

# PTT over IP Solution for Management Center



IPNext600PTT IP-PBX+  
PTT Server



AP-IP300 PTT  
IP Phone



AP-LMR2000 LMR Gateway

**AddPac**

**AddPac Technology**

Sales and Marketing

[www.addpac.com](http://www.addpac.com)

# Contents

- PTT over IP Service Features
- PTT over IP Network Diagram
- PTT over IP Solution Components
  - IPNext600PTT IP-PBX+ PTT Server
  - AP-IP300 IP Phone for PTT Service
  - LMR (Land-to-Mobile Radio) Gateways
    - AP-LMR2000
  - AP601 SIP Paging Terminal

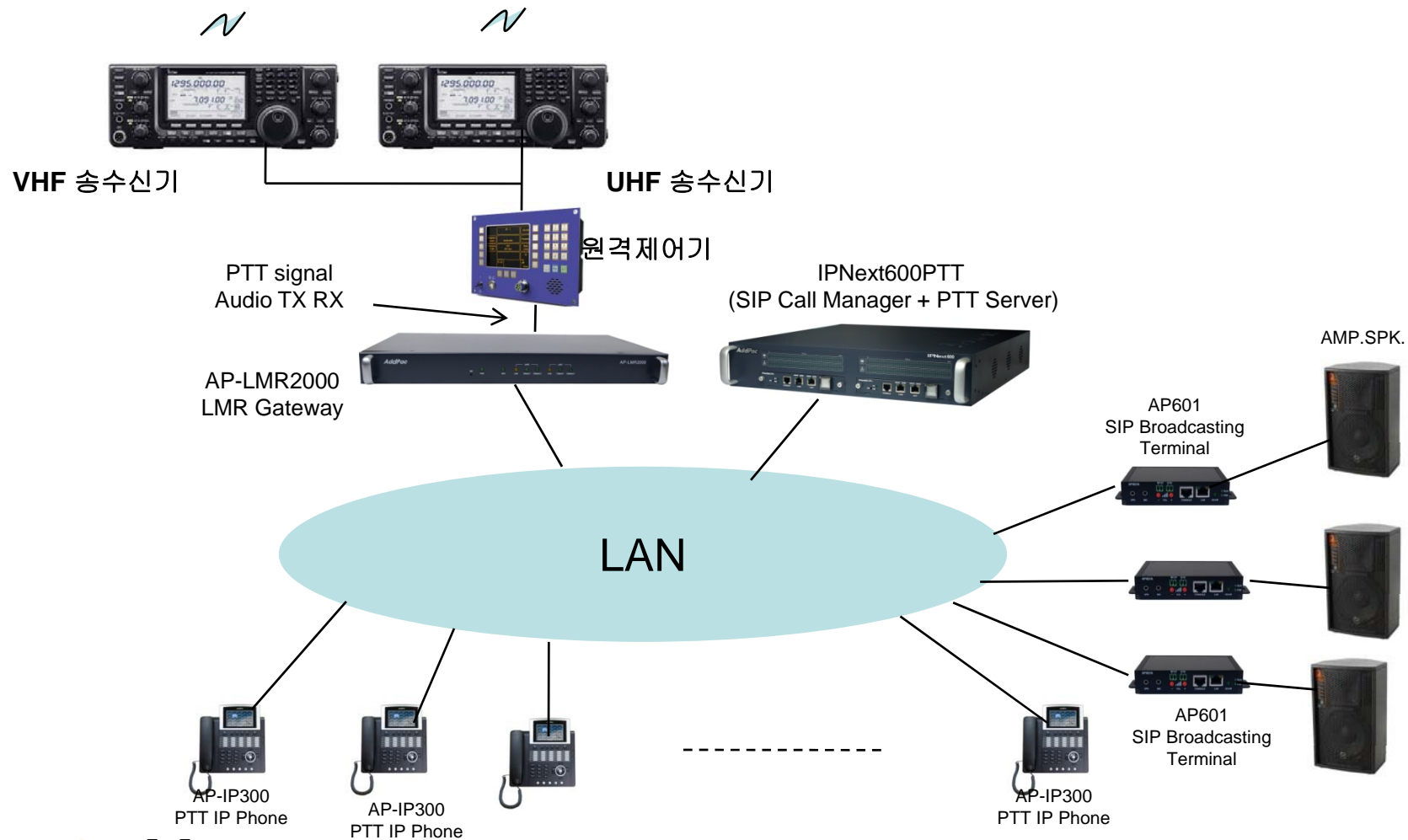
# PTT over IP Service Features

- Various VoIP & PTT Call Mode Support
  - VoIP Call & PTT Call Support
  - Call Waiting Support and Incoming Call Indication
  - VoIP Call and PTT Call Mode Change
  - Various PTT Call Mode Support
    - Point-to-Point PTT Call, Group PTT Call, Emergency PTT Call
  - PTT Call Connection using Send/PTT Button

# PTT over IP Service Features

- PTT Group List Display Function
  - PTT Member List Display
    - Overall, Personal, Group, Emergency List Display
  - Group Presence Status Display
  - PTT Group Presence Status Display (Option : Presence Server Required)
    - Automatic Presence Status Display
    - Manual Presence Status Display
- VoIP Call List Display
  - Outbound/Incoming/Absent Call List
  - VoIP Call Phone Book
  - VoIP Call List Delete and Redialing Support

# PTT over IP Network Diagram





# IP based PTT Solution Components

# PTT over IP Solution Product Table

PTT & Paging S/W	IPNext600PTT	AP-IP300 PTT IP Phone	AP-LMR2000 LMR Gateway	AP601 SIP Paging Terminal
				
Smart Web Manager	IP based PTT Service Support Dial-Out based PTT Service Support Advanced PTT Server Features Emergency PTT Service Support IP-PBX Interworking Service SIP Call Manager System Redundancy Power Redundancy	High End IP Phone 4.3 Inch Color LCD External Audio In/Out Two(2) Fast Ethernet 25 Speed Dial button with Lamp Push-to-Talk Service SIP, H.323 Signaling Support VoIP Codec (G.711,G.729,etc)	Radio over IP Service Support Radio Systems(Motorola, etc) are Extended to IP Network RISC Microprocessor Computing Power Two(2) 10/100Mbps Fast Ethernet One(1) RS-232C Console (RJ45) Two(2) Radio Module Slots for E&M, etc	SIP Paging Terminal RISC +DSP Computing Power One(1) 10/100Mbps Fast Ethernet (RJ45) One(1) RS-232C Interface (RJ45) SPK/MIC Audio Interface Support Option : 30Watt Digital AMP. Built-in (AP601A)

# IPNext 600 PTT IP-PBX System (IP-PBX + PTT Server)





# Product Overview

## IPNext600PTT Next Generation IP-PBX System

- SIP Application Server, Proxy, Registrar and Location Server
- Multiple ITSP Trunk with SIP & H.323 Accounts Support
- High Performance PTT Server Solution
- Dual System Redundancy Architecture
  - Two(2) Fast Ethernet Interface / System
- High Performance RISC Architecture
- Powerful Network Protocols (PPPoE, DHCP, Static Routing, etc)
- IPv4/IPv6 Dual Stack
- RTP Proxy Function Embedded for Private IP and IPv6 Address Interworking
- User Presence Service Features for Smart Multimedia Messenger and Smart IP Phone
- IVR Scenario Editor, Voice Mail, Media Service (Coloring), Conference
- Firmware Upgradeable Architecture
- Smart Multimedia Manager for IP-PBX Management
- Smart Messenger Service (click to dial) for Unified Communication
- Smart NMS for Large Scale Deployment
- Advanced Voice QoS Mechanism
- Dual Redundancy Power Module
- Various IP Terminal Support

# PTT Server Service

IPNext600PTT Next Generation IP-PBX System

- IP based PTT Service Support
- Dial-Out based PTT Service Support
  - Multi-Session, Multi-Group
  - PtP (Point-to-Point) Service
- Advanced PTT Server Features
  - 1:1 PTT
  - Group PTT
  - Emergency PTT with Alarm Notification
- Emergency PTT Service Support
- IP-PBX Interworking Service
- IP Terminal Interworking Service (Wi-Fi Phone, IP Phones, Soft Phone, Smart Phone Application)
- PTT Solution with Outstanding Network Service Capability

# Hardware Specification

IPNext600PTT Next Generation IP-PBX System

RISC  
CPU

- 64bit High-End Microprocessor Computing Power
- Main Chassis
  - Dual Redundancy CPU Boards for System Fault Tolerant
    - Two(2) 10/100Mbps Gigabit Ethernet
    - One(1) RS-232C Console (RJ45)
  - Dual Redundancy Power Supply Module
  - Hot-Swap Features

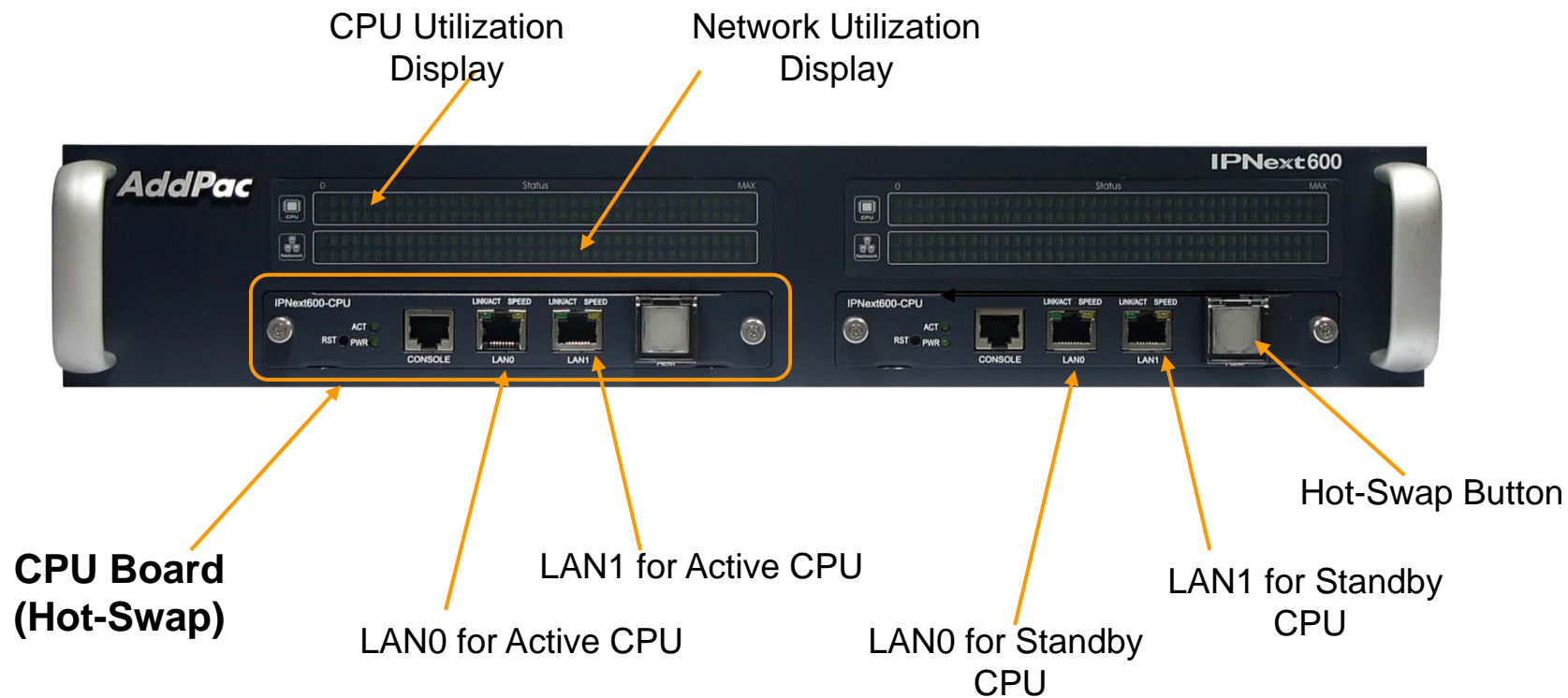


# Hardware Specification

IPNext600PTT Next Generation IP-PBX System

RISC  
CPU

## Front Side



# Hardware Specification

IPNext600PTT Next Generation IP-PBX System



Back Side

Dual Power Supply Modules  
(Hot-Swap)



PSU Module A

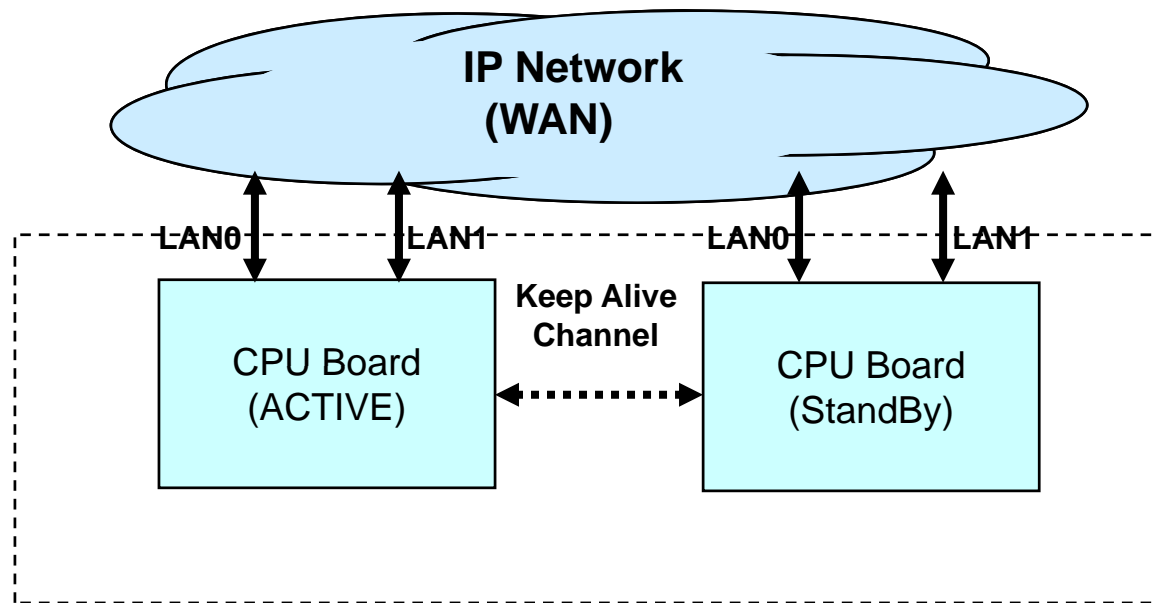
PSU Module B

Power On/Off Switch  
for System

# System Redundancy Features

IPNext600PTT Next Generation IP-PBX System

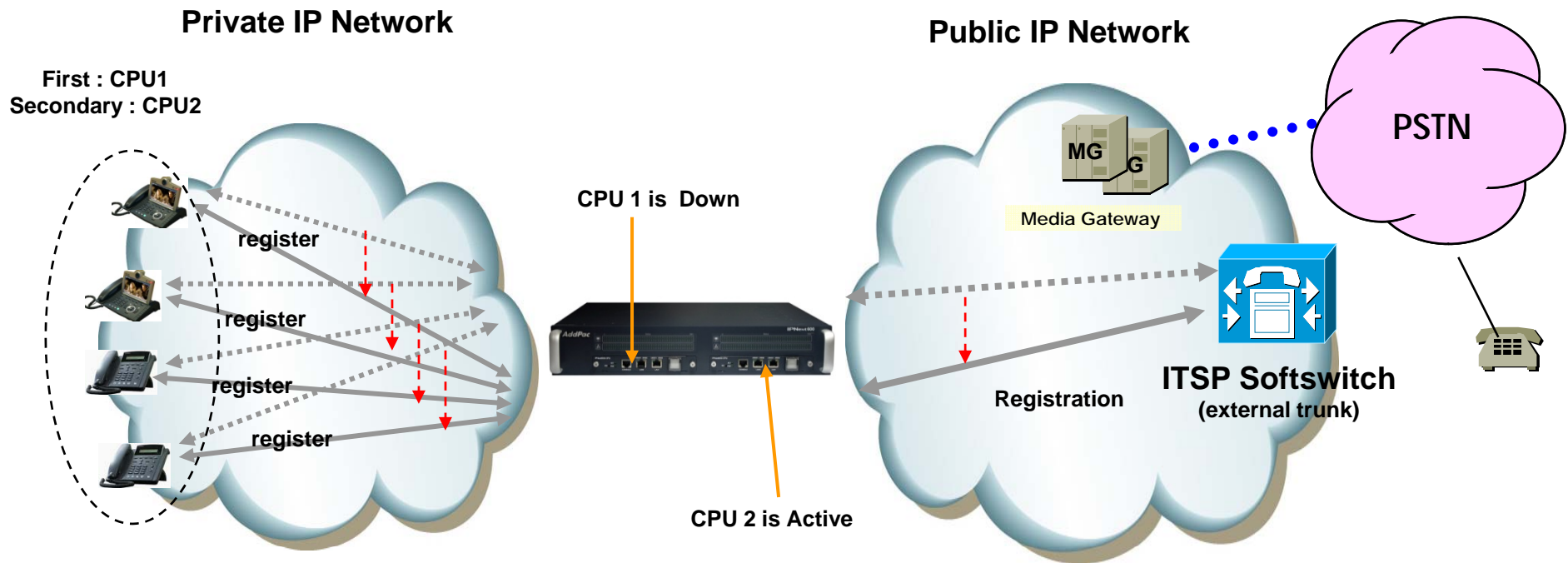
IPNext600PTT System Block Diagram



# System Redundancy Features

IPNext600PTT Next Generation IP-PBX System

- Active– Active Duplication Scheme
- Active – Standby Duplication Scheme
- VRRP based Duplication Scheme



Active – Standby Duplication Scheme (example)

# 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



# AP-LMR2000

## LMR(Land-to-Mobile Radio) Gateway



# Contents

- Product Overview
- Hardware Specification
- LMR(Land-to-Mobile Radio) Service
- RoIP System Message Flow Diagram

# Product Overview

## AP-LMR2000 LMR Gateway

- Radio 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, 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
- Firmware Upgradeable Architecture
- Advanced Voice QoS Mechanism
- Powerful Web based Management
- RS232C Port Support for Command Line Interface

# Hardware Specification

AP-LMR2000 LMR Gateway

RISC  
CPU

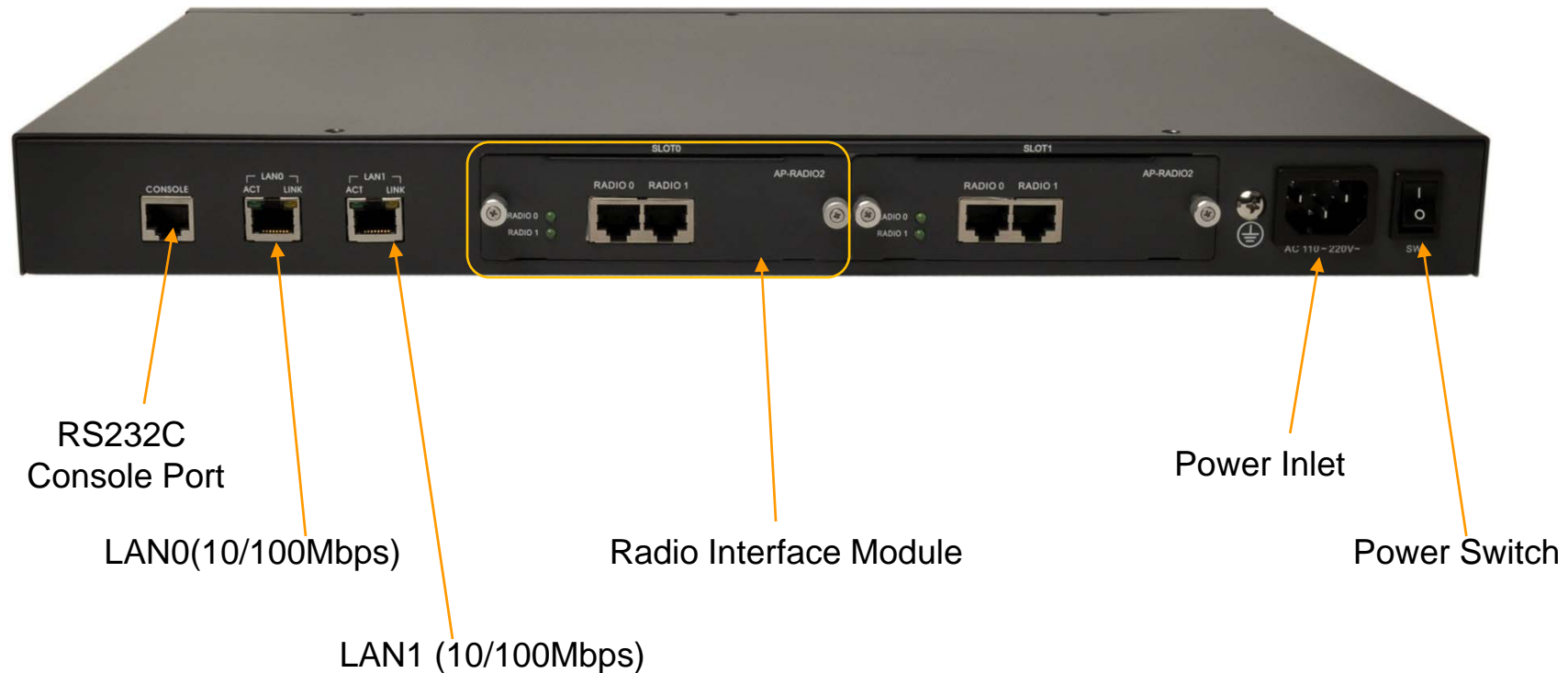
High-end  
DSP

- 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
  - Internal Power Supply

# Hardware Specification

## AP-LMR2000 LMR Gateway

### AP-LMR2000 Back Side





# Hardware Specification

AP-LMR2000 LMR Gateway

Example : AP-RADIO2 E&M Interface Module for Radio Interworking



# Hardware Specification

## AP-LMR2000 LMR Gateway

### 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.
<b>Two-Wire Mode</b>		
T1/R1 (Tip-1/Ring-1)	Pin 4,5	In two-wire operation, the T1/R1 leads carry the full-duplex audio path.
<b>Four-Wire Mode</b>		
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

# LMR Service

## AP-LMR2000 LMR Gateway

- LMR system overview
  - A LMR(Land Mobile Radio) system is a collection of portable and stationary radio units designed to communicate with each other.
  - LMR is deployed wherever organizations need to have instant communication between geographically dispersed and mobile personnel.
  - Typical LMR system users are public safety organizations (ex: police departments, fire departments, etc).
  - The systems are extended the range of communications by repeaters.
  - The systems are required interoperability with IP network.

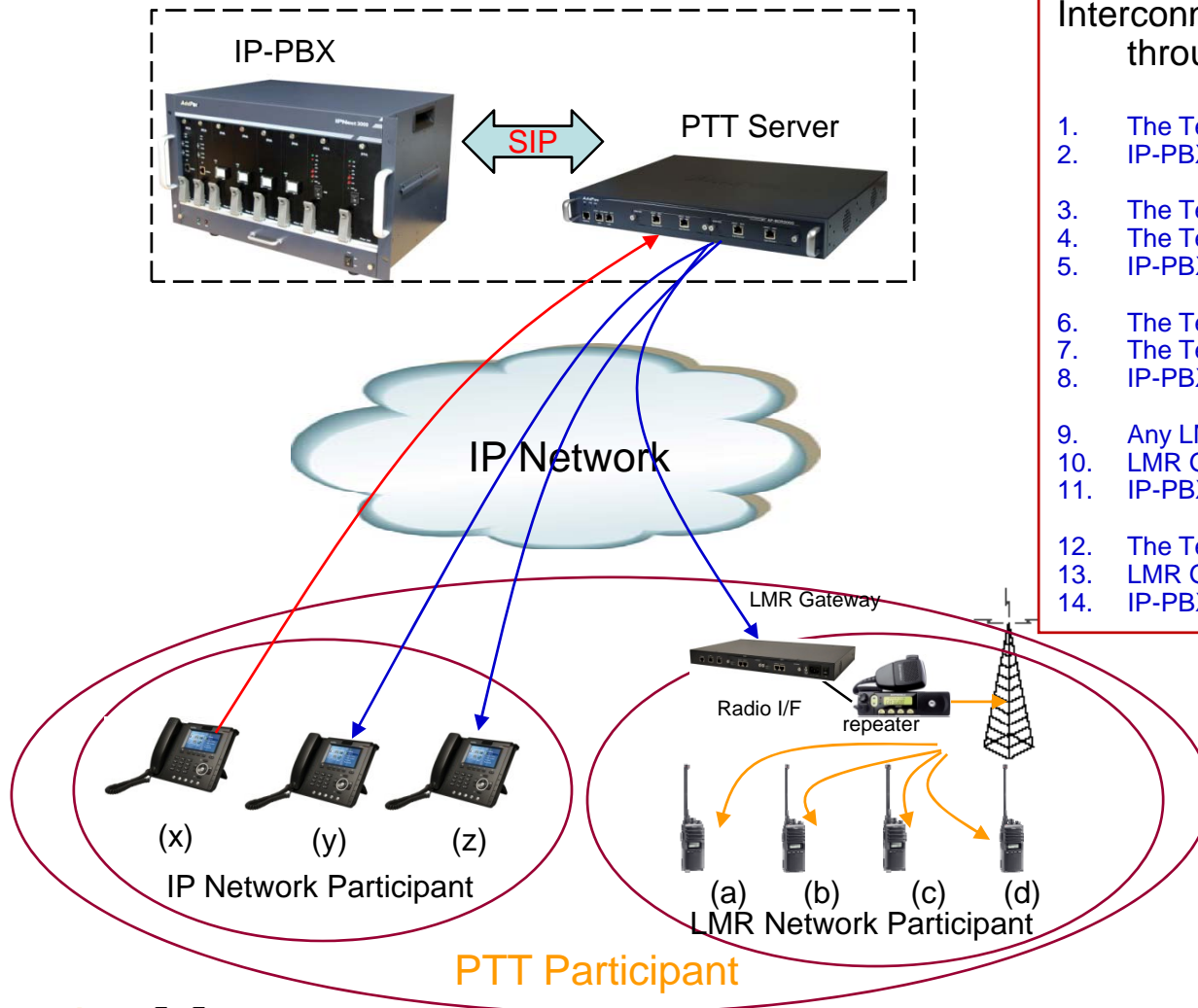
# LMR Service

## AP-LMR2000 LMR Gateway

- **AddPac RoIP Solution Features**
  - LMR Gateway(AP-LMR2000) joins the LMR systems to the IP network through open SIP standard and RTP.
  - The radios are connected to LMR gateway through AddPac radio interface (reference LMR signal).
  - AddPac IP PTT terminals (AP-IP230, AP-IP300 IP Phones, etc) support the traditional radio user interface(PTT).
  - AddPac IP PTT terminals easy PTT group management user interface.
  - IP-PBX support call management, PTT group management, PTT control and various additional service.
  - PTT Server(AP-PTS3000) support powerful media data relay, broadcasting, multicasting and PTT group management.
  - RoIP Solution supports emergency and group PTT service.

# LMR Service Examples

## AP-LMR2000 LMR Gateway



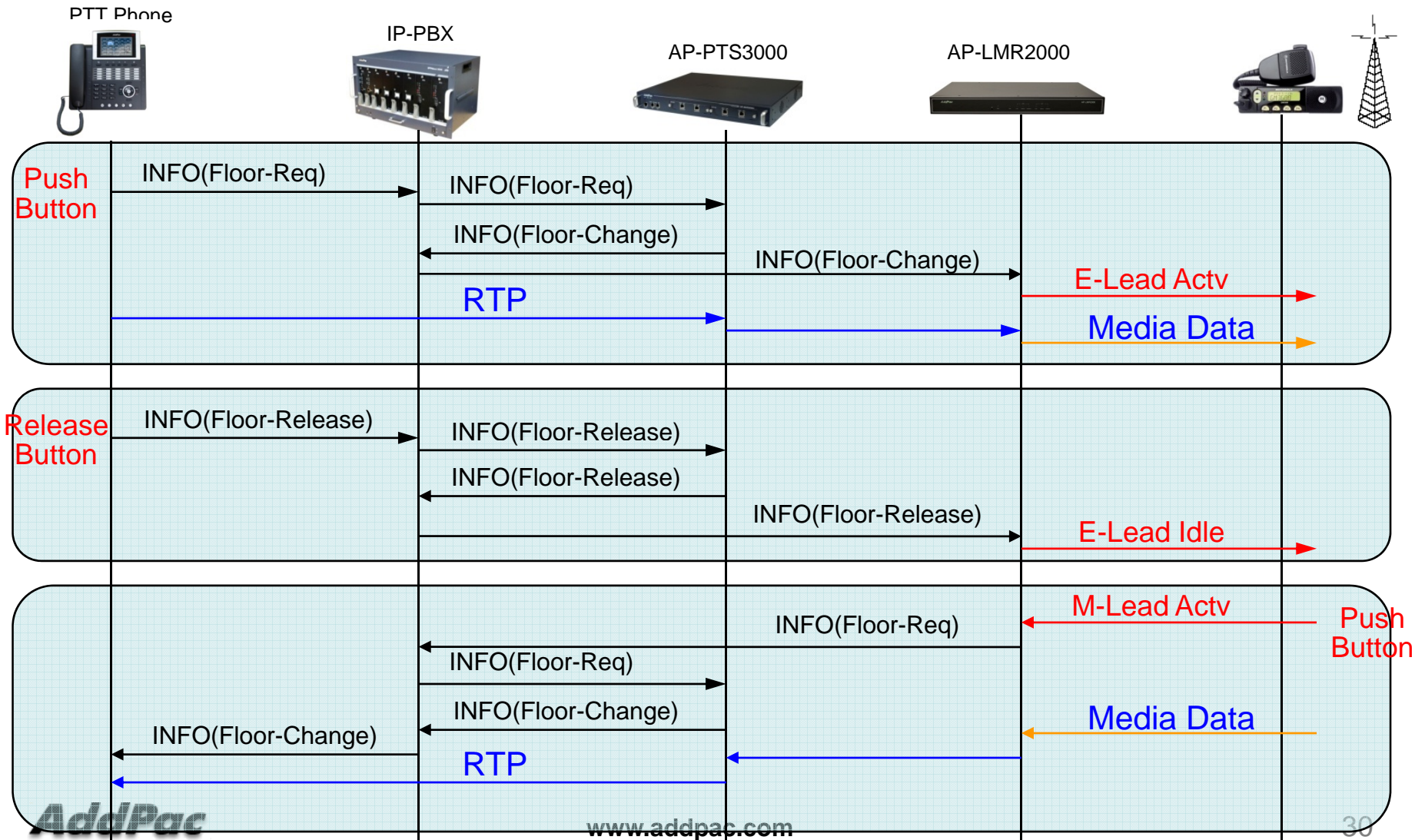
### Interconnection LMR systems to IP network through AddPac RoIP solution.

1. The Terminal(x) originate a PTT conference.
2. IP-PBX send invitation message to all participant.
3. The Terminal(x) presses the 'floor button' to talk.
4. The Terminal(x) send a 'floor-request' message.
5. IP-PBX and PTT servers control media-relay.
6. The Terminal(x) releases the 'floor button'.
7. The Terminal(x) send a 'release-request' message.
8. IP-PBX and PTT servers control media-relay.
9. Any LMR Terminal(a~d) presses the 'floor button' to talk.
10. LMR Gateway send a 'floor-request' message.
11. IP-PBX and PTT servers control media-relay.
12. The Terminal(a) releases the 'floor button'.
13. LMR Gateway send a 'release-request' message.
14. IP-PBX and PTT servers control media-relay.

<span style="color: red;">—</span>	RTP (floor)
<span style="color: blue;">—</span>	RTP(Participant)
<span style="color: yellow;">—</span>	Radio(Participant)

# RoIP System Message Flow

AP-LMR2000 LMR Gateway



# AP601

## SIP Paging Terminal



# Product Overview

## AP601 SIP Paging Terminal

- SIP based Voice Broadcasting Terminal Solution
- Hardware Architecture for Voice Broadcasting Terminal Service
- Remote Broadcasting Service at terminal side
- High Quality Voice Codec Support (High Quality Codec, G.711, G.726, etc)
- RTP/UDP Protocol Support
- Unicast and Multicast Broadcasting Scheme
- SPMS (SIP Paging Management Software) Support
- One(1) channel SPK/MIC Port
- Volume Control Button Support (Up, Down)
- Option (AP601A) : AMP. Built-in
- High-Quality Audio/Voice Service
- Firmware Upgradeable Architecture
- Broadcasting Solution with Outstanding Network Service Capability
- External Power Supply



# Hardware Specification

AP601 SIP Paging Terminal

RISC  
CPU

High-end  
DSP

- RISC Microprocessor Computing Power
- High-end Programmable DSP Hardware Architecture
- High Quality Audio Encoding/Decoding Service
- One(1) 10/100Mbps Fast Ethernet (RJ45)
- One(1) RS-232C Interface (RJ45)
- SPK/MIC Audio Interface Support
- Volume Control Button Support (Up, Down)
- External Power Supply Support
- Option : 30Watt Digital AMP. Built-in (AP601A)

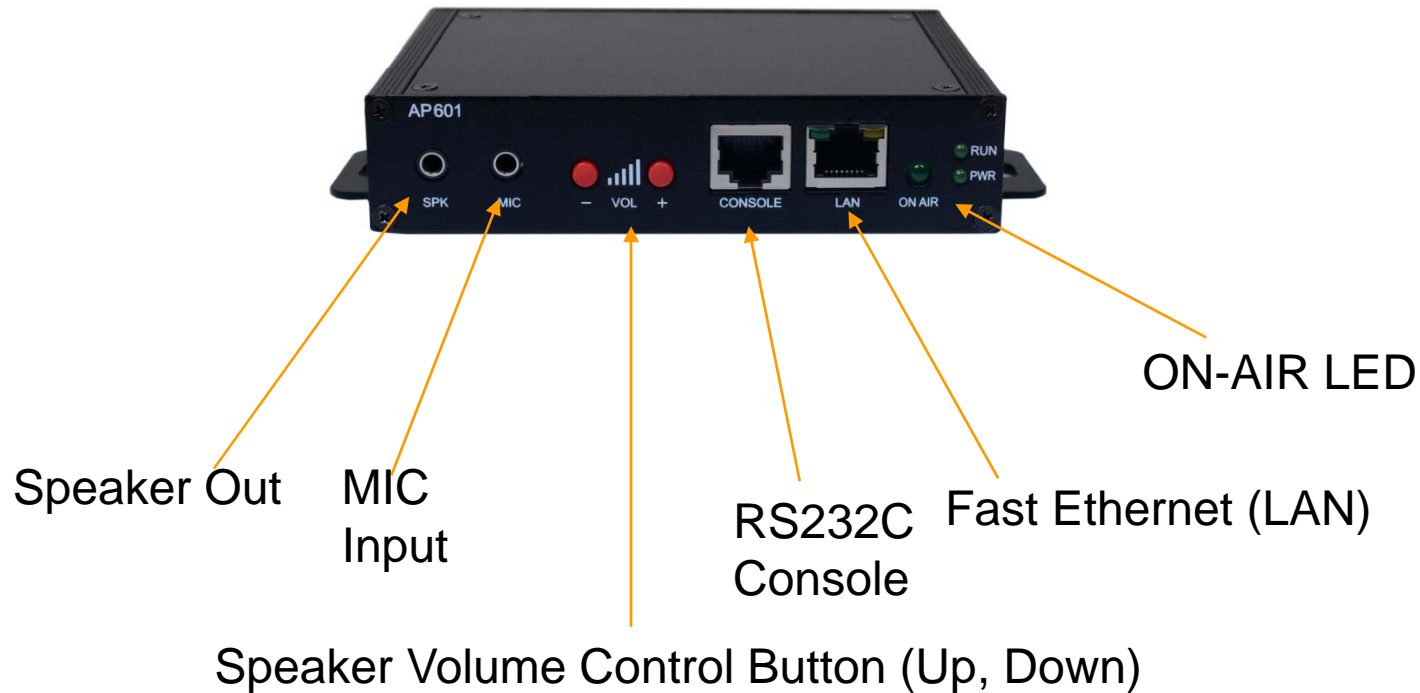
# Hardware Specification

AP601 SIP Paging Terminal

RISC  
CPU

High-end  
DSP

## Front Side



# Hardware Specification

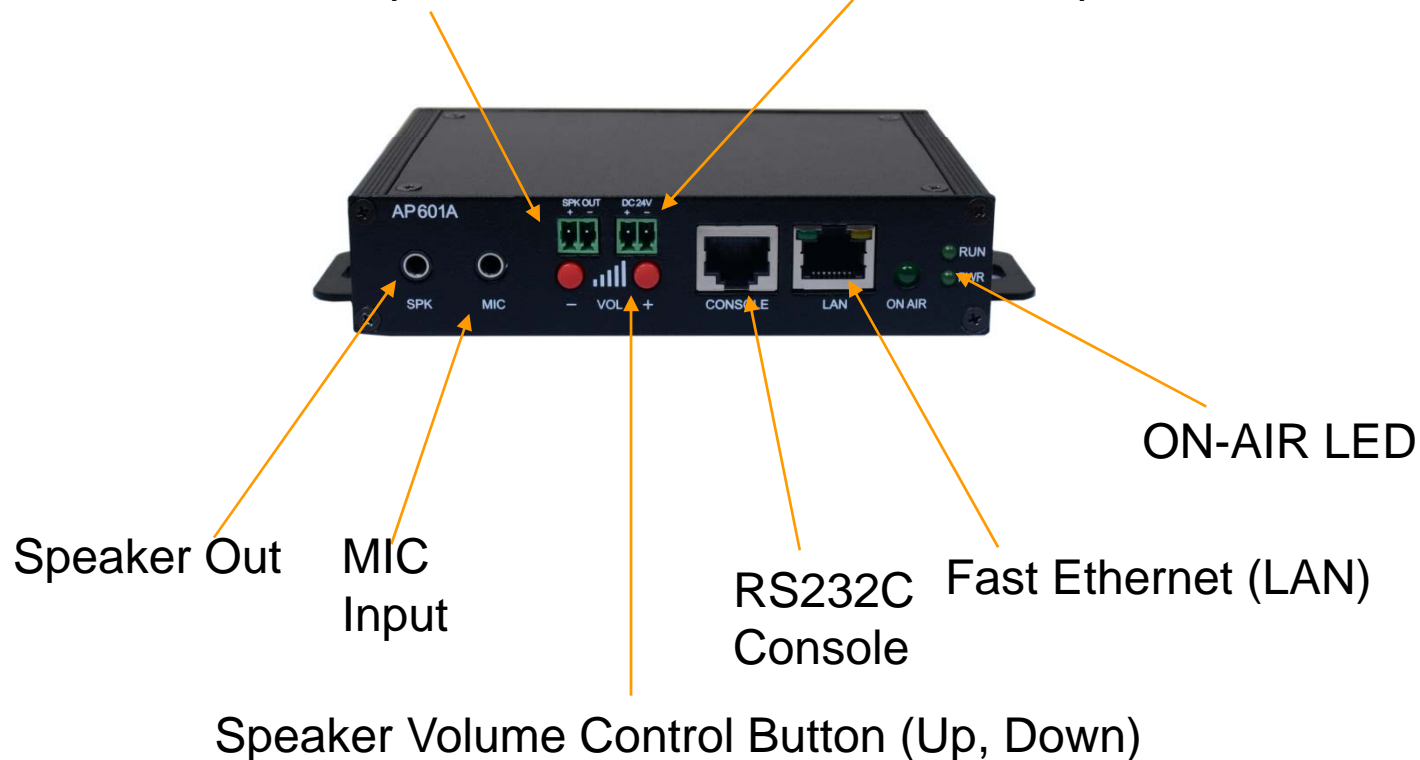
AP601 SIP Paging Terminal

RISC  
CPU

High-end  
DSP

## Front Side (AMP. Built-In Model : AP601A)

AMP. Speaker Out    24V DC Power Input for Internal AMP.



# Hardware Specification

AP601 SIP Paging Terminal

RISC  
CPU

High-end  
DSP

## Back Side

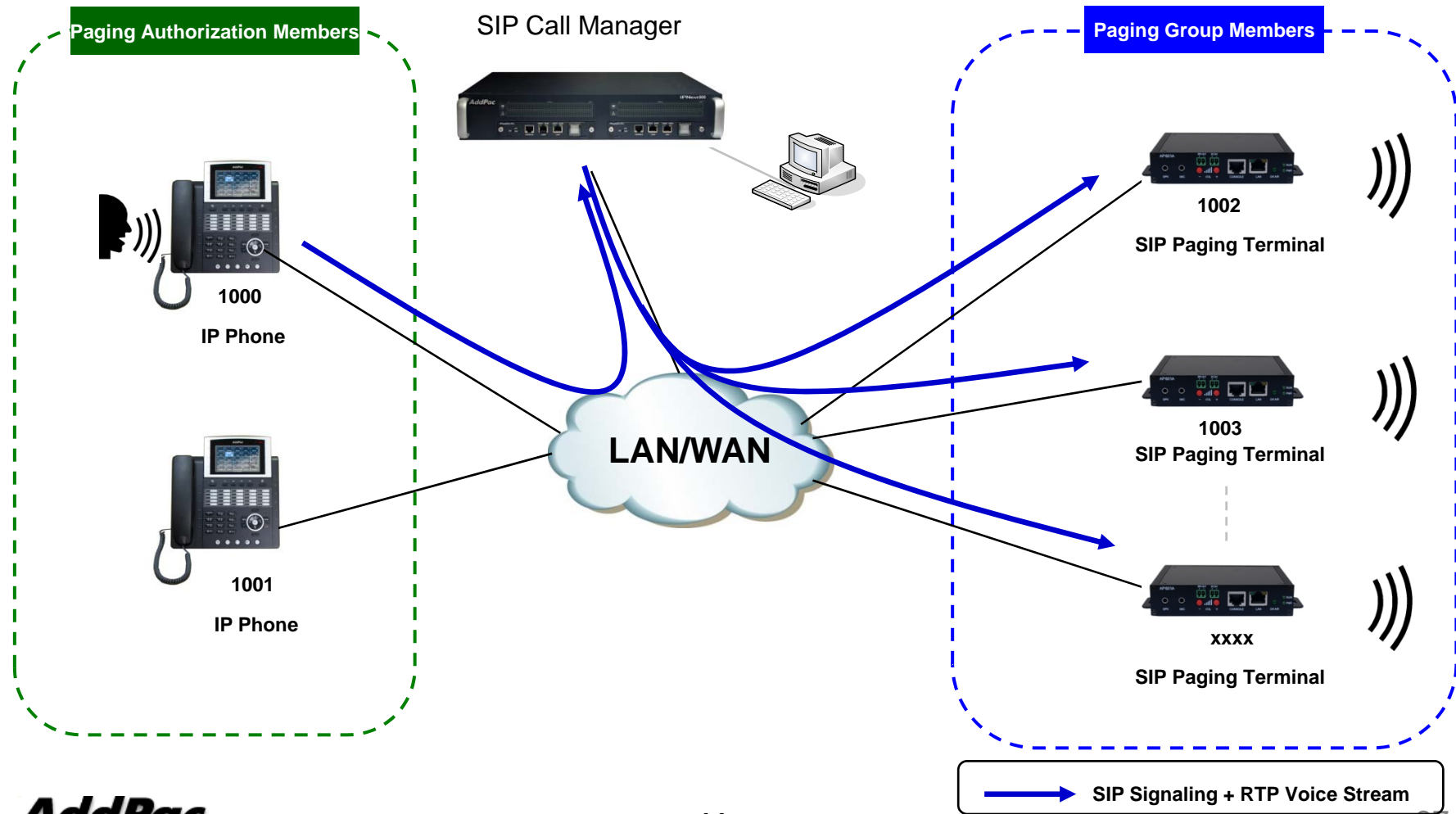


External Power  
Supply Adaptor

Power Switch

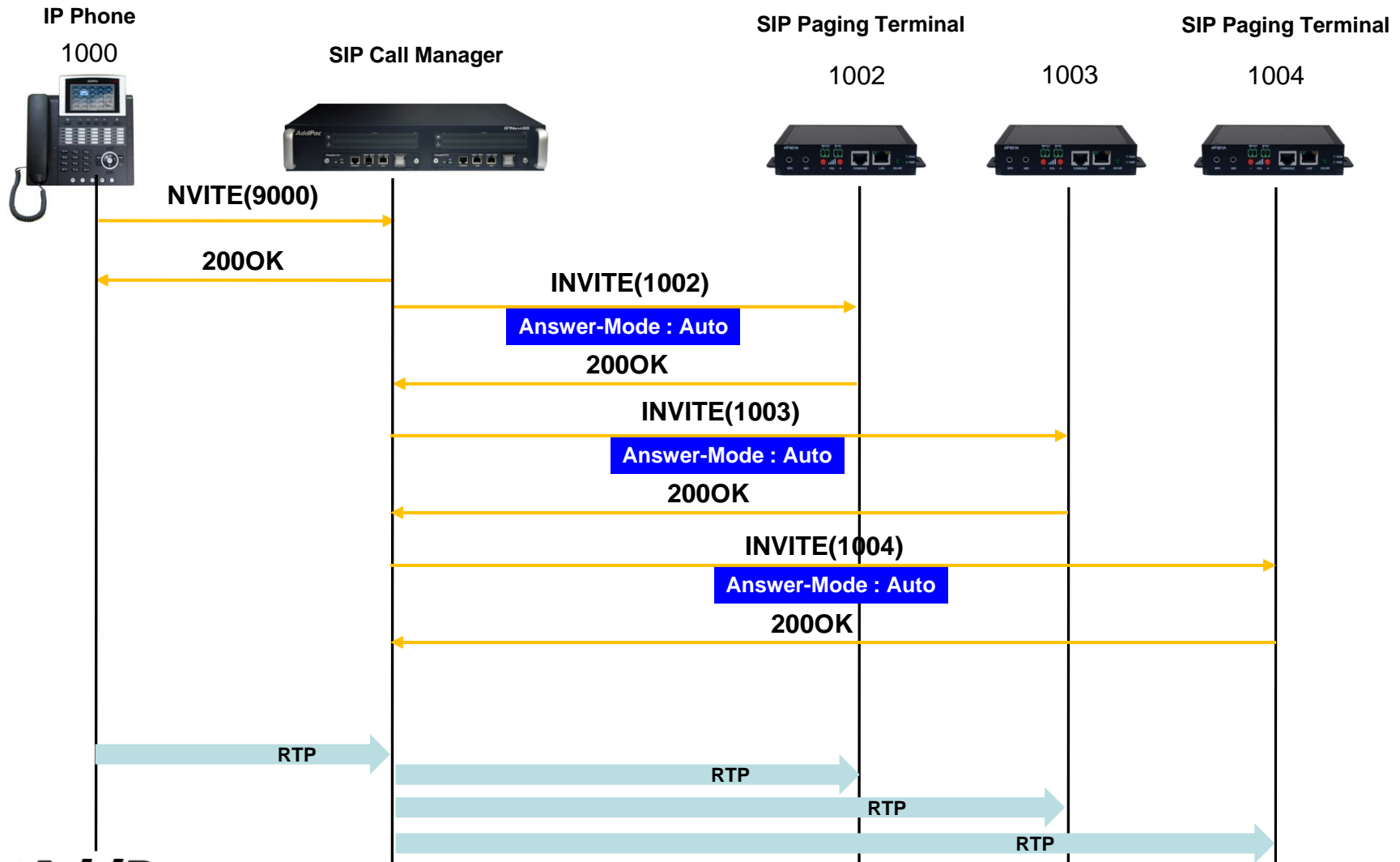
# SIP Broadcasting Network Diagram

AP601 SIP Paging Terminal



# Paging Group Signaling Flow

AP601 SIP Paging Terminal





WSMM Configuration for Paging Group  
(WSMM : Web based Smart Multimedia Manager)  
: AddPac IP-PBX Solution

# Extension – Paging Group

**Smart Multimedia Manager**  
www.addpac.com

**Extensions**

	Modify	Delete	User Portal	Extension Number	Type	Name	Date Created
1				1000	User Extension	Ashley Allen	2015-07-28 12:39:51
2				1001	User Extension	Mary Moore	2015-07-28 12:39:55
3				1002	User Extension	Thomas Taylor	2015-07-28 12:40:00
4				1003	User Extension	Victoria Valdez	2015-07-28 12:40:04
5				1004	User Extension	Olivia Ortiz	2015-07-28 12:40:08
6				1005	User Extension	Linda Lewis	2015-07-28 12:40:12
7				1006	User Extension	George Sale	2015-07-28 12:40:17
8				1007	User Extension	Isabel Irwin	2015-07-28 12:40:21
9				1008	User Extension	William Watson	2015-07-28 12:40:25
10				1009	User Extension	Sarah Scott	2015-07-28 12:40:30
11				1010	User Extension	Nicolas Nelson	2015-07-28 12:40:34
12				1011	User Extension	Emma Evans	2015-07-28 12:40:38
13				1012	User Extension	Rachel Ross	2015-07-28 12:40:43
14				1013	User Extension	Henry Holt	2015-07-28 12:40:47

**Add a Paging Group**

Extension \*  (2~12 digits)

Name \*

Audio Codec

Play beep at start

Play Announcement

**Extensions**

Extension	Name	Extension

**Paging Group Members**

Name	Extension	Display Name	Multicast

**Paging Group**

Group Members

**Paging Group**  
A paging group has members of user extensions who will receive broadcasting announcement with auto answering by speaker phone. This is half-duplex one-way broadcasting.

**Push-to-Talk Group**  
A PTT (Push to Talk) group has members of user extensions who will receive broadcasting announcement with auto answering and also can be used for speaker phone pushing the button. This is full-duplex two-way broadcasting.

**IVR Extension**  
An IVR (Interactive Voice Response) extension has a type of auto attendant for incoming calls from trunks. If incoming calls from trunk are routed to an IVR extension by incoming call rule, the interactive scenario will be proceed to transfer the call to a proper user extension.

**Paging Group**  
A paging group has members of user extensions who will receive broadcasting announcement with auto answering by speaker phone. This is half-duplex one-way broadcasting.



# Paging Group Configuration

**Smart Multimedia Manager**  
www.addpac.com

**Add a Paging Group**

Extension \* 9000 (2~12 digits)  Check Extension Extension number is valid.

Name \*

Audio Codec G.711U

Play beep at start Beep Sound 3

Play Announcement

**Group Members**

Name	Extension
Ashley Allen	1000
Mary Moore	1001
Isabel Irwin	1007
William Watson	1008
Sarah Scott	1009
Nicolas Nelson	1010
Emma Evans	1011
Georgel Davis	1012

**Paging Group Members**

Name	Extension	Display Name	Multicast
Thomas Taylor	1002		Off
Victoria Valdez	1003		Off
Olivia Ortiz	1004		Off
Linda Lewis	1005		Off
George Gale	1006		Off

**Authorization Members**

Name	Extension	Display Name	Multicast
Ashley Allen	1000		Off
Mary Moore	1001		Off

**Play Announcement**

Play Announcement

Announcement Closing Notification

Repeat Count 1

Retry Count 2

Retry Interval 3 sec

Close on Caller Drop Call

**Description**

A paging group has members of user extensions who will receive broadcasting announcement with auto answering by speaker phone. This is half-duplex one-way broadcasting. Only authorized members can make a paging by dialing the paging extension.

**Related Links**

- User Extension
- Announcement and Tones
- Partitions

**Play Announcement**

If enabled, group members will hear announcement at broadcasting. The announcement can be selected among announcement files and can be uploaded at Announcements and Tones menu.



# Thank you!

AddPac Technology Co., Ltd.  
Sales and Marketing

Phone +82.2.568.3848 (KOREA)

FAX +82.2.568.3847 (KOREA)

E-mail [sales@addpac.com](mailto:sales@addpac.com)