Android PTT (Push-to-Talk) over IP Solution



Preliminary Product Overview

(Without notice, following described technical spec. can be changed)

AddPac Technology

Sales and Marketing

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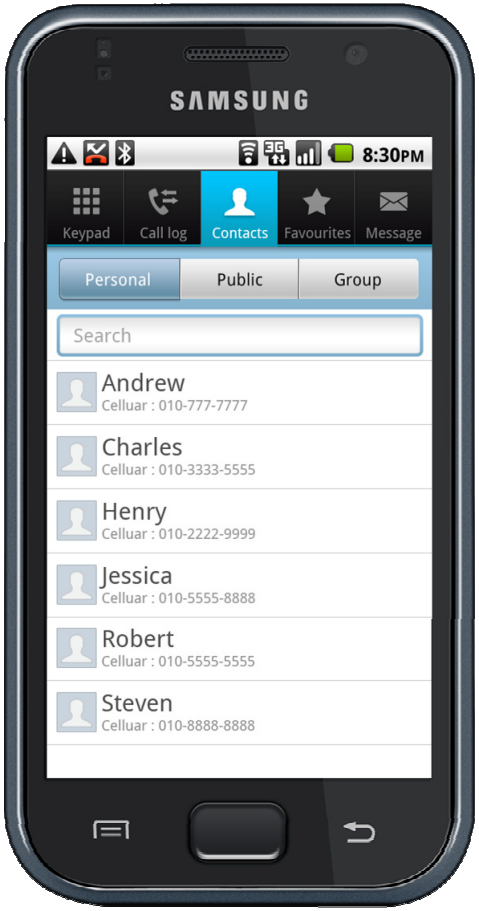
  - LMR(Land-to-Mobile Radio) Gateway for PTT Service
  - AP-WP100P Wi-Fi Phone for PTT Service
  - AP-IP300 IP Phone for PTT Service
  - Network Management System

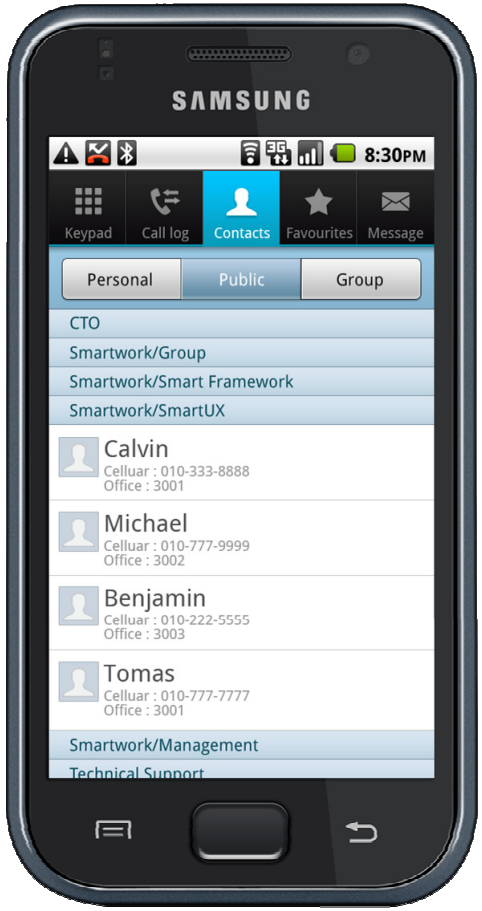
Android PTT Service Features

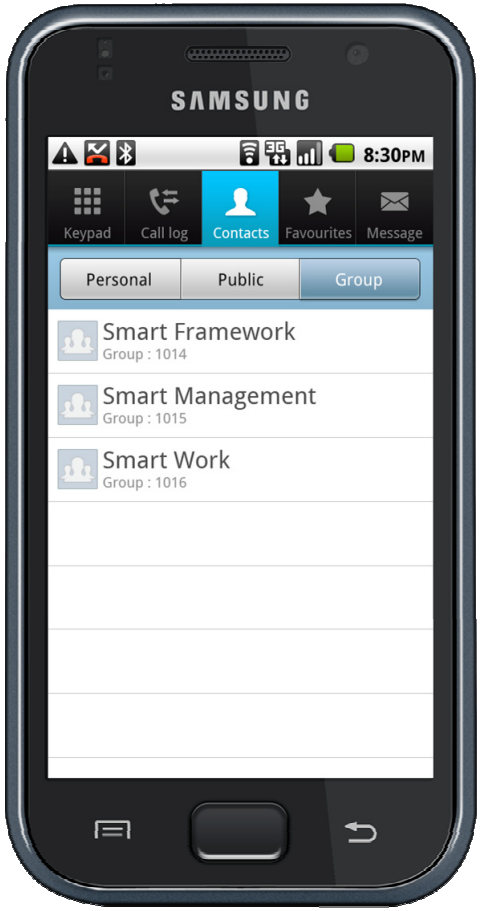
- Android OS Support (Galaxy S, Galaxy U, etc)
- Wifi based PTT over IP Service
- 3G based PTT over IP Service (mVoIP)
- SIP based Point-to-Point VoIP Call Service
- SIP based Group(PTT) VoIP Call Service
- Emergency PTT Call Service
- Various IP-PBX Call Scenario
  - Hold/Resume , Transfer , Call Waiting
- Personal, Public, Group Address List Support
- Use Internal Contacts List for Personal Phone Book

Example

- Personal Phone Book is synchronized with built-in Contacts

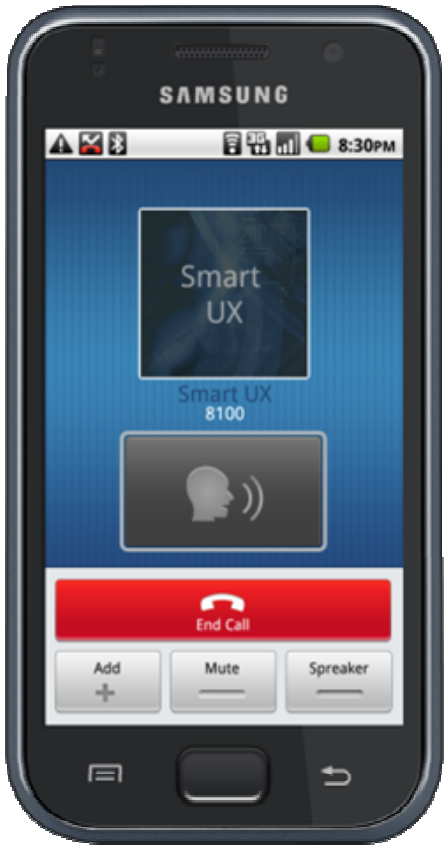






Example

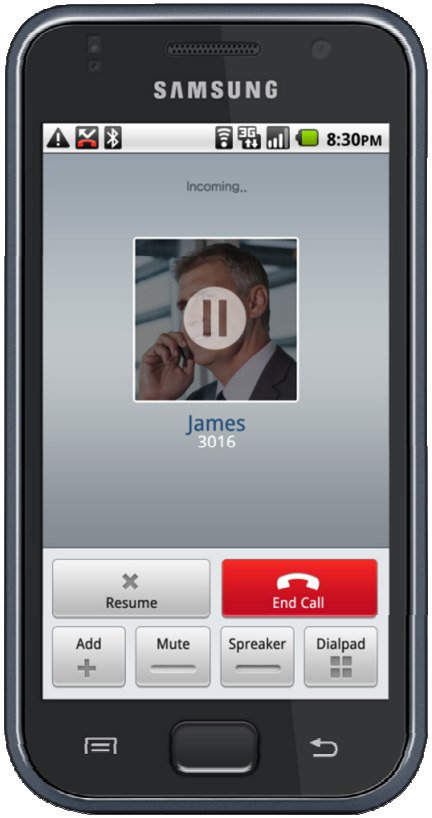
- Display user profile in call
  - User Name, Phone Number, Photo

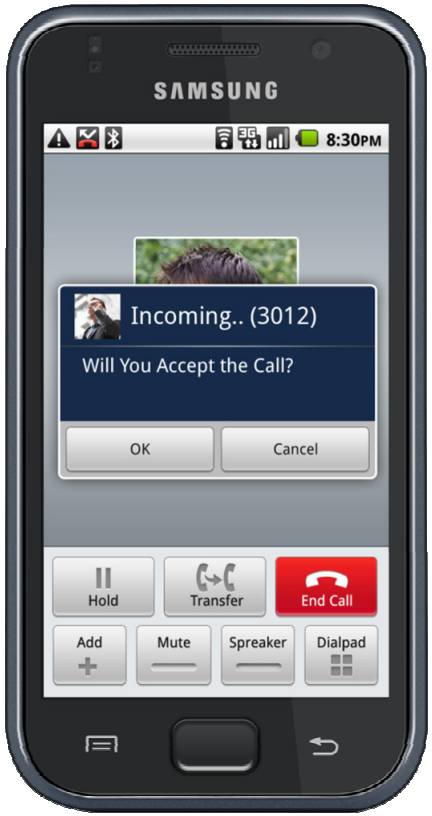


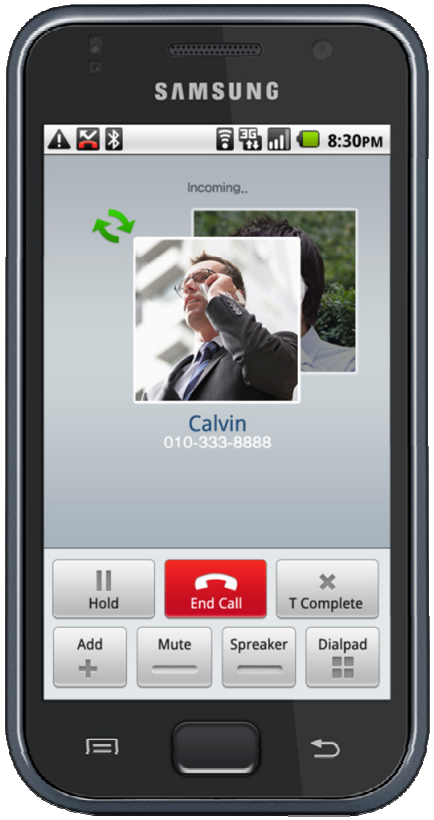


Example

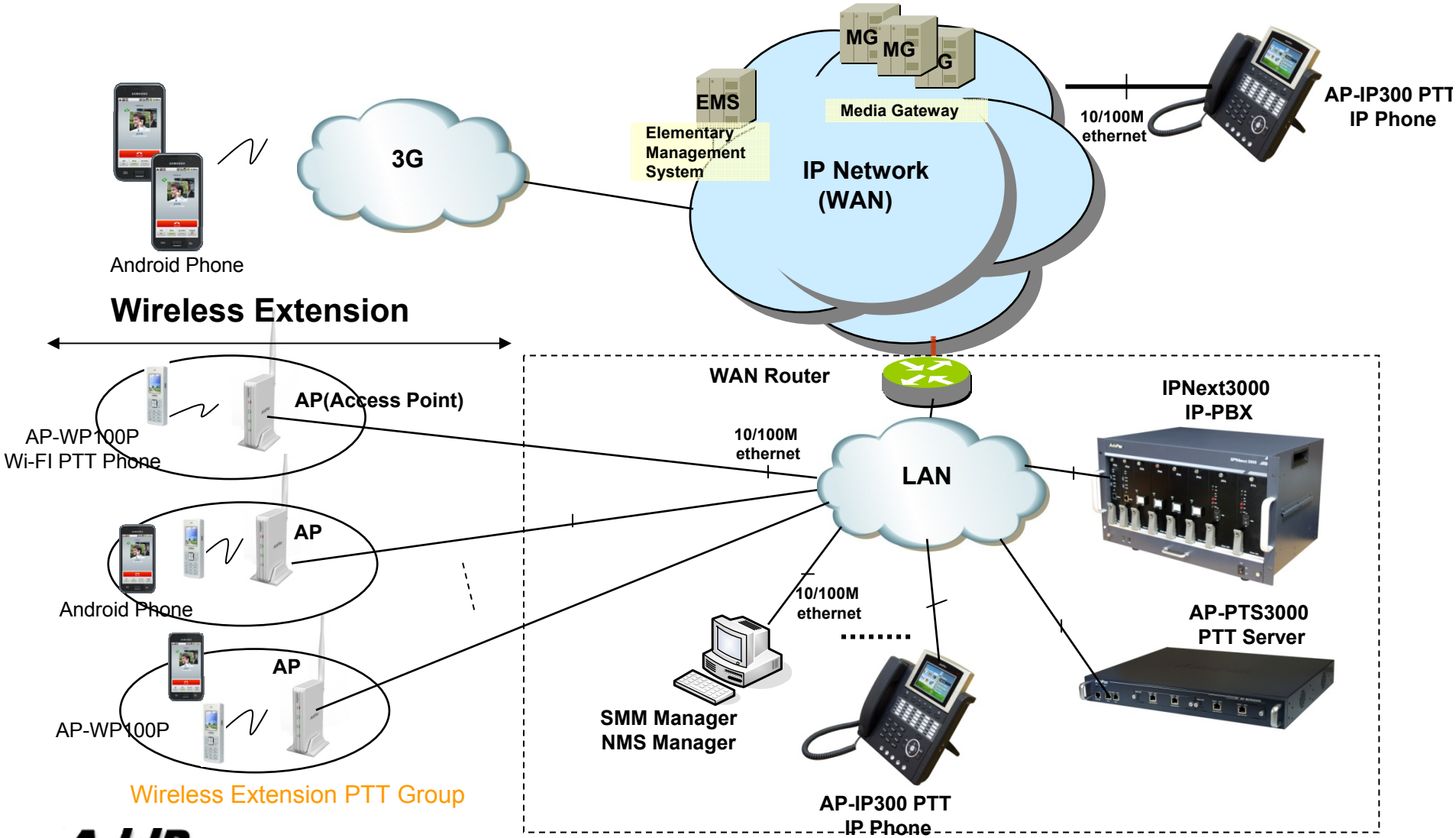
- Support IP-PBX call features
  - Hold/Resume , Transfer , Call Waiting







Android PTT Network Diagram



Android PTT Call Scenario (example)

- PTP Call Scenario
  - Basic Call and Display user profile
  - Hold / Resume
  - Call Waiting
  - Call Transfer
  - 3G to 3G basic Call

- PTT Scenario
  - Basic Call (Wi-Fi to Wi-Fi)
  - Basic Call (3G to 3G)

Android PTT - Call Scenario

- Basic Call and Display user profile

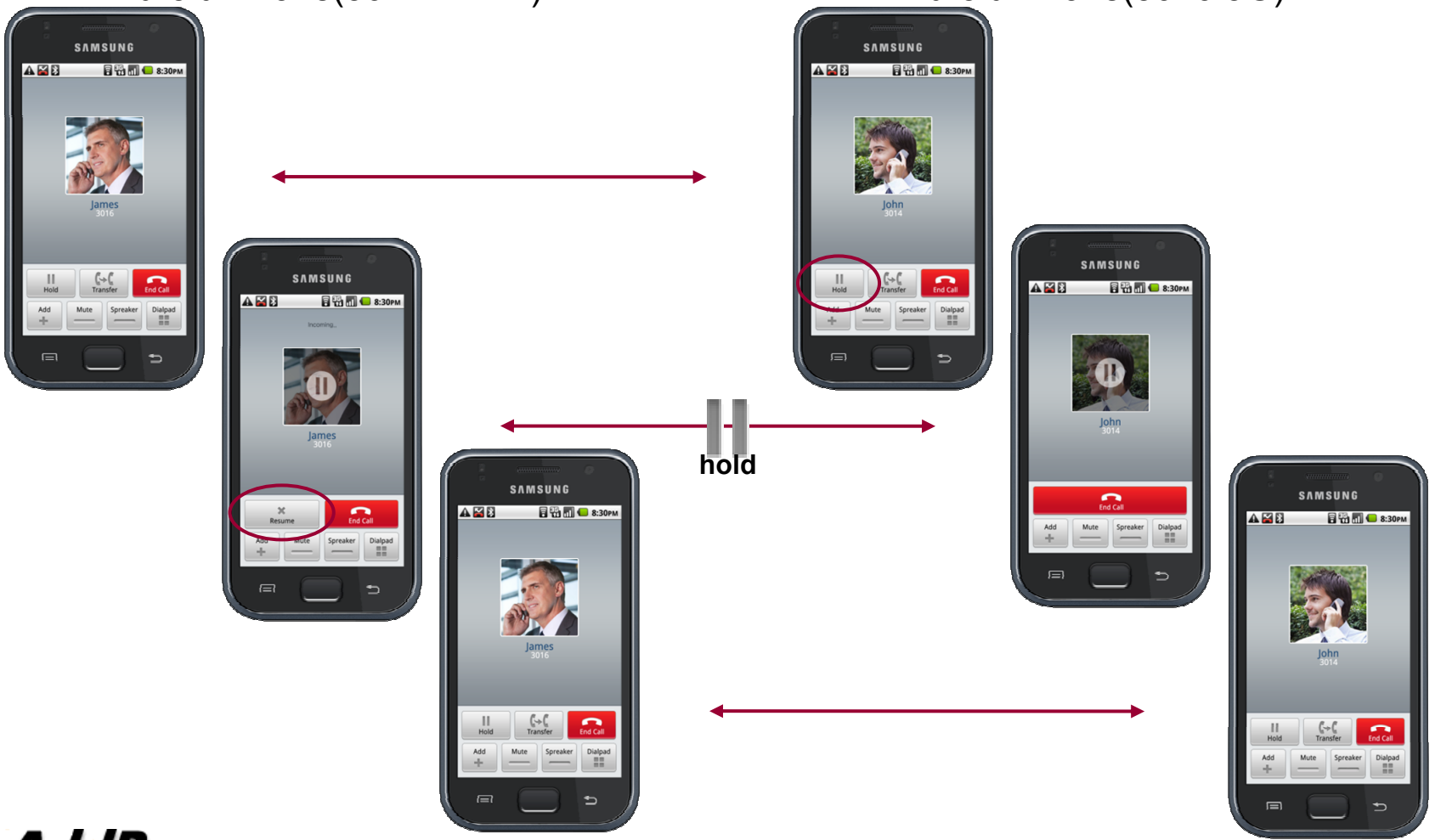
  - Android Phone(3014: Wi-Fi) → Android Phone(3016:3G)



Android PTT - Call Scenario

- Hold / Resume

  - Android Phone(3014: Wi-Fi) → Android Phone(3016:3G)



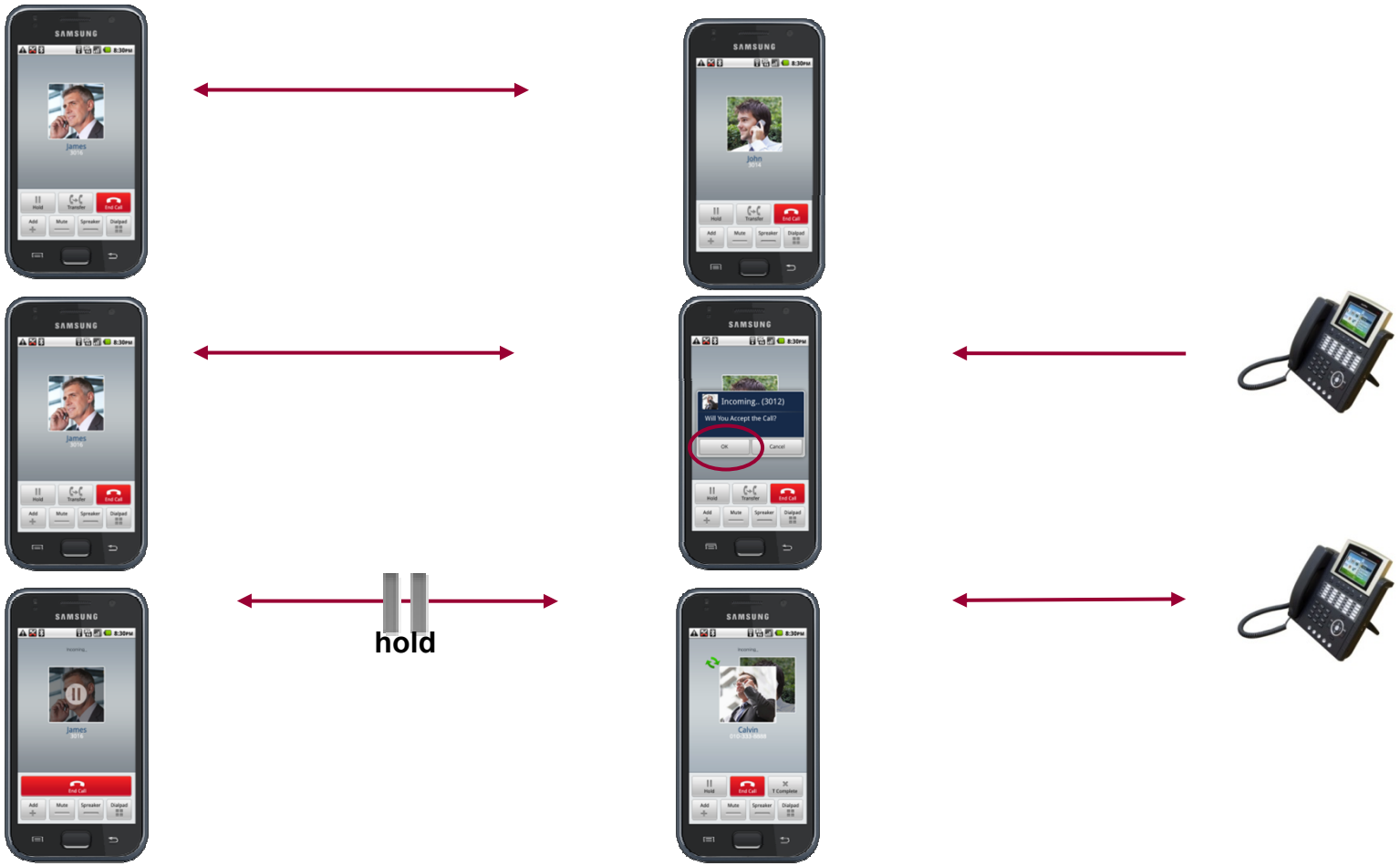
Android PTT - Call Scenario

- Call Waiting (1)

- Android Phone(3014: Wi-Fi)

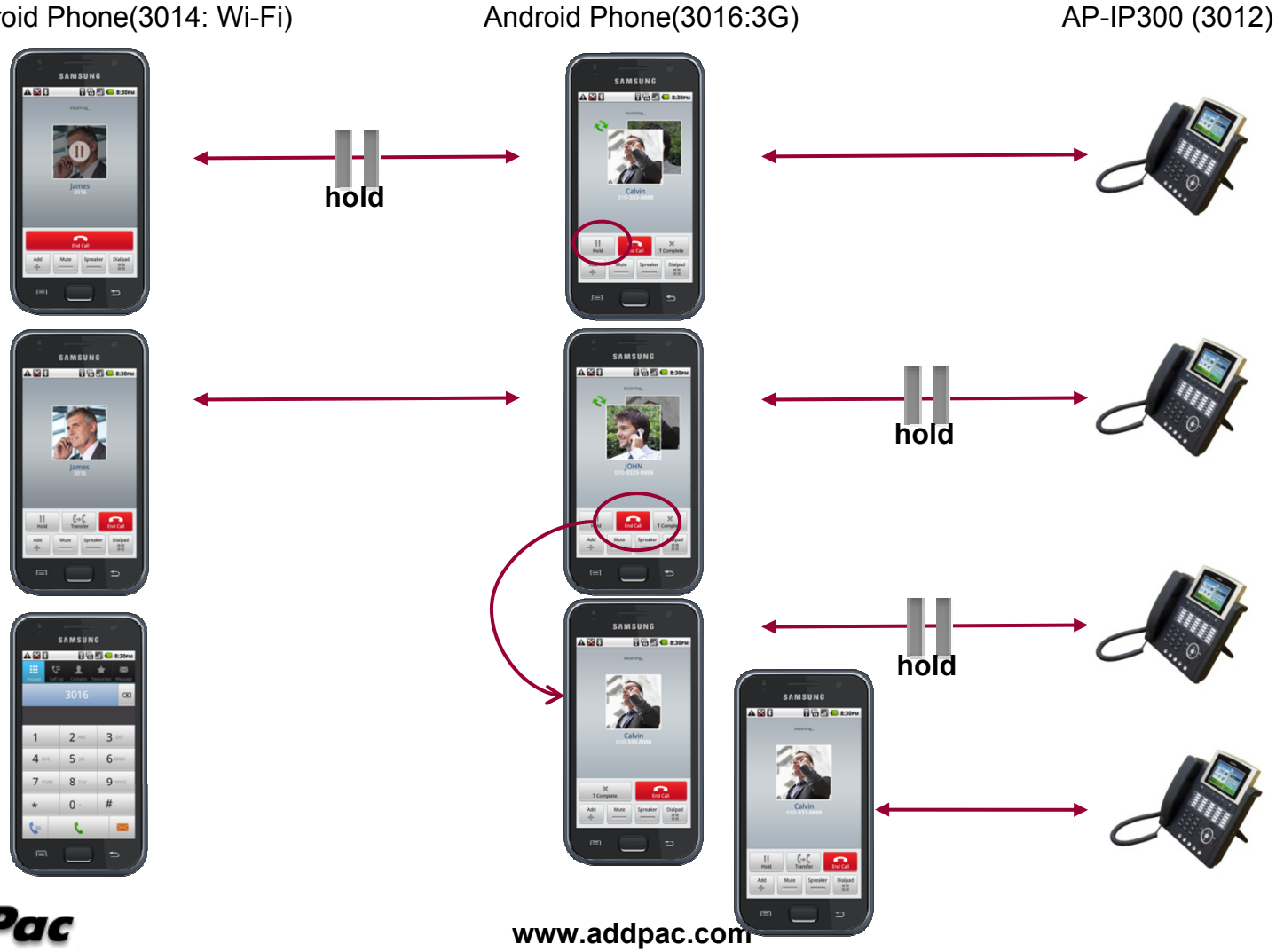
Android Phone(3016:3G)

AP-IP300 (3012)



Android PTT - Call Scenario

- Call Waiting (2)



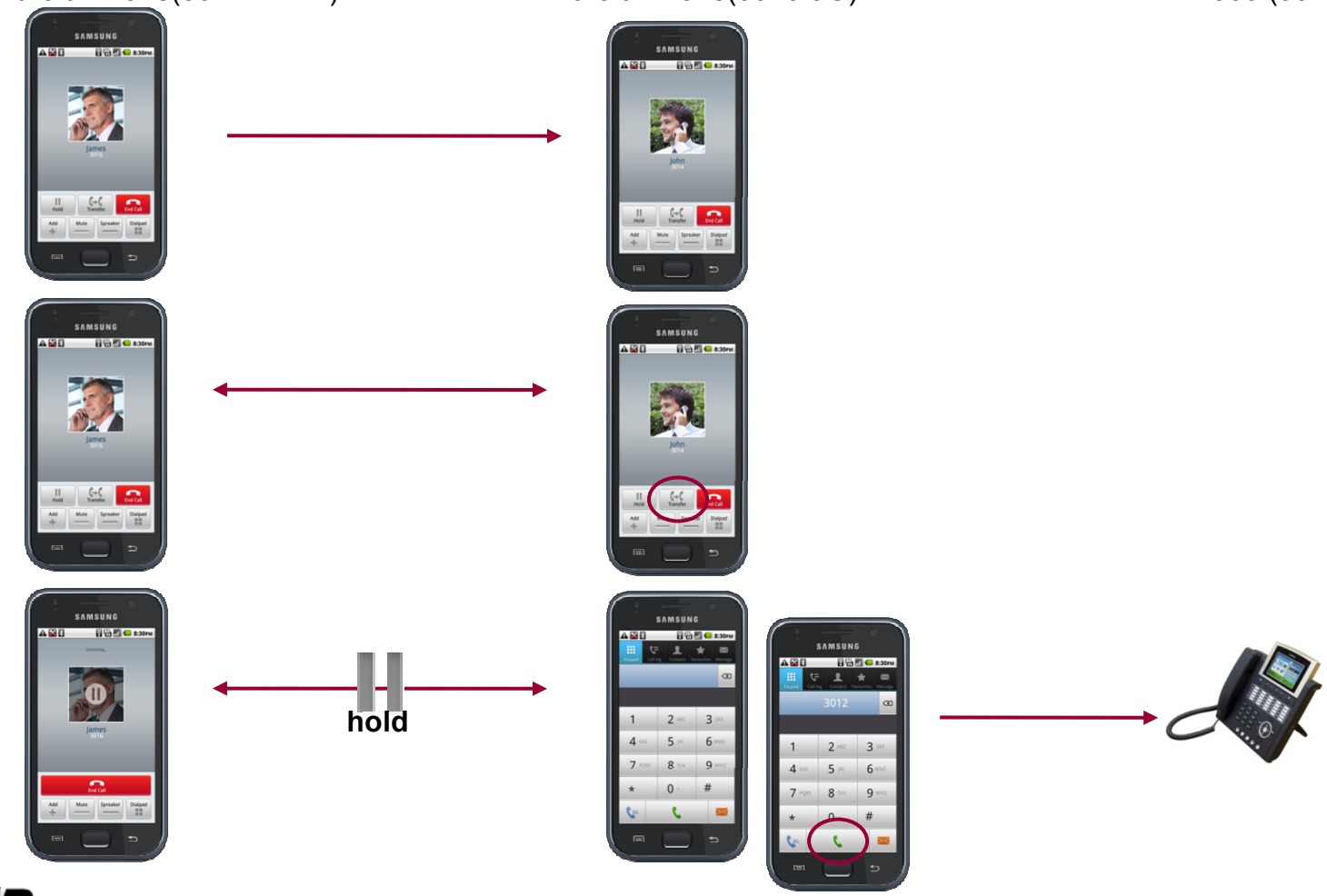
Android PTT - Call Scenario

- Transfer (1)

- Android Phone(3014: Wi-Fi)

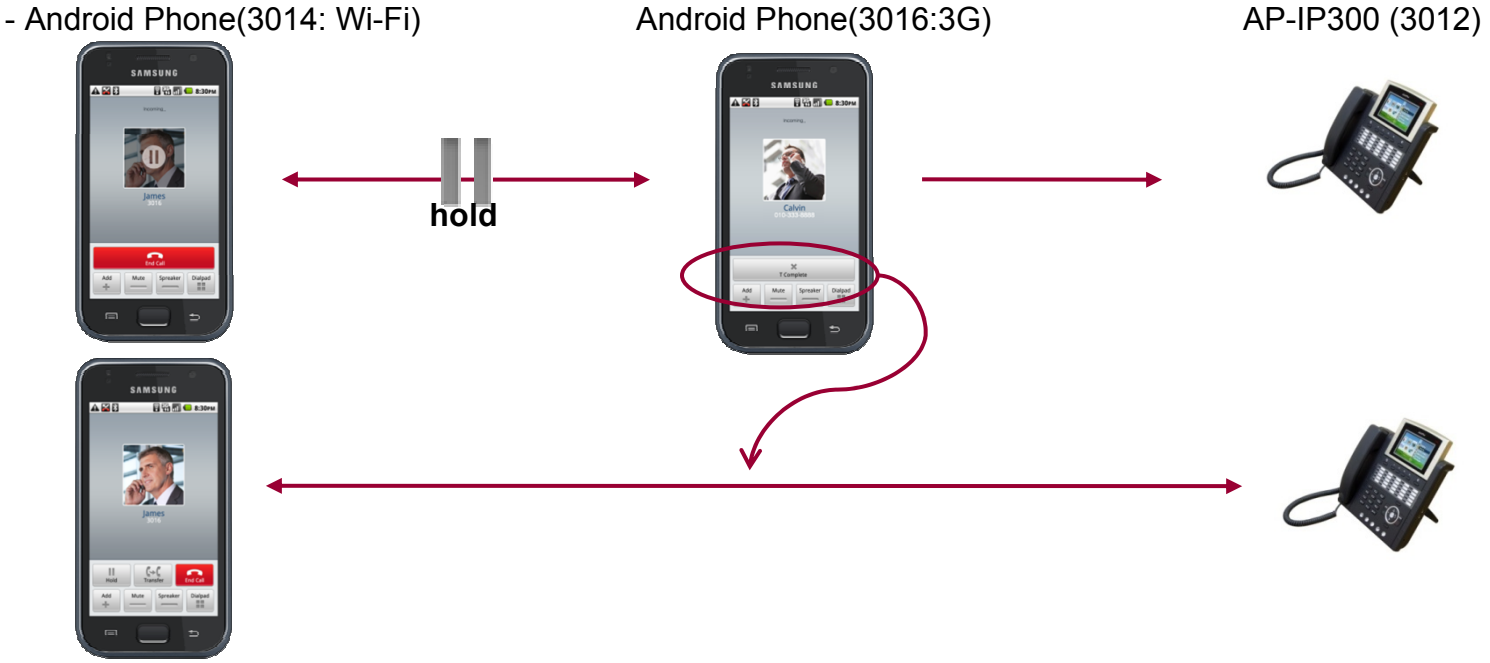
Android Phone(3016:3G)

AP-IP300 (3012)



Android PTT - Call Scenario

- Transfer (2)



Android PTT - Call Scenario

- 3G to 3G basic Call

  - Android Phone(3014: 3G) → Android Phone(3016:3G)



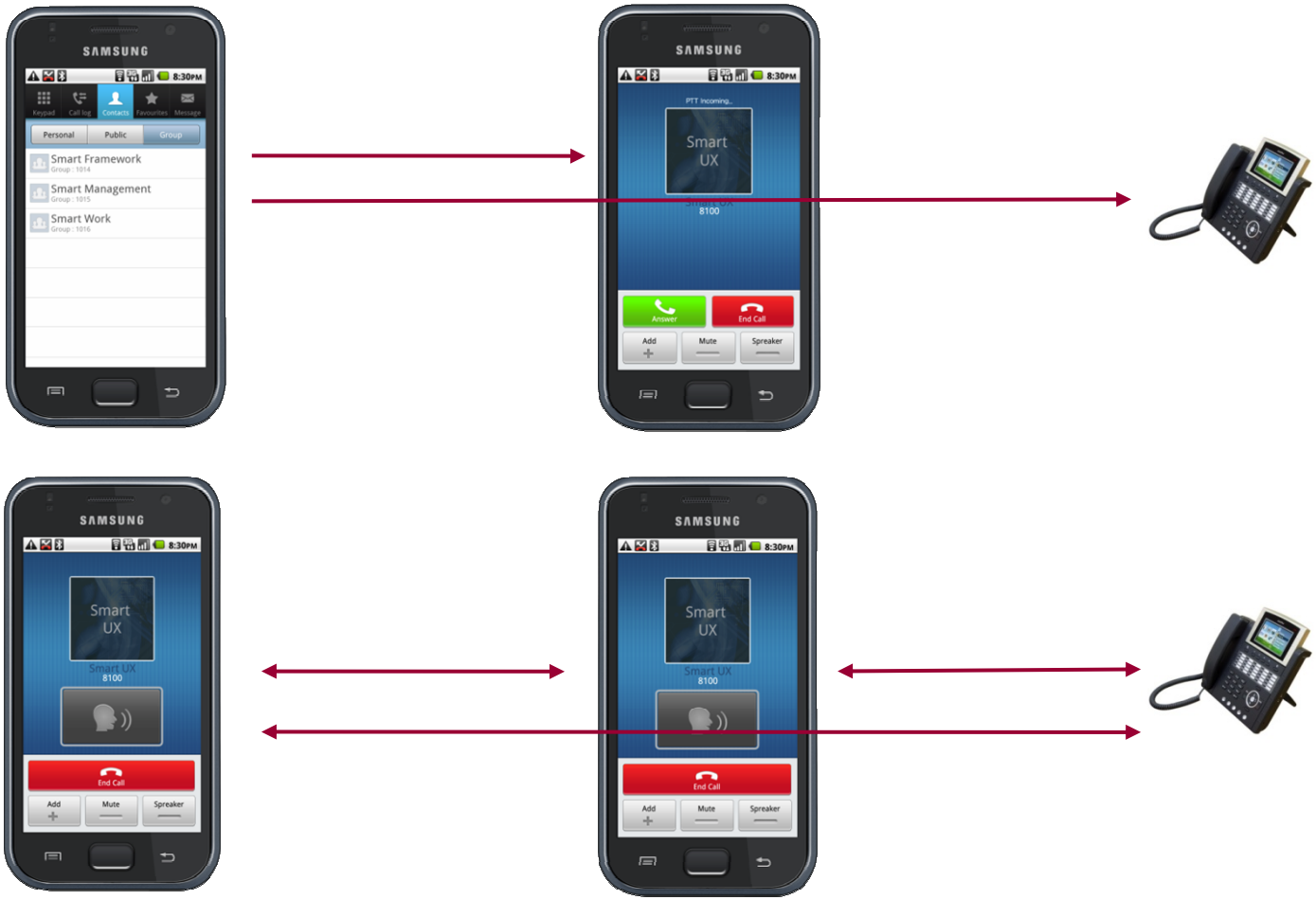
Android PTT - PTT Scenario

- basic Call (Wi-Fi to Wi-Fi)

- Android Phone(3014: Wi-Fi)

Android Phone(3016:Wi-Fi)

AP-IP300 (3012)



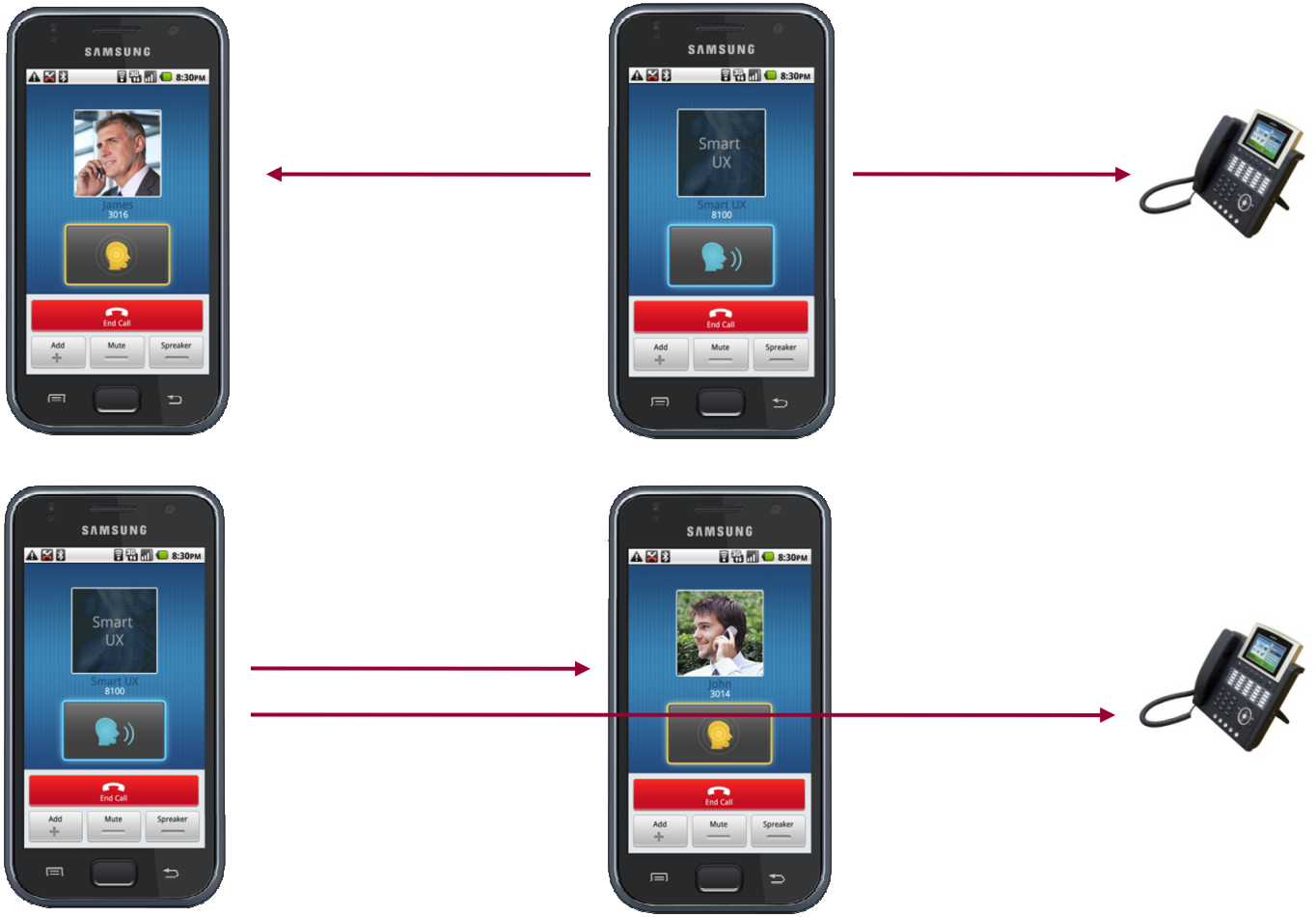
Android PTT - PTT Scenario

- Basic Call (Wi-Fi to Wi-Fi)

- Android Phone(3014: Wi-Fi)

Android Phone(3016:Wi-Fi)

AP-IP300 (3012)



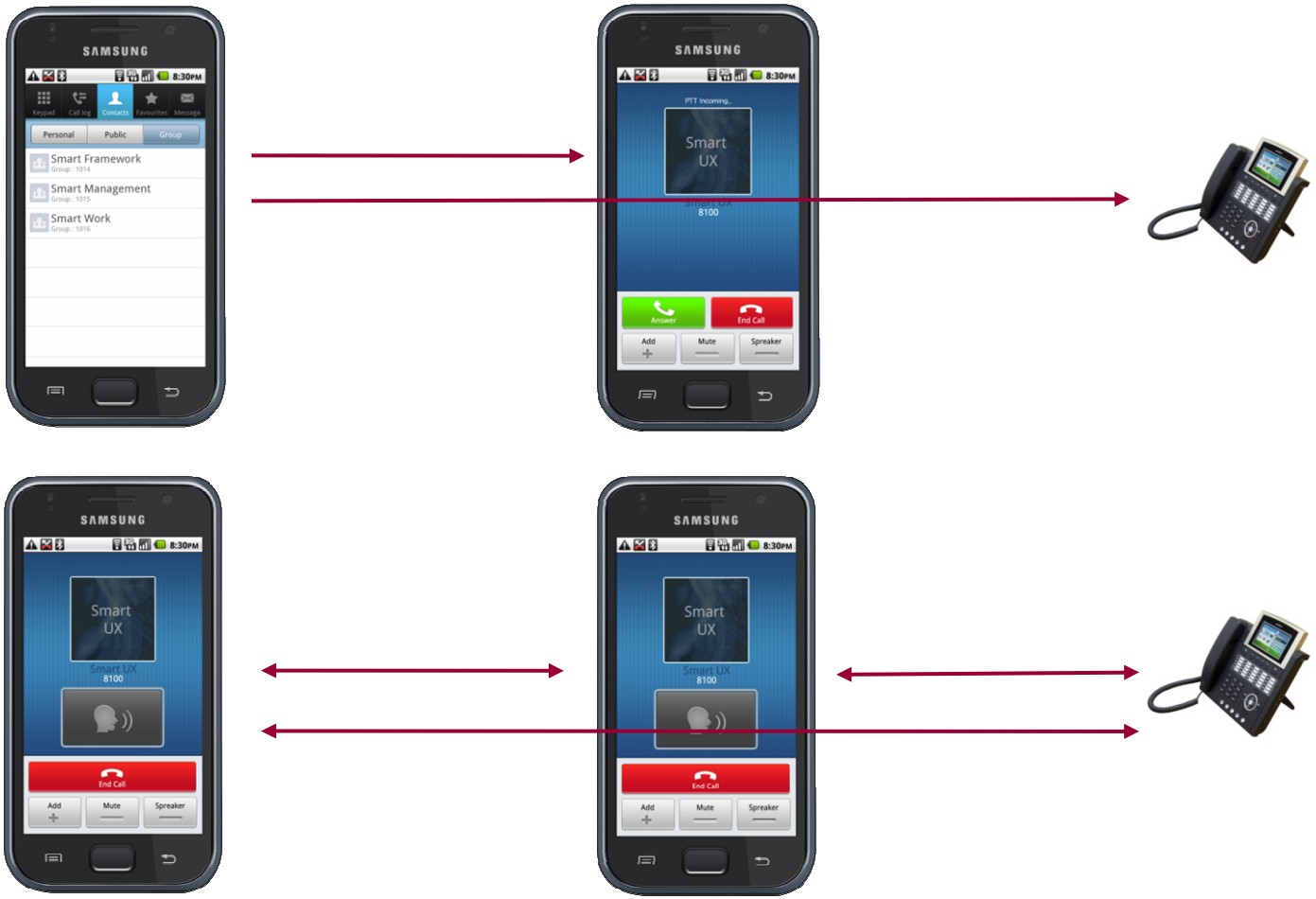
Android PTT - PTT Scenario

- Basic Call (3G to 3G)

- Android Phone(3014: 3G)

Android Phone(3016:3G)

AP-IP300 (3012)



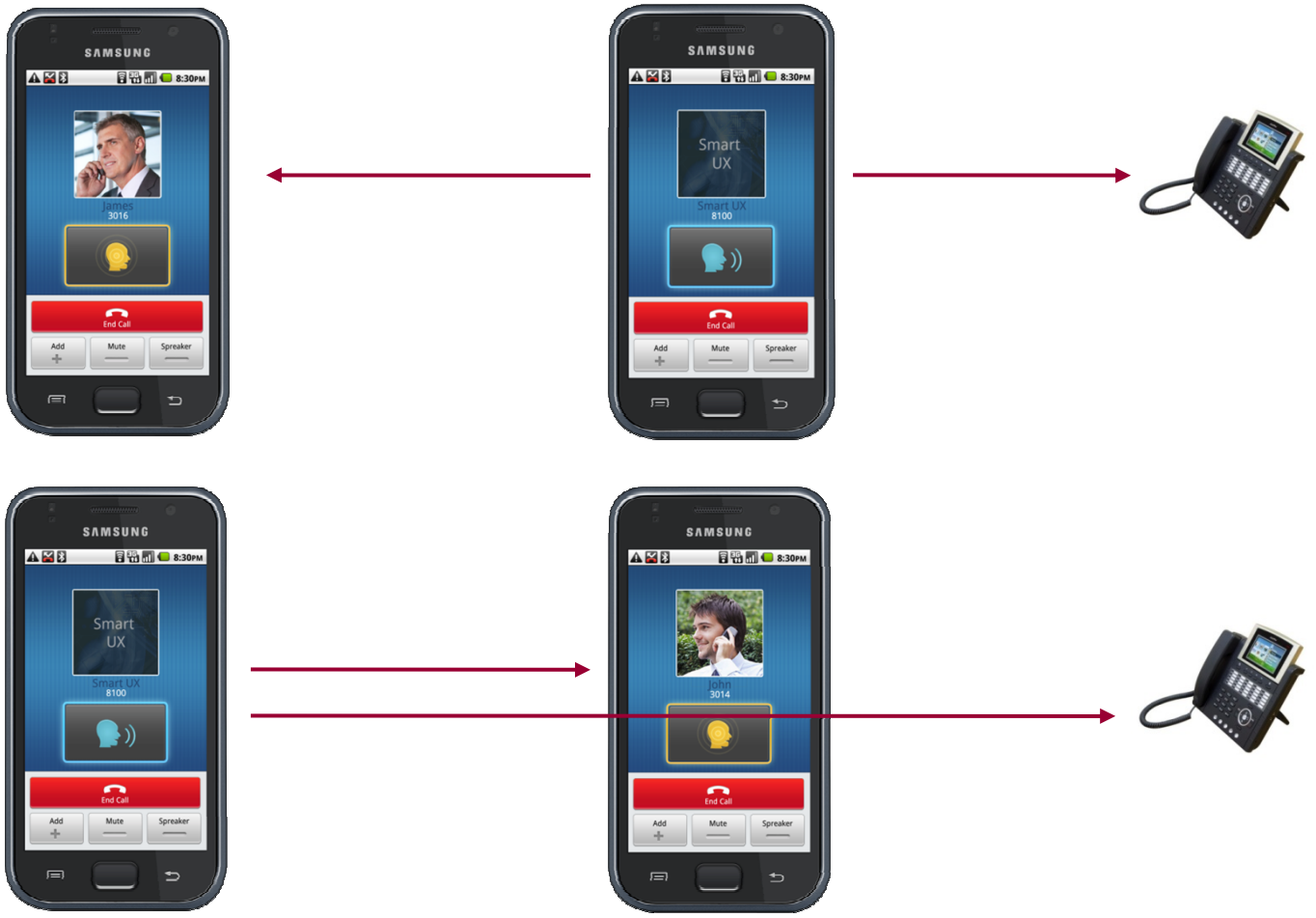
Android PTT - PTT Scenario

- Basic Call (3G to 3G)

- Android Phone(3014: 3G)

Android Phone(3016:3G)

AP-IP300 (3012)



IP based PTT Solution Components

IPNext3000 Next Generation IP-PBX



Main Features

IPNext3000 Next Generation IP-PBX

- Advanced IP-PBX Solution
- IPv4/IPv6 based Dual Network Protocol Support
- Internal/External RTP Proxy Function Support
  - External RTP Proxy Server for Private Address : AP-RS2000
- Internal/External Presence Function Support with Smart Messenger
  - External Presence Server : AP-PS2000
- Powerful Management and User Friendly Features
- Fault Tolerant and Scalability Architecture
- Firmware Upgradeable Architecture
- Dual System Redundancy Architecture
  - Two(2) 3.5 Inch Hard Disk (RAID 1) / System
  - Two(2) Gigabit Ethernet Interface / System
- Dual Redundancy Power Module
- Smart Multimedia Manager Software

Hardware Specification

IPNext3000 Next Generation IP-PBX

RISC CPU

IPNext3000 Front Side



Power On/Off Switch for System

CPU Board (Hot-Swap)

Dual Power Supply Modules (Hot-Swap)

Dual 3.5 Inch HDD Disks(RAID1) : Hot-Swap

FAN Tray for Air Cooling

Power On/Off Switch for FAN Tray

Hardware Specification

IPNext3000 Next Generation IP-PBX

RISC CPU

IPNext3000 Back Side



LAN0 for Active CPU

LAN1 for Active CPU

LAN0 for Standby CPU

LAN1 for Standby CPU

Plug for PSU Module B

Plug for PSU Module A

AP-PTS3000 PTT Server



Main Features

AP-PTS3000 PTT Server

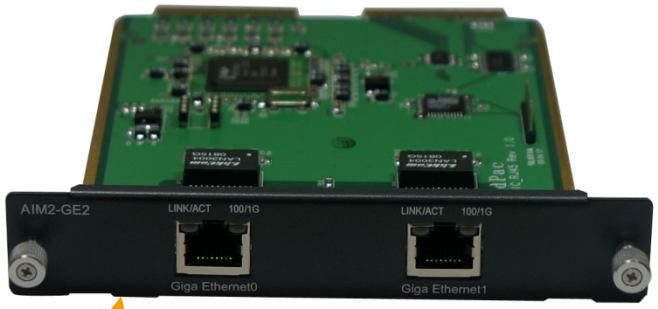
- Two(2) Module Slots for PTT Broadcasting Service
- Two(2) Gigabit Ethernet Interface Module
- IP based PTT Service Support
- Dial-Out based PTT Service Support
  - Multi-Session , Multi-Group
  - PtMP(Point-to-Multipoint) Service
  - PtP (Point-to-Point) Service
- Meet-me based PTT Service Support(Option)
- IP-PBX Interworking Service
- IP Terminal Interworking Service (Wi-Fi Phone, IP Phones)
- Advanced Networking Protocols
- Firmware Upgradeable Architecture
- PTT Solution with Outstanding Network Service Capability

Hardware Specification

AP-PTS3000 PTT Server

64bit CPU

- Network Module (AP-AIM2-GE2)
  - Two(2) Port Gigabit Ethernet Module



One(1) RS232C Port for CLI



Two(2) Fast Ethernet for management

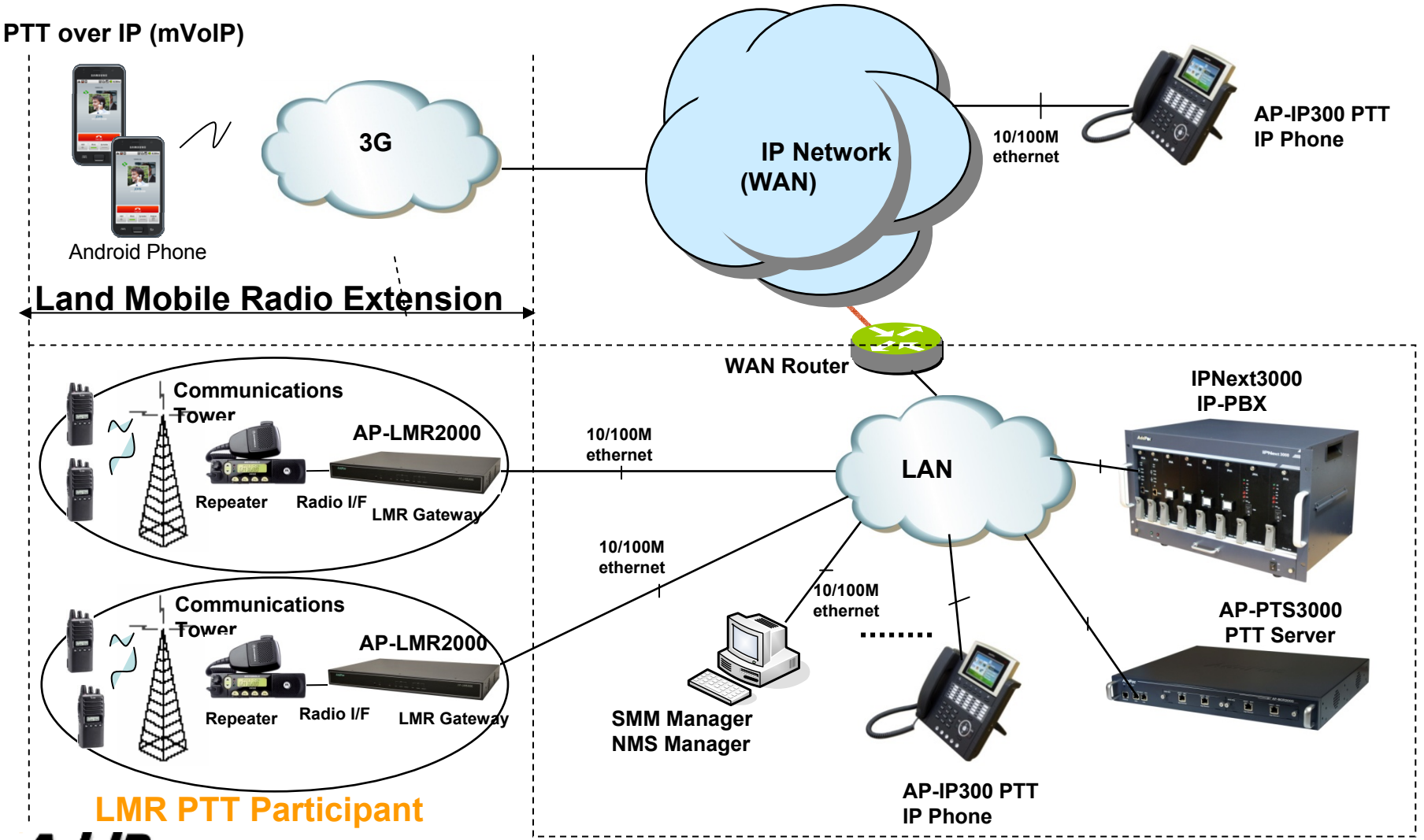
Two(2) Gigabit Ethernet for PTT Service

LMR Gateways for PTT Service (RoIP : Radio over IP)

LMR Gateway Comparison Table

	AP-LMR100 	AP-LMR1000 	AP-LMR2000 
Radio Interface Type	E&M, etc	E&M, etc	E&M, etc
Module Slots for Radio Interface	N/A	1	2
Port Number /Module	N/A	2	2
Radio Interface Ports	1	2	4
IPv4/IPv6 Dual Stack Support	Support	Support	Support
VoIP Signaling	H.323/SIP	H.323/SIP	H.323/SIP
TLS/SRTP Secure Protocol	Support	Support	Support
Management	CLI/Web	CLI/Web	CLI/Web
LAN Port	2	2	2
Console Port for CLI	1	1	1

RoIP Network Diagram



AP-LMR2000
LMR Gateway

Main Features

AP-LMR2000 LMR Gateway

- LMR over IP Service Support
- Radio Systems(Motorola, etc) are Extended to IP Network
- High Performance RISC & Programmable DSP Architecture
- Two(2) 10/100Mbps Fast Ethernet (IP Share ,etc)
- High Performance LAN-to-LAN Routing Capability
- Two(2) Module Slots for Radio Interface (E&M Module, Radio Interface Adaptation Module, etc)
- VoIP Codec : G.711/G.726/G.723/G.729, VAD, etc
- Powerful Network Protocols (PPPoE, DHCP, Static Routing, etc)
- IPv4/IPv6 Dual Stack Support
- SIP/H.323 Dual Concurrent Signaling Protocols
- TLS/SRTP VoIP Secure Protocol Support (AES, 3DES, etc)
- Firmware Upgradeable Architecture
- Advanced Voice QoS Mechanism
- Powerful Web based Management
- RS232C Port Support for Command Line Interface
- AddPac Total Solution Component for Radio over IP

Hardware Specification

AP-LMR2000 LMR Gateway

RISC CPU

High-end DSP

- RISC Microprocessor Computing Power
- Main Chassis
  - Network Interface
    - Two(2) 10/100Mbps Fast Ethernet
    - One(1) RS-232C Console (RJ45)
  - Two(2) Radio Module Slots for E&M, etc



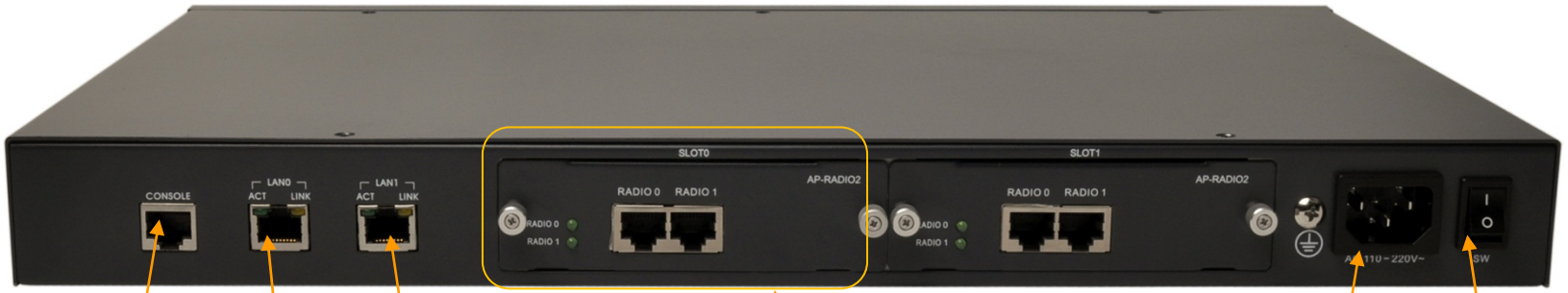
Hardware Specification

AP-LMR2000 LMR Gateway

RISC CPU

High-end DSP

AP-LMR2000 Back Side



RS232C Console Port

LAN0(10/100Mbps)

LAN1 (10/100Mbps)

Radio Interface Module

Power Inlet

Power Switch

Example : E&M Interface for Radio Interworking

Lead Name	Pin	Description
E (Ear or Earth)	Pin 7	Signal wire asserted by the router toward the connected device. Typically mapped to the push-to-talk (PTT) lead on the radio.
M (Mouth or Magnet)	Pin 2	Signal wire asserted by the router toward the connected device. Typically mapped to the push-to-talk (PTT) lead on the radio.
SG (Signal Ground)	Pin 8	Used on E&M signaling Types II, III, and IV.
SB (Signal Battery)	Pin 1	Used on E&M signaling Types II, III, and IV.
Two-Wire Mode		
T1/R1 (Tip-1/Ring-1)	Pin 4,5	In two-wire operation, the T1/R1 leads carry the full-duplex audio path.
Four-Wire Mode		
T/R (Tip/Ring)	Pin6,3	In a four-wire operation configuration, this pair of leads carries the audio in from the radio to the router and would typically be connected to the line out or speaker of the radio.
T1/R1 (Tip-1/Ring-1)	Pin5,4	In a four-wire operation configuration, this pair of leads carries the audio out from the router to the radio and would normally be connected to the line in or microphone on the radio

Example : E&M Interface for Radio Interworking



AP-WP100P Wi-Fi Phone for PTT Service



Main Features

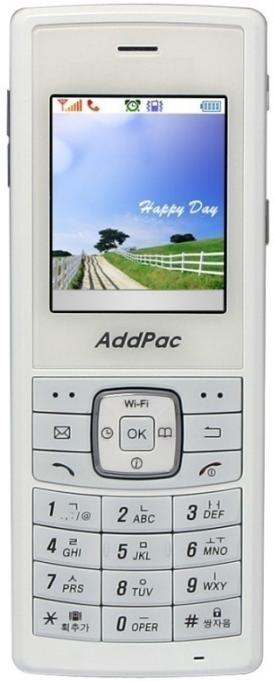
AP-WP100 Wi-Fi IP Phone

- Wi-Fi IP Phone Solution
- Various Call Scenario Support (IP-PBX)
- State-of-art SIP Signaling
- PTT Service over IP (PTT Button Support)
- IEEE802.11b/g up to 54Mbps
- WPA(Wifi Protected Access), 802.11i Security Standard
- Wi-Fi IP Audio Broadcasting Terminal Solution
- External Audio In/Out Port for Headset
- Firmware Upgradeable Architecture
- VoIP Solution with Outstanding Network Service Capability
- Audio Privacy Protection

Hardware Specification

AP-WP100 Wi-Fi IP Phone

- **Microprocessor**
  - RISC processor
- **Memory**
  - NAND FLASH : 32Mbyte
  - mSDRAM : 32MByte
- **Wireless**
  - IEEE802.11b/g Support
  - Operating Frequency : 2.4GHz
  - 802.11g: 54, 48, 36, 24, 18, 12, 9, 6Mbps, auto rate
  - 802.11b: 11, 5.5, 2, 1Mbps, auto rate
  - Operating Channels : IEEE Channels 1–14
- **Audio Interface**
  - 2 x MIC-IN, Receiver OUT, Speaker OUT , Head Phone OUT
  - Interface : I2S (Chip Set : CS42L52)
- **Display**
  - LCD : 220 X 176 260K Color 2” TFT LCD (16bit data bus)



Hardware Specification

AP-WP100 Wi-Fi IP Phone

- **IO PORT**
  - Ear-phone jack 2.5mm, 4 Contact
  - 24PIN Data Connector
    - USB Device, RS232 TTL, Battery Charge 4.2V or 5V(USB)
  - 3PIN Battery Charge Connector(4.2V)
- **Other**
  - 23 Keys (Front) + 4 Keys (Side) , 8 Back Light LEDs
  - Vibration Motor
  - Battery : 3.7V, 1330mAh Lithium Polymer Battery (Inner Pack Type)

Hardware Specification

AP-WP100 Wi-Fi IP Phone



AP-IP300 IP Phone for PTT Service



Main Features

AP-IP300 IP Phone

- 4.3 Inch Color LCD Display
- External I/O Interface
  - Audio In/Out
  - Two(2) Fast Ethernet Interface
  - PSTN FXO Interface (optional)
- PoE (Power over Ethernet) Support
- 25 Speed Dial button with Presence Indication Lamp
- Audio Broadcasting Controller & Terminal
- Providing Powerful Push-to-Talk Service
- Powerful Color GUI
- IPv4/IPv6 Address Support
- SIP, H.323 Signaling Support
- High-end Error Resilient Against Various Packet Error

Hardware Specification

AP-IP300 IP Phone

- RISC+DSP Microprocessor Computing Power (Dual Processor Architecture)
- High Quality 4.3 Inch Color LCD Panel
- 25 Speed Dial Key & User Presence Indication LED
- Optional PSTN Backup Interface
  - FXO Interface
- High quality Audio and Voice Interface
  - Stereo Audio Input Connector
  - Stereo Audio Output Connector
- Network Interface
  - Two(2) 10/100Mbps Fast Ethernet
- USB Host Mode Interface
  - USB Memory(Flash, HDD), etc
- Power Supply
  - Power over Ethernet
  - External Power Adaptor (5V, 3A)

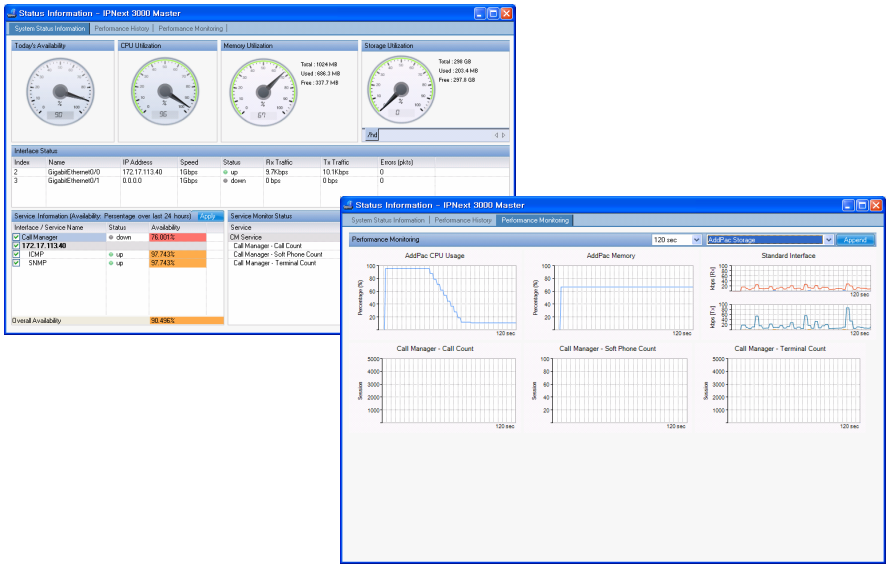


Hardware Specification

AP-IP300 IP Phone



NMS System for PTT Solution



System Requirement

Network Management System for PTT Server

NMS Server

- OS : RHEL (Redhat Enterprise Linux) 5.0 or higher
- CPU : Quad-Core 2.0 GHz / 1333MHz FSB 2x4 MB cache
- Physical Memory : 4 GB
- HDD : 300 G
- JRE (Java Runtime Environment) 1.5.1 or Higher
- Database : PostgreSQL 8.1.11

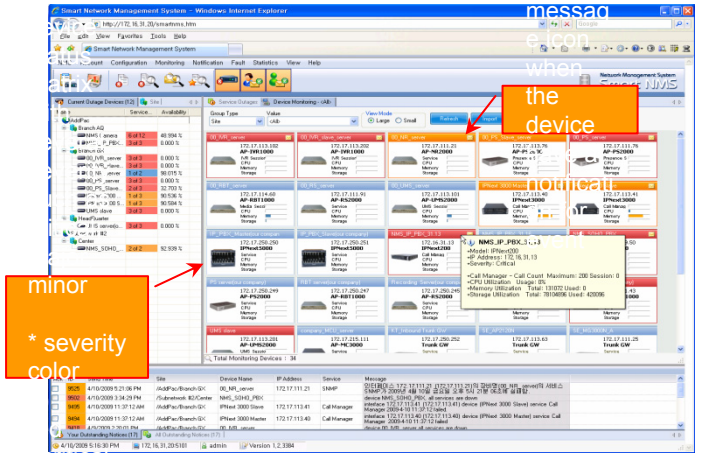
NMS Client

- Windows XP, Vista, Windows Server 2000/2003
- Microsoft Internet Explorer 6.0 or higher

Main Features

Network Management System for PTT Server

- Server & Client Architecture
- Web-based Management
- Network Resource Management
- Device Fault Management
- Device Fault History Management
- Device Status Information
- Notification Management
- Fault Statistics
- Model & Service Management



Thank you!

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