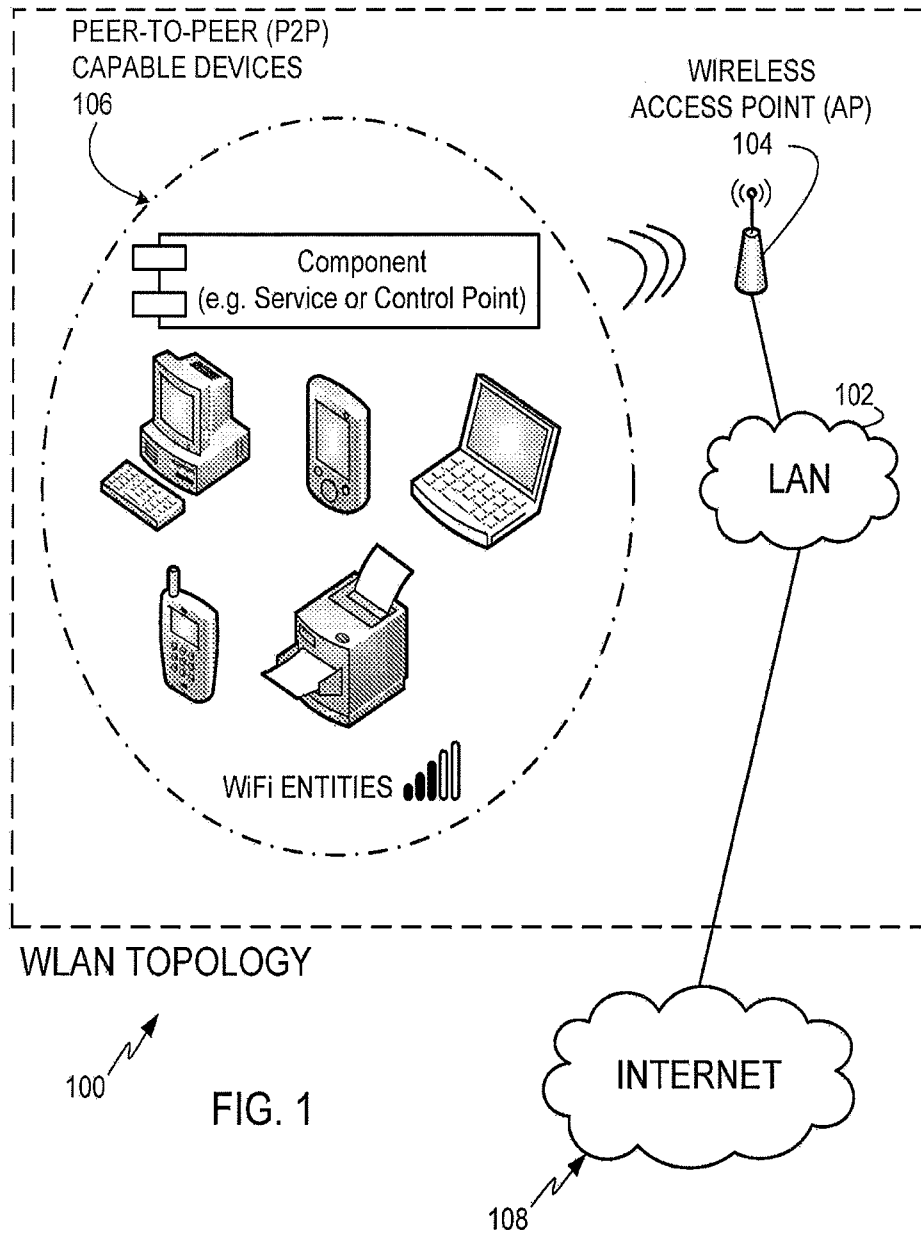
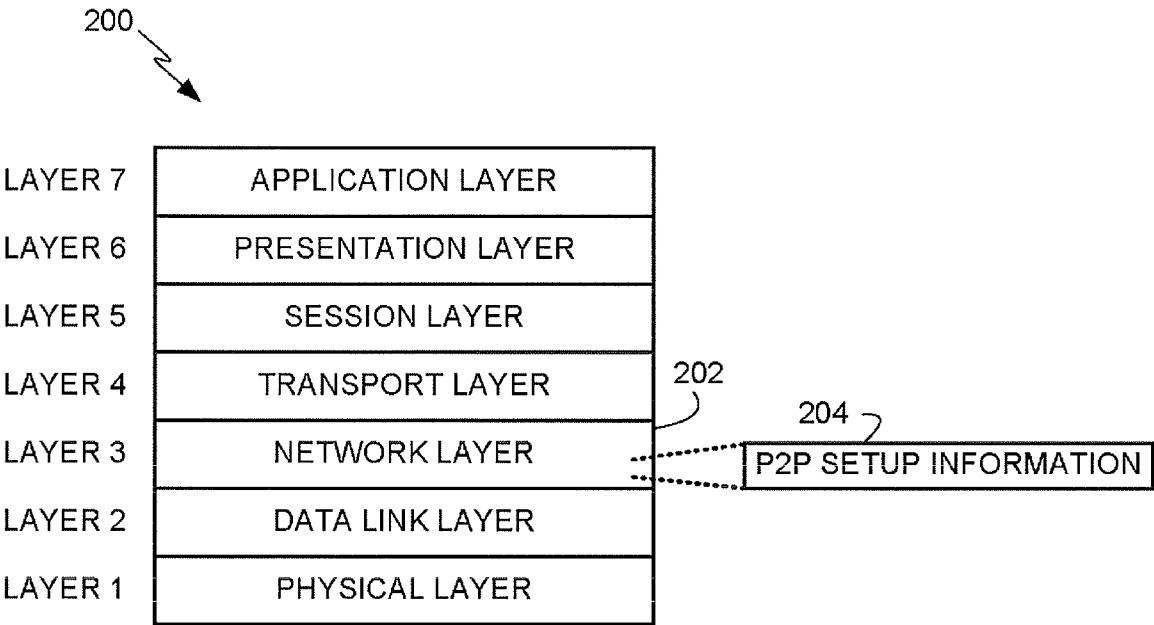


FIG. 1



COMMUNICATION LAYER ARCHITECTURE
FIG. 2

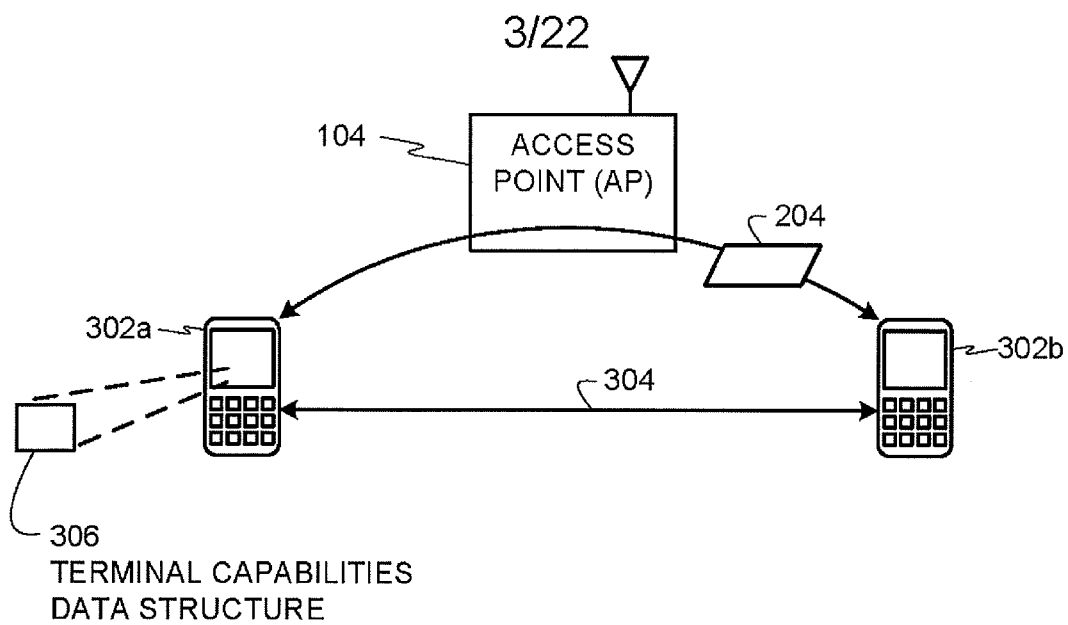


FIG. 3

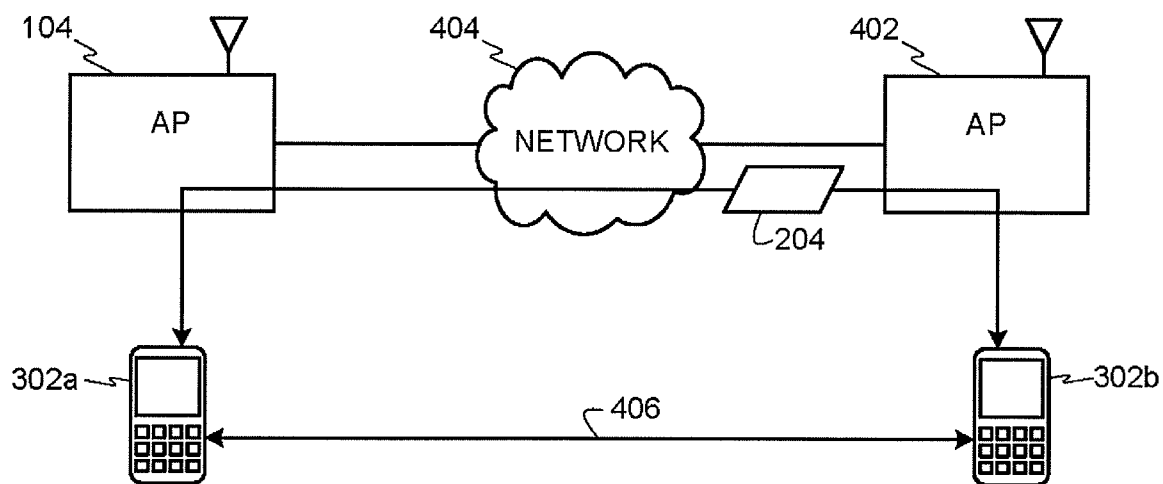


FIG. 4

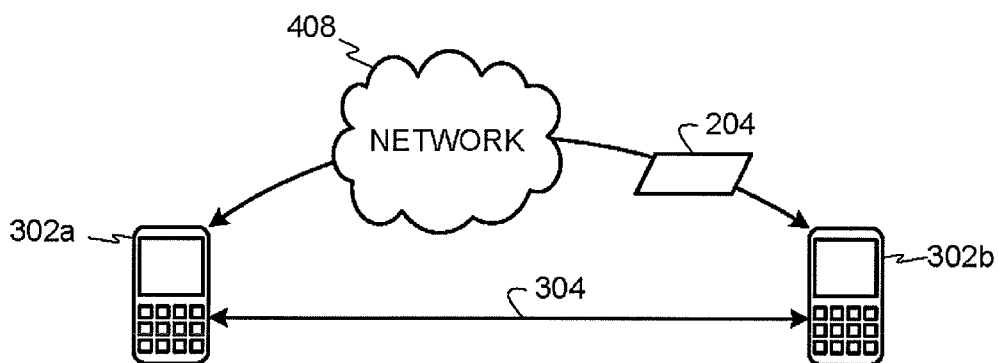


FIG. 5

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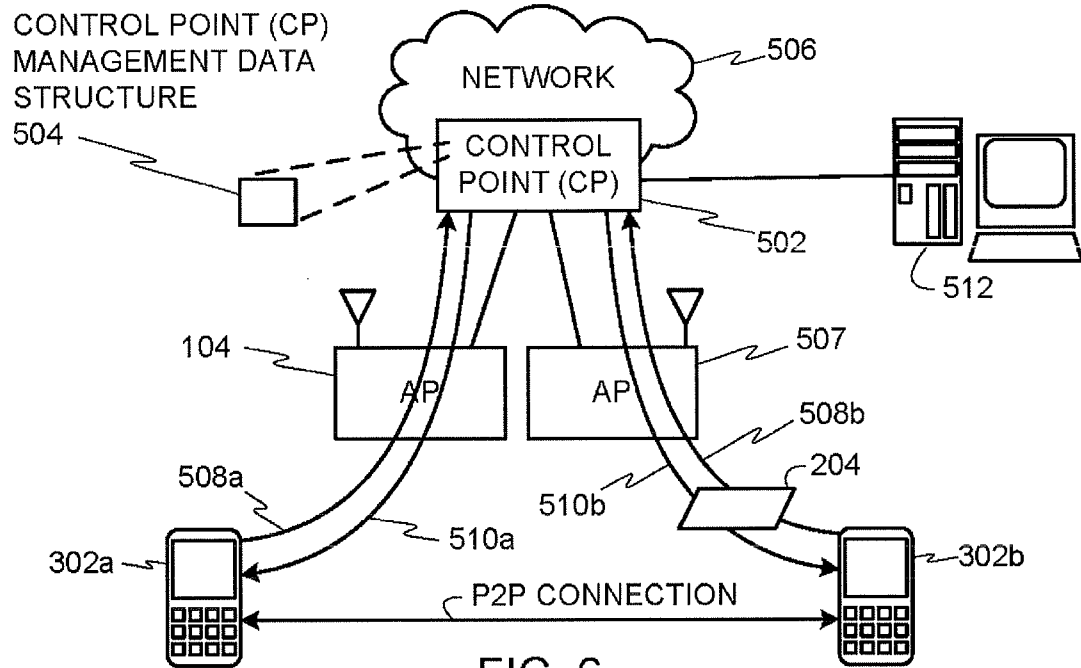


FIG. 6

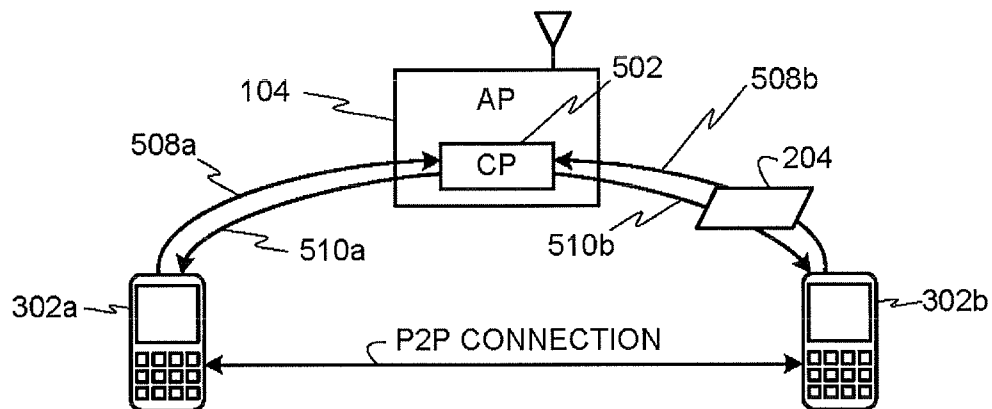


FIG. 7

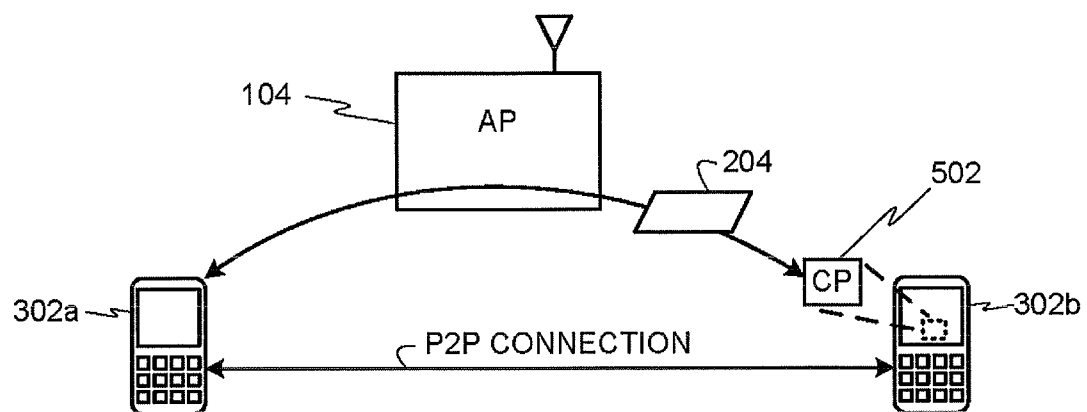


FIG. 8

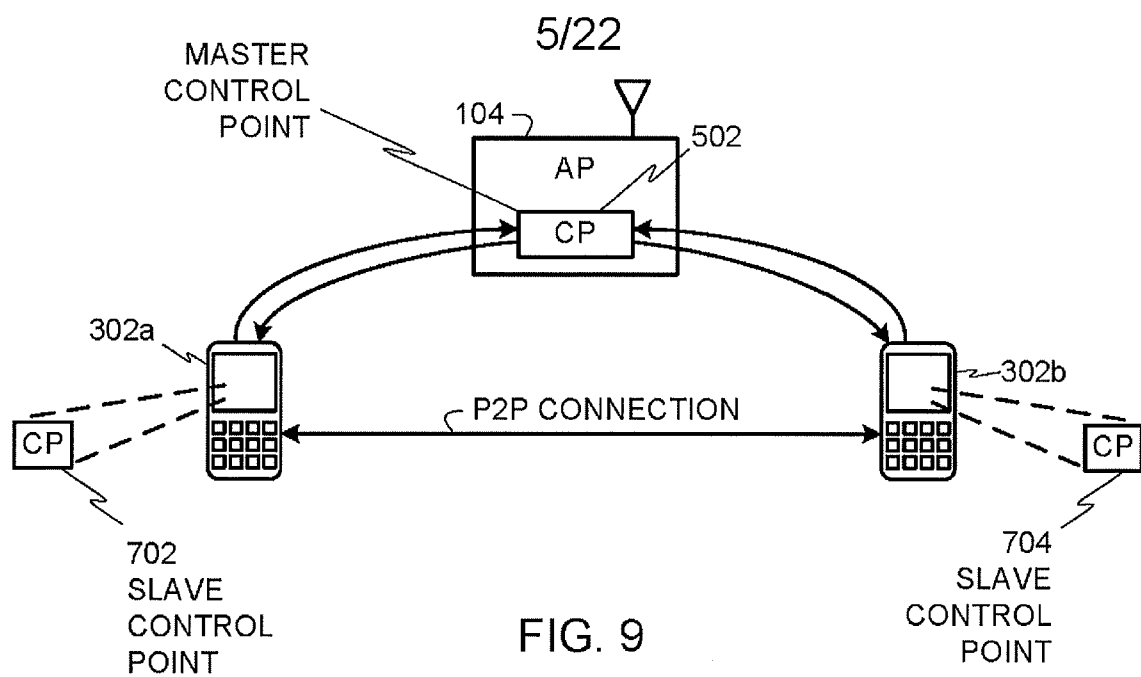
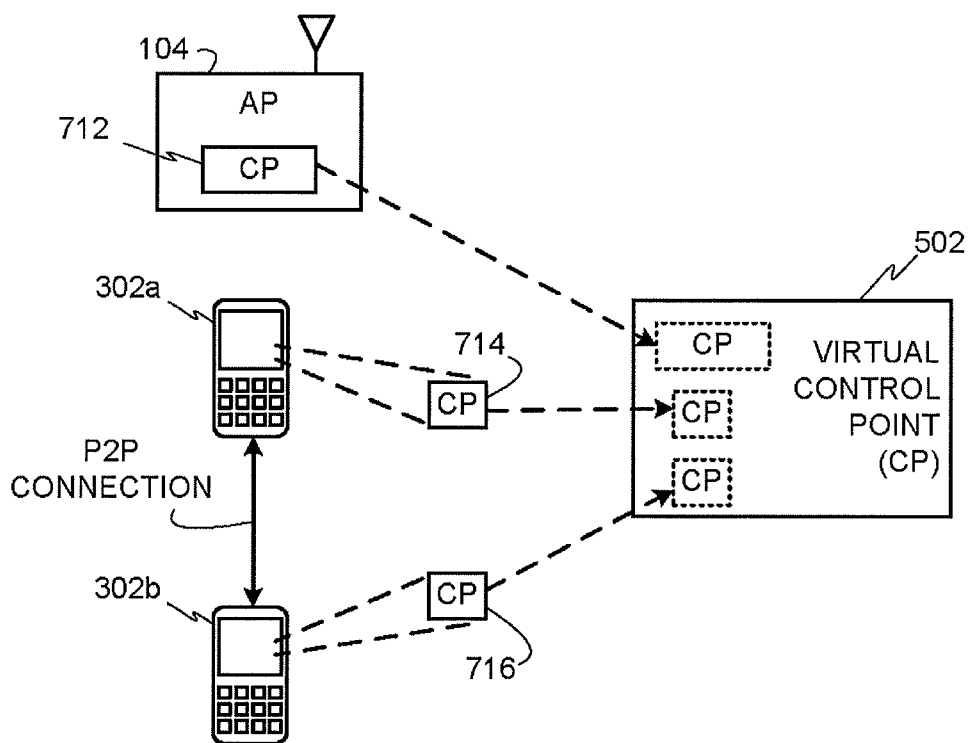


FIG. 10

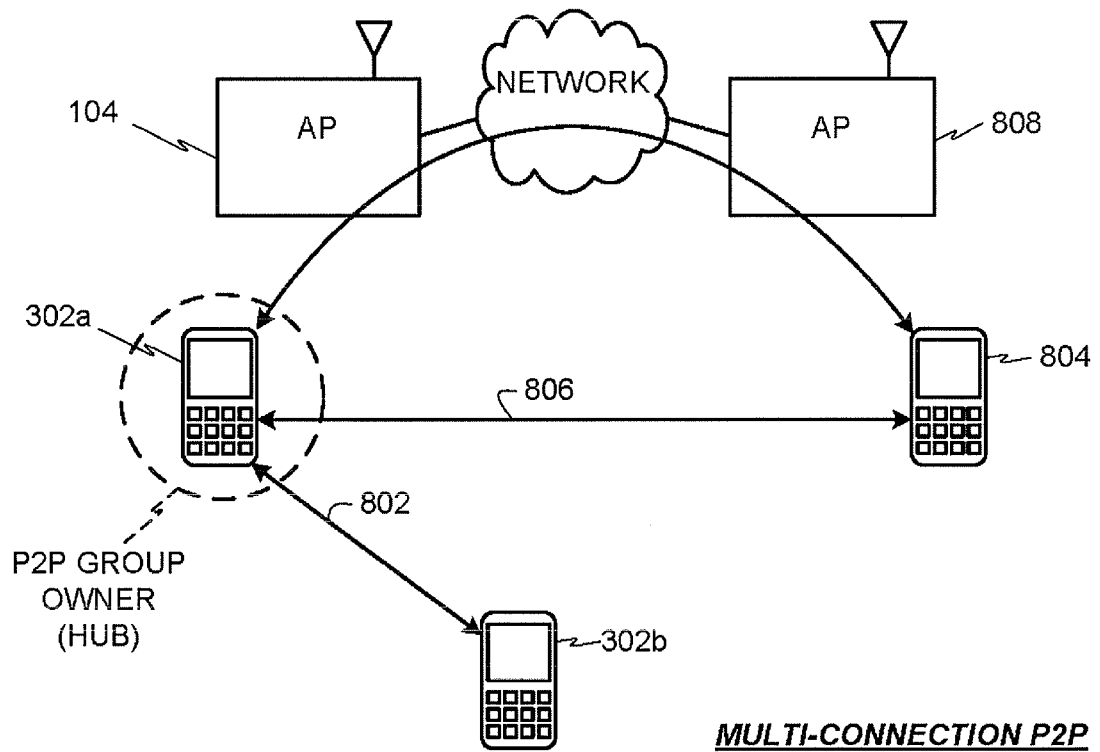


FIG. 11

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TERMINAL CAPABILITIES DATA STRUCTURE

SERVICE TYPE: "WLAN PEER COMMUNICATIONS"	
PROPERTY TYPE	PROPERTY NAME
LINK MECHANISM	ADHOC
	Wi-Fi P2P
	DLS
	BT
	BT AMP
NETWORK CONFIGURATION	DHCP
	NETMASK
	DEFAULT GATEWAY
	DNS
	NAT
SERVICES	STREAMING
	FILE EXCHANGE
	GATEWAY
	SHARING
	EMERGENCY SERVICE ACCESS
	QoS CLASSES
	VoIP
ALTERNATE NETWORK DISCOVERY PROTOCOLS	UPnP
	BONJOUR
	SDP
	SIP
	UDDI
AUTHENTICATION	EAP
	USERNAME/PASSWORD
LOCATION	CIVIC
	GEO
DEVICE TYPE	PHONE
	HANDHELD
	COMPUTER
	PRINTER
	HiFi

FIG. 12

504
↘CONTROL POINT (CP) MANAGEMENT
DATA STRUCTURE

1002 ↘ TERMINAL STATION	1004 ↘ P2P CAPABILITIES/ CONFIGURATION	1006 ↘ P2P CONNECTION	1008 ↘ SERVICE
STA1	{WiFi P2P; etc...}	STA2, [SPEED], ...	VoIP
STA2	{WiFi P2P; etc...}	STA1, [SPEED], ...	VoIP
STA3	{ADHOC; etc...}	NONE	NONE
STA4	{BT; etc...}	STA5, STA6, [SPEED], ...	IM
		STA5, [SPEED], ...	VoIP
STA5	{BT; etc...}	STA4, STA6, [SPEED], ...	IM
		STA4, [SPEED], ...	VoIP
STA6	{BT; etc...}	STA4, STA5, [SPEED], ...	IM

FIG. 13

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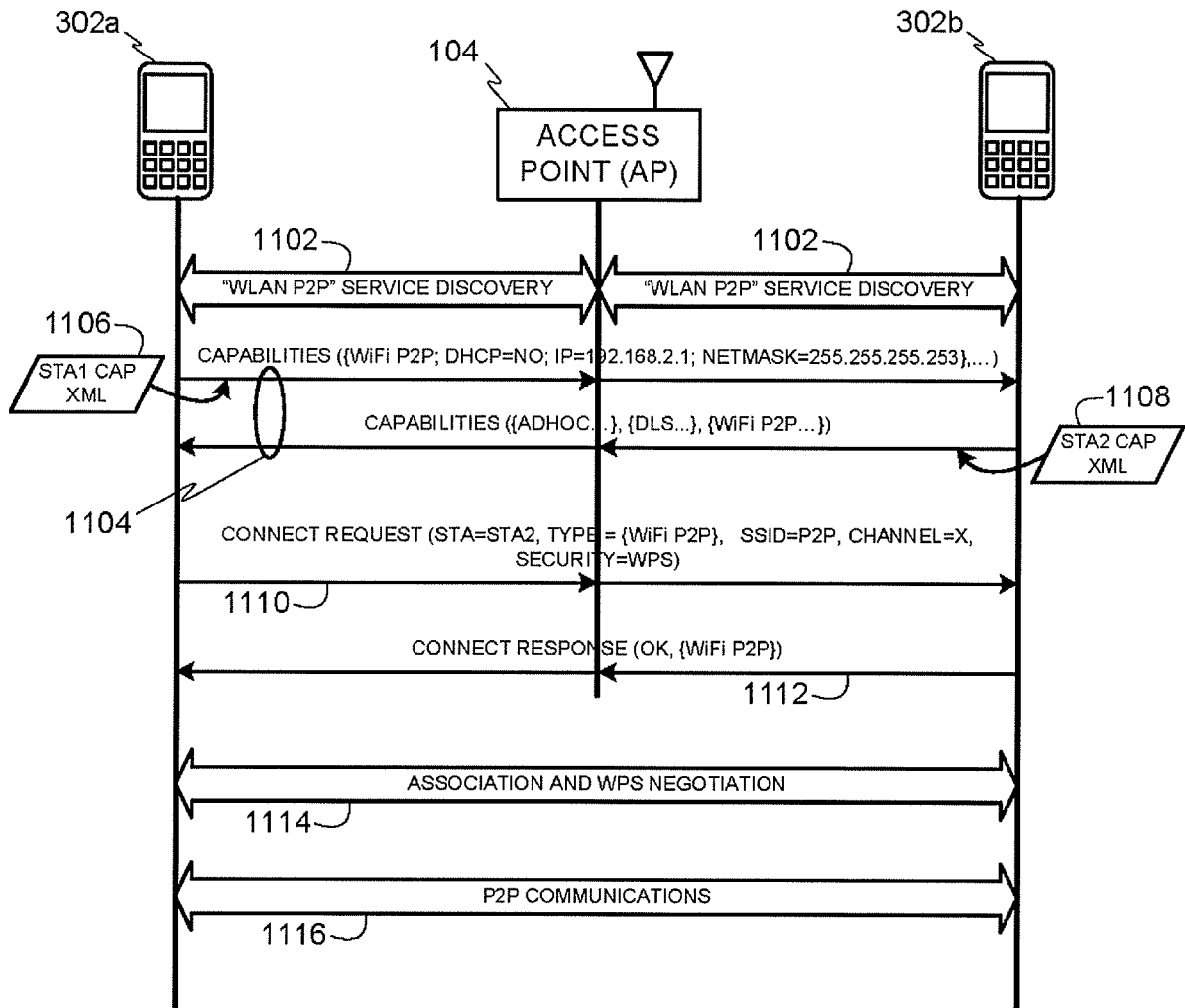


FIG. 14

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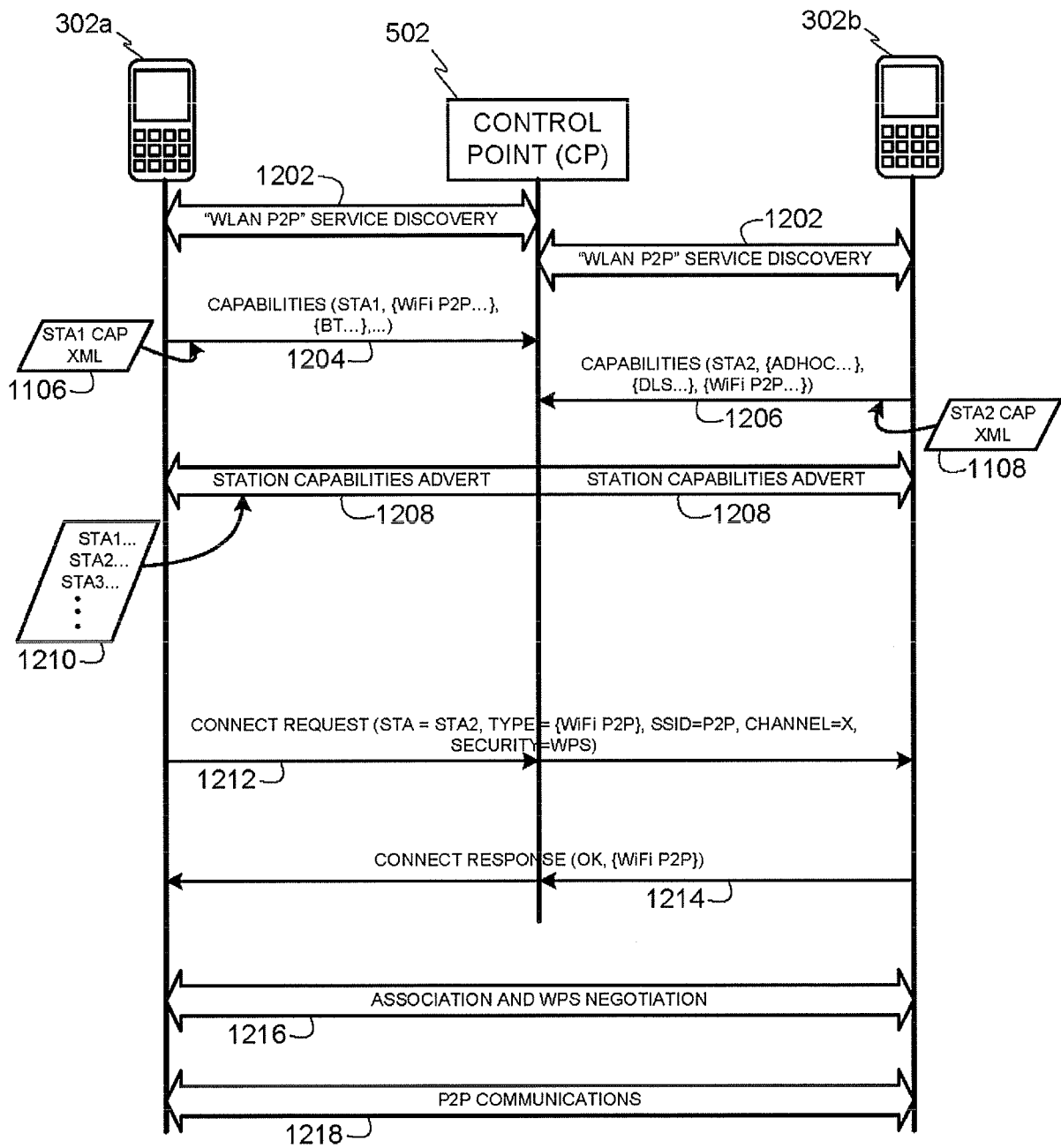


FIG. 15

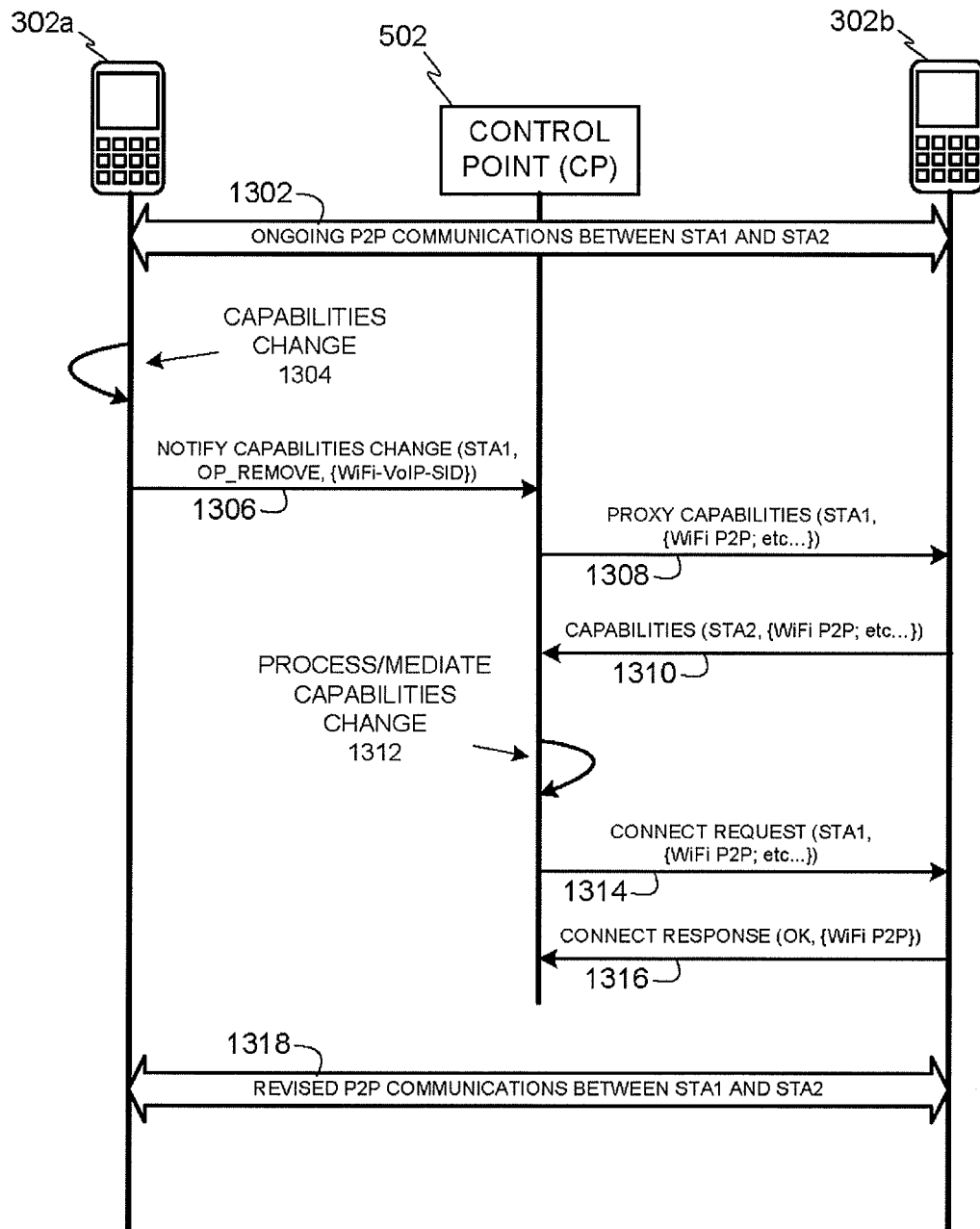


FIG. 16

```

<?xml version="1.0" encoding="UTF-8" ?>
- <schema xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:wifi.xml:ns:wlan:p2pcomms"
xmlns:p2p="urn:wifi.xml:ns:wlan:p2p-comms"
xmlns:xlink="http://www.w3.org/1999/xlink">
<import namespace="http://www.w3.org/1999/xlink" schemaLocation="xlink.xsd" />
- <element name="serviceType">
- <complexType>
- <sequence>
- <element ref="p2p:linkMechanism" />
- <element ref="p2p:netConfig" />
- <element ref="p2p:serviceList" />
- <element ref="p2p:AlternateDiscoveryProtocols" />
- </sequence>
- </complexType>
</element>
- <element name="linkMechanism">
- <complexType>
- <sequence>
- <element maxOccurs="unbounded" ref="p2p:adHocLink" />
- </sequence>
- </complexType>
</element>
- <element name="adHocLink">
- <complexType>
- <attribute name="linkIDPrefix" use="required" type="NCName" />
- <attribute name="linkType" />
- </complexType>
</element>
- <element name="netConfig">
- <complexType>
- <sequence>
- <element ref="p2p:dhcp" />
- <element ref="p2p:netmask" />
- <element ref="p2p:defaultGateway" />
- <element ref="p2p:dns" />
- <element ref="p2p:nat" />
- </sequence>
- </complexType>
</element>
- <element name="dhcp">
- <complexType>
- <simpleContent>
- <extension base="NMTOKEN">
- <attribute name="enabled" use="required" type="boolean" />
- </extension>
- </simpleContent>
- </complexType>
</element>
<element name="netmask" type="NMTOKEN" />
<element name="defaultGateway" type="NMTOKEN" />
<element name="dns" type="NMTOKEN" />

```

FIG. 17A

```

- <element name="nat">
- <complexType>
- <sequence>
- <element ref="p2p:natInside" />
- <element ref="p2p:natOutside" />
- </sequence>
- </complexType>
</element>
- <element name="natInside">
- <complexType>
- <simpleContent>
- <extension base="NMTOKEN">
- <attribute name="type" use="required" type="NCName" />
- </extension>
- </simpleContent>
- </complexType>
</element>
- <element name="natOutside">
- <complexType>
- <simpleContent>
- <extension base="NMTOKEN">
- <attribute name="type" use="required" type="NCName" />
- </extension>
- </simpleContent>
- </complexType>
</element>
- <element name="serviceList">
- <complexType>
- <sequence>
- <element maxOccurs="unbounded" ref="p2p:service" />
- </sequence>
- </complexType>
</element>
- <element name="service">
- <complexType>
- <sequence>
- <element ref="p2p:svcDescription" />
- <element minOccurs="0" ref="p2p:svcDiscoveryProtocolTypes" />
- </sequence>
- <attribute name="cos" use="required" type="NMTOKEN" />
- <attribute name="id" use="required" type="NCName" />
- <attribute name="vendor" />
- <attribute name="version" use="required" type="decimal" />
- </complexType>
</element>
- <element name="svcDescription" type="string" />
- <element name="svcDiscoveryProtocolTypes">
- <complexType>
- <sequence>
- <element ref="p2p:sdpType" />
- </sequence>
- </complexType>
</element>
- <element name="sdpType">
- <complexType>
- <attribute name="addrType" use="required" type="NCName" />
- <attribute name="id" use="required" type="NCName" />
- <attribute name="multicastAddr" use="required" type="NMTOKEN" />
- </complexType>
</element>

```

FIG. 17B

```

<element name="AlternateDiscoveryProtocols">
  <complexType>
    <sequence>
      <element ref="p2p:UPnP" />
      <element ref="p2p:Bonjour" />
    </sequence>
  </complexType>
</element>
<element name="UPnP">
  <complexType>
    <complexContent>
      <extension base="p2p:svcMapper">
        <attribute ref="xlink:actuate" use="required" />
        <attribute ref="xlink:href" use="required" />
        <attribute ref="xlink:type" use="required" />
      </extension>
    </complexContent>
  </complexType>
</element>
<element name="Bonjour">
  <complexType>
    <complexContent>
      <extension base="p2p:svcMapper">
        <attribute ref="xlink:actuate" use="required" />
        <attribute ref="xlink:href" use="required" />
        <attribute ref="xlink:type" use="required" />
      </extension>
    </complexContent>
  </complexType>
</element>
<complexType name="svcMapper">
  <sequence>
    <element ref="p2p:svcMapper" />
  </sequence>
</complexType>
<element name="svcMapper">
  <complexType>
    <sequence>
      <element maxOccurs="unbounded" ref="p2p:svcMapEntry" />
    </sequence>
  </complexType>
</element>
<element name="svcMapEntry">
  <complexType>
    <attribute name="contains" />
    <attribute name="refId" use="required" type="NCName" />
  </complexType>
</element>
</schema>

```

FIG. 17C

1500

```

<?xml version="1.0" ?>
- <p2p:serviceType xmlns:p2p="urn:wifi:xm1:ns:wlan:p2p-comms"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xsi:schemaLocation="http://www.w3.org/1999/xlink xlink.xsd
  urn:wifi:xm1:ns:wlan:p2p-comms p2pcomms.xsd">
  <!-- Ad-hoc control point definition for a P2P Network -->
  - <p2p:linkMechanism>
    <p2p:adHocLink linkIDPrefix="AH_Link1" />
    <p2p:adHocLink linkIDPrefix="AH_Link2" linkType="WiFi P2P" />
  </p2p:linkMechanism>
  - <p2p:netConfig>
    <p2p:dhcp enabled="true">192.168.2.1</p2p:dhcp>
    <p2p:netmask>255.255.255.0</p2p:netmask>
    <p2p:defaultGateway>192.168.2.1</p2p:defaultGateway>
    <p2p:dns>192.168.2.2</p2p:dns>
  - <p2p:nat>
    <p2p:natInside type="IPv4">192.168.2.1</p2p:natInside>
    <p2p:natOutside type="IPv4">63.63.1</p2p:natOutside>
  </p2p:nat>
  </p2p:netConfig>
  - <p2p:serviceList>
    <!-- Pre-provisioned service list accessible to the control point -->
    <!-- with discovery protocol types/hints -->
    - <p2p:service id="VOIP_A1" version="1.0" vendor="Skype" cos="WiFi:Voice">
      <p2p:svcDescription>WiFi Voice Using Skype</p2p:svcDescription>
    - <p2p:svcDiscoveryProtocolTypes>
      <p2p:sdpType id="SSDP" addrType="IPv4" multicastAddr="239.255.255.250" />
    </p2p:svcDiscoveryProtocolTypes>
    </p2p:service>
    - <p2p:service id="ESAP" version="1.0" cos="WiFi:Required">
      <p2p:svcDescription>WiFi Emergency Service Access</p2p:svcDescription>
    </p2p:service>
    - <p2p:service id="CLK_A1" version="1.0" vendor="T-Wifi(tm)" cos="WiFi:Time">
      <p2p:svcDescription>WiFi Clock Service</p2p:svcDescription>
    - <p2p:svcDiscoveryProtocolTypes>

```

FIG. 18A

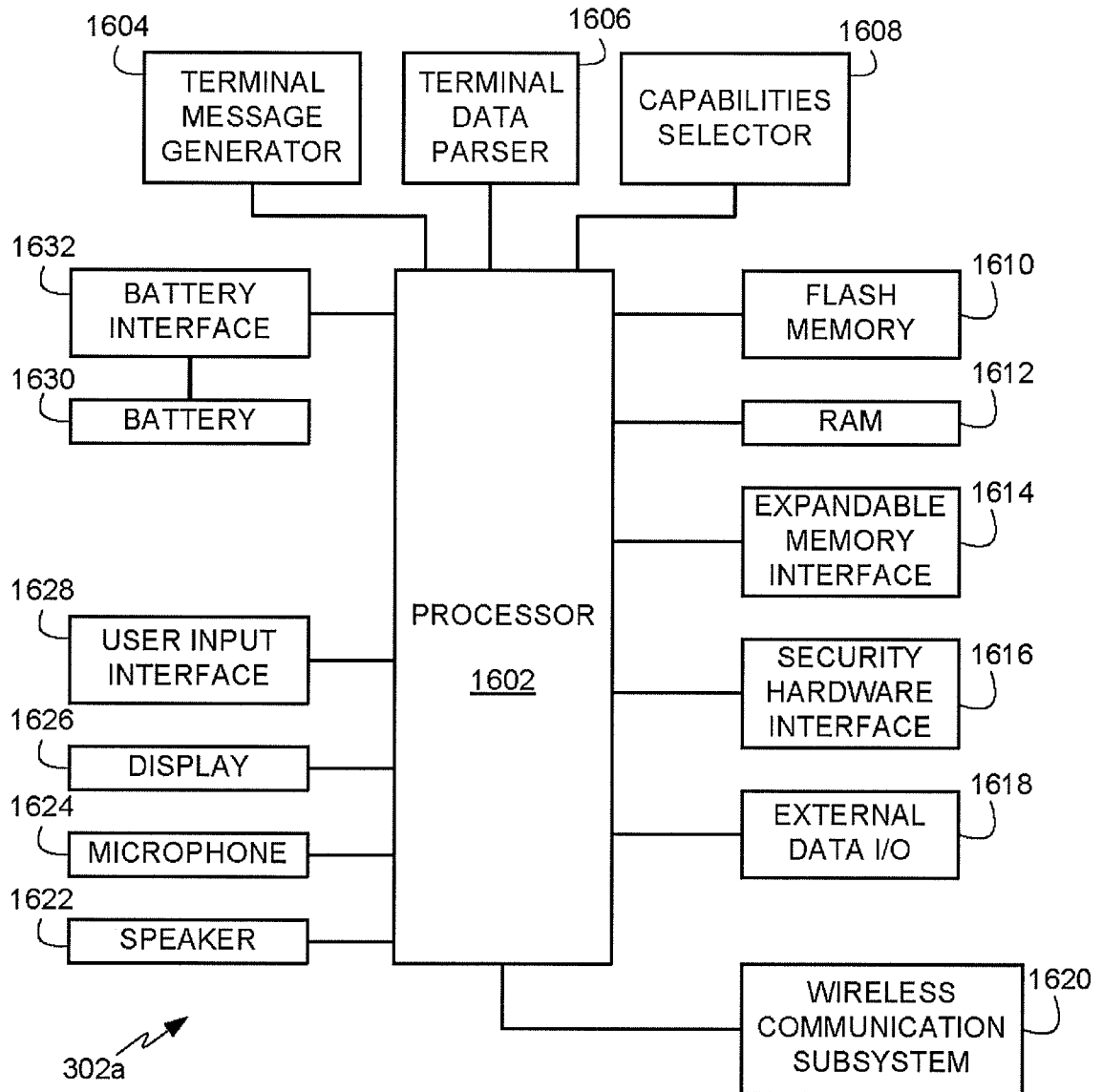
1500

```

    <p2p:sdpType id="SSDP" addrType="IPv4" multicastAddr="239.255.255.250" />
  </p2p:svcDiscoveryProtocolTypes>
  <p2p:service>
    <p2p:serviceList>
      - <p2p:AlternateDiscoveryProtocols>
        <!-- Alternative discovery protocols - to be used where/when a service list entry does -->
        <!-- or a given service list entry is unable to be discovered using a specified sdp type -->
        - <p2p:UPnP xlink:type="resource" xlink:href="http://www.example.com/wifi/UPnP/Voice" xlink:actuate="onRequest">
          - <p2p:svcMapper>
            - <p2p:svcMapEntry refid="VOIP_A1" />
            <p2p:svcMapEntry refid="Ref1" contains="^[a-zA-Z0-9]*Print[a-zA-Z0-9]*" />
          </p2p:svcMapper>
        </p2p:UPnP>
      - <p2p:Bonjour xlink:type="resource" xlink:href="http://www.example.com/wifi/Bonjour/Clock"
        xlink:actuate="onRequest">
        - <p2p:svcMapper>
          <p2p:svcMapEntry refid="CLK_A1" />
          <p2p:svcMapEntry refid="Ref2" contains="^[a-zA-Z]*Time" />
        </p2p:svcMapper>
        </p2p:Bonjour>
      </p2p:AlternateDiscoveryProtocols>
    </p2p:serviceType>

```

FIG. 18B



WIRELESS TERMINAL

FIG. 19

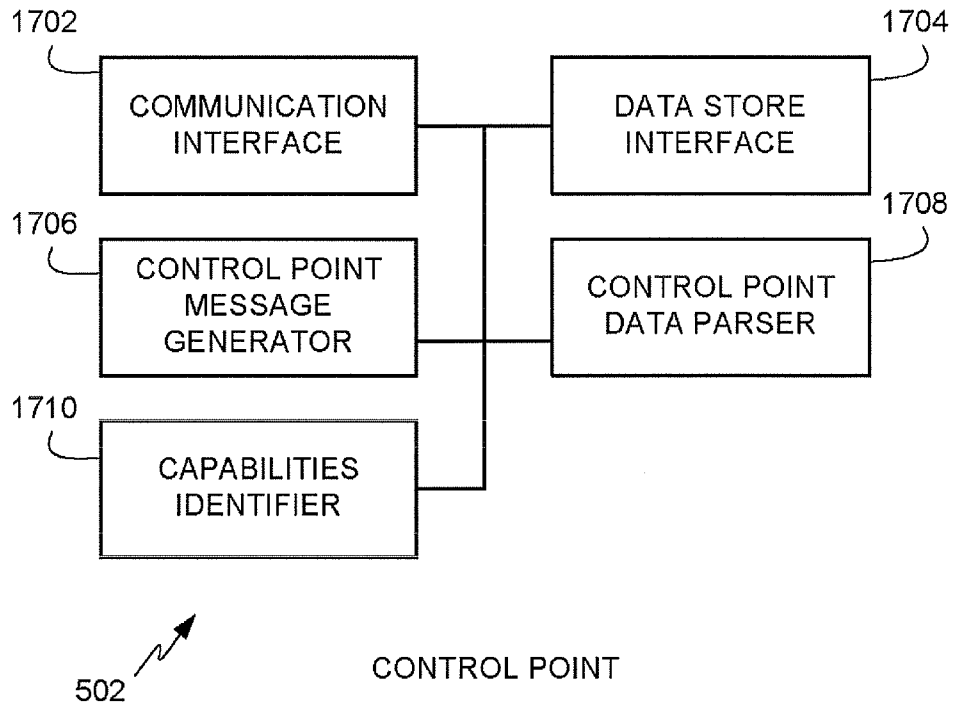


FIG. 20

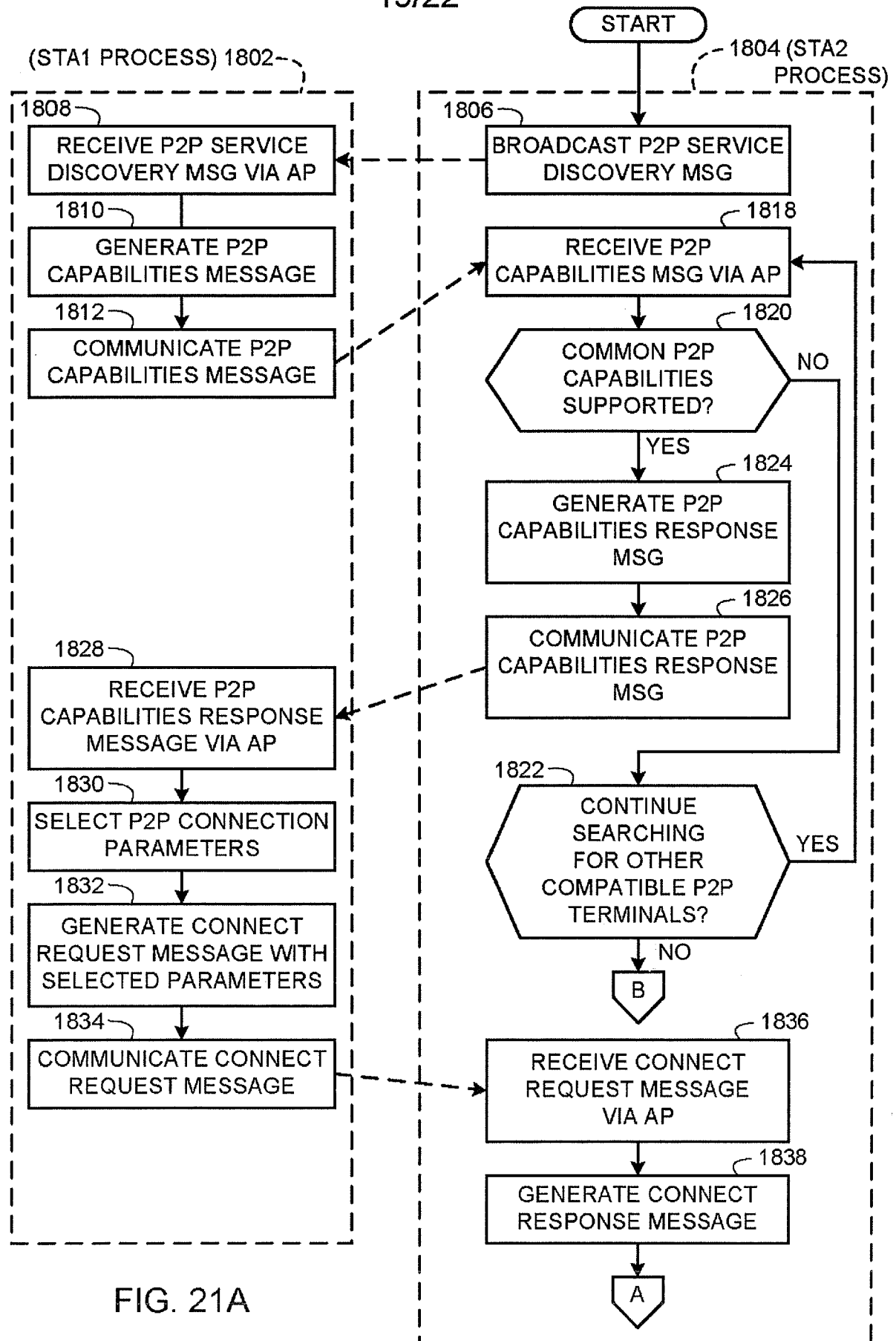


FIG. 21A

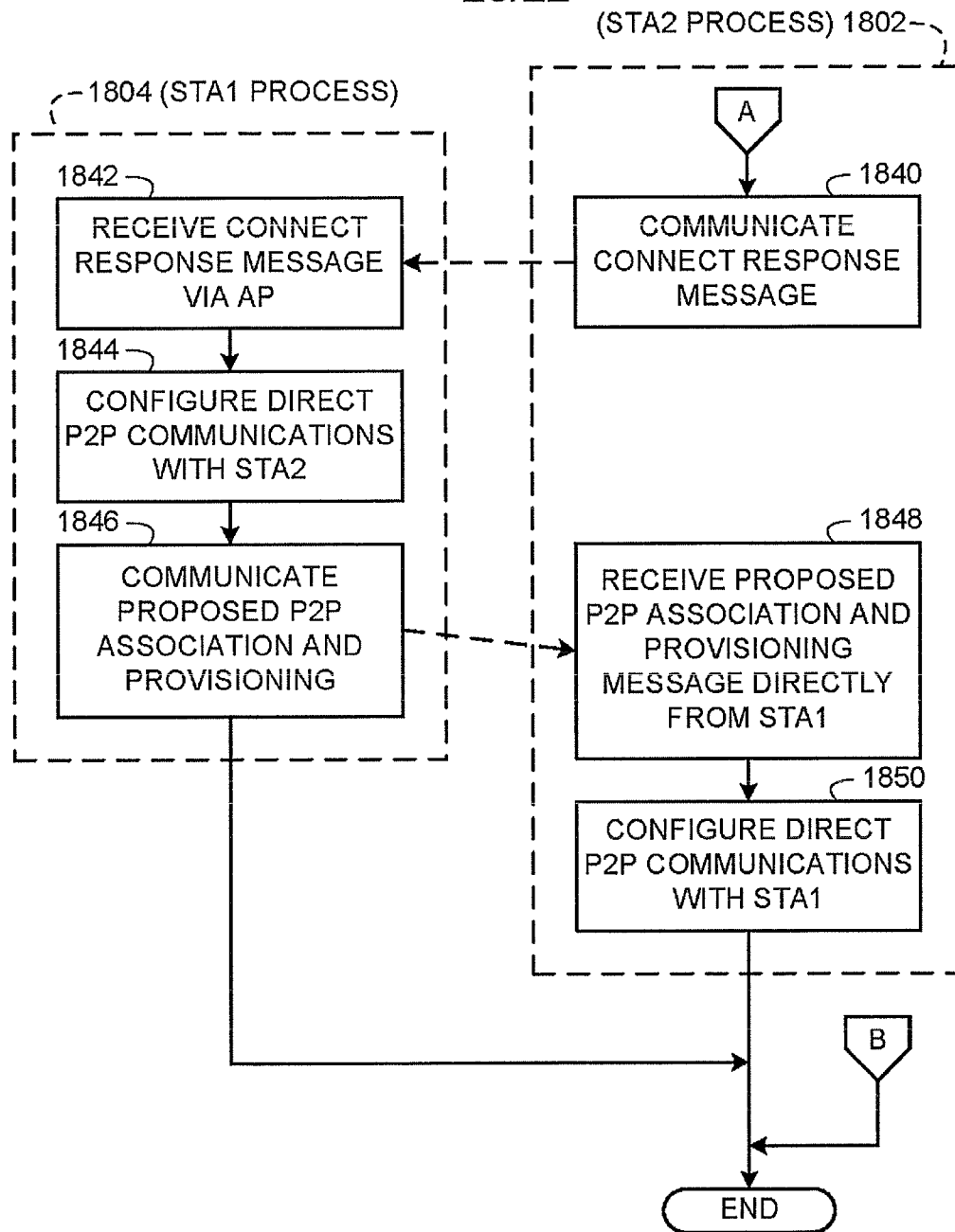


FIG. 21B

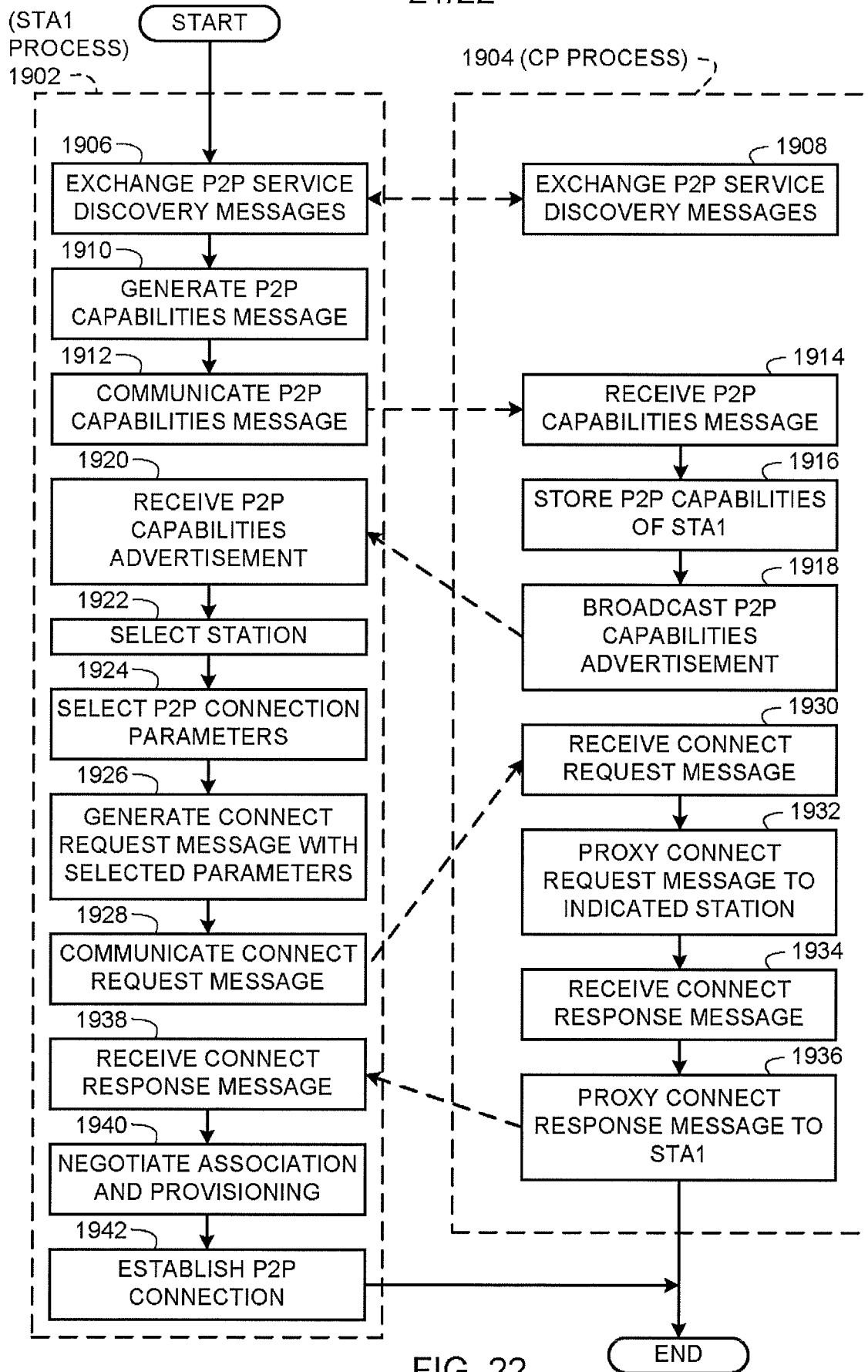


FIG. 22

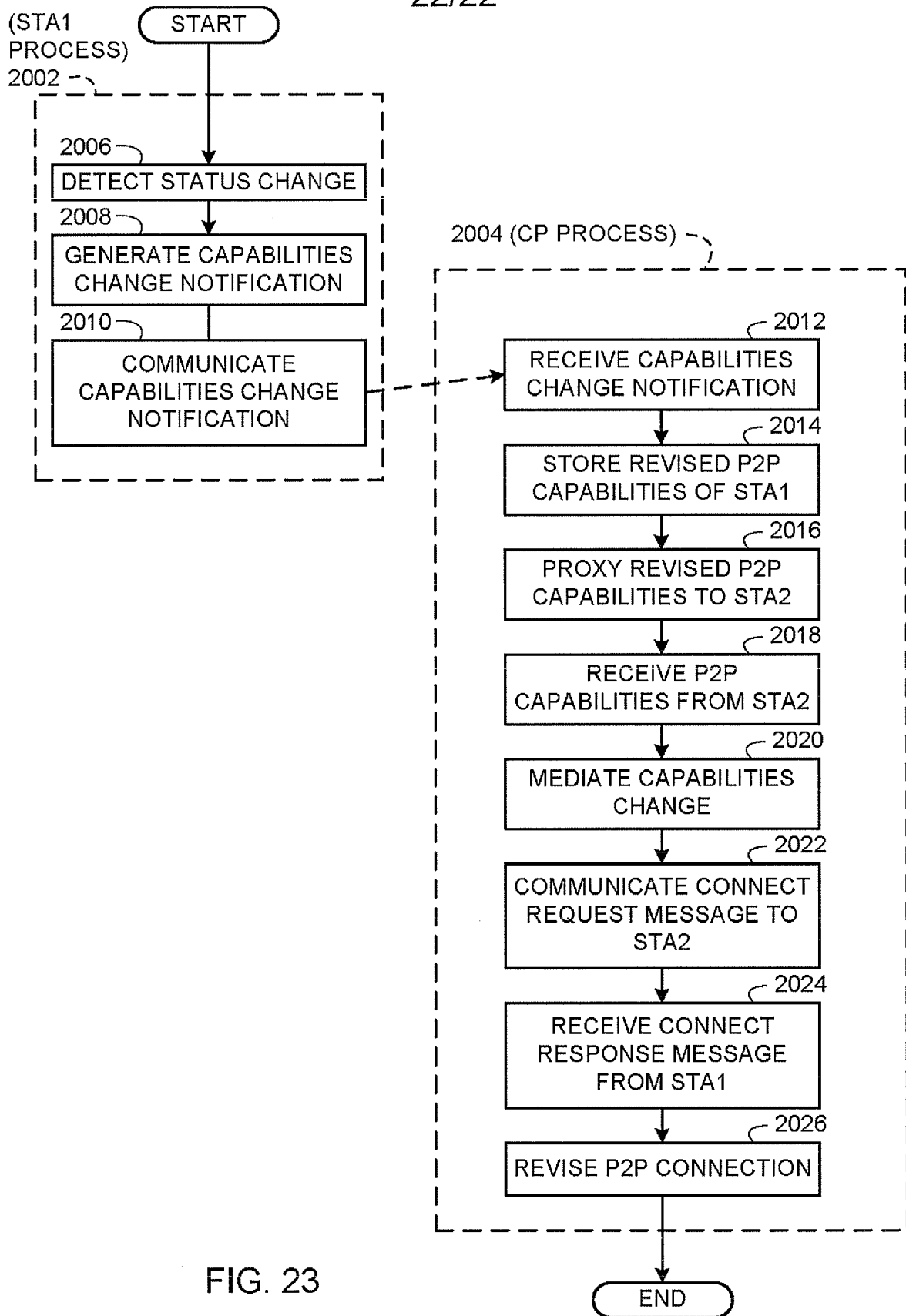


FIG. 23