AP-LMR3000
LMR(Land-to-Mobile Radio) Gateway

High Performance RoIP (Radio over IP) Solution

SIP Call Manager + PTT Server Service Features

**AddPac Technology**

Sales and Marketing

Contents

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- SIP Call Manager Service and Features

- RTP Proxy Service

- User Presence Service

- Network Service and Features

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Product Overview

- Land to Mobile Radio Gateway Service Support
- Radio over IP Service Support
- Radio Systems(Motorola, etc) are directly Extended to IP Network
- SIP Call Manger Support
- PTT Server Support for 1:N PTT Service
- High Performance RISC & Programmable DSP Architecture
- Two(2) 10/100Mbps Fast Ethernet (IP Share ,etc)
- Two(2) Module Slots for Radio Interface (E&M, Radio2, etc)
- VoIP Codec : G.711/G.726/G.723/G.729, VAD, etc
- Powerful Network Protocols (PPPoE, DHCP, Static Routing, etc)
- SIP/H.323 Dual Concurrent Signaling Protocols
- Firmware Upgradeable Architecture
- Advanced Voice QoS Mechanism
- Powerful Smart Web based Management
- Command Line Interface Support (RS232C Console or Telnet)

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IP-PBX Software Components
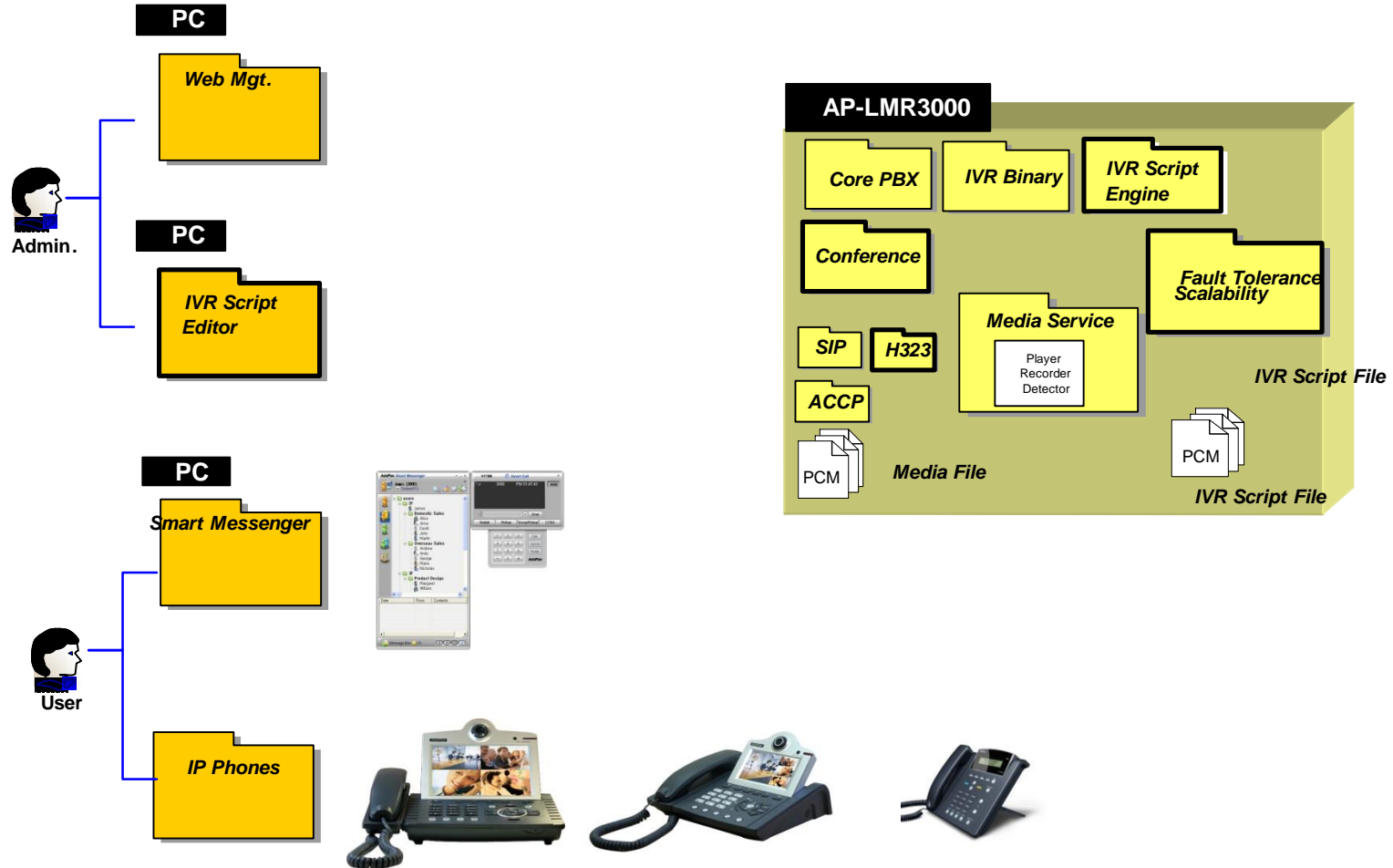
IP Telephony Service and Features

- **Signaling Server**
  - SIP Application Server, Proxy, Registrar and Location Server (RFC3261)
  - Multiple ITSP Trunk with SIP & H.323 Accounts Support
    - **IP UA Client Role for Registering to ITSP SIP Server**
    - **H.323 Gatekeeper Client Role for Registering to ITSP H.323 Gatekeeper Server**

- **IVR & Auto Attendant**
  - Default Auto Attendant Support
  - Interactive Voice Response (IVR)
    - **Provides with GUI-based Smart IVR Scenario Editor**
    - **Upload/Download Scenario by Smart IVR Scenario Editor**
    - **Supports Multiple Concurrent Scenarios**
    - **Supports Recordable IVR Prompts**

- **Voice Mail**
  - Support Voice Mail with IVR
  - Access from Remote Site via Trunk Support
  - Voice Mail Notification Support

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IP Telephony Service and Features

- **Number & Call Routing**
  - Trunk Hunting by Preference or Sequential
  - Call Hunting by Preference, Simultaneous, Random
  - Call Hunting by Chained Hunting Group
  - Partition for Address Grading
  - Call Class for Call Access Control
  - Number Translation Rule for Inbound/Outbound Call
  - Centrex with Prefix Support
  - Multiple Shared Devices with One Number
  - Multiple Numbers on One Device
  - Individual Call Park within Park Number Pool
  - Group Call Park within a Group or Other Group
  - Call Pickup of Ringing Call of Same Group or Other Group
  - Call Pickup of Parked Call
  - Call Transfer - Blind, Consult
  - Call Forwarding - Unconditional, Busy, No Answer, Voice Mail
  - Call Waiting
  - Call Swaping
  - Call Hold

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IP Telephony Service and Features

- **IP-PBX Advanced Features with AddPac IP Phones**
  - Multiple Call Handling with Call Status and Calling Line Number and Name
  - Plug and Play with Auto Discovery Function
  - Softkey Map Download and Control
  - Time and Date Setting
  - Voice Mail List View
  - Parked Call List View
  - Call Forward Setting
  - Recent Call List View
  - Calling Number and Name Identification
  - Individual Call Park within Park Number Pool by Softkey
  - Group Call Park within a Group or Other Group by Softkey
  - Call Pickup of Ringing Call of Same Group or Other Group by Softkey
  - Call Pickup of Parked Call by Softkey
  - Call Transfer - Blind, Consult by Softkey
  - Call Waiting Indication
  - Call Swaping by Softkey
  - Call Hold by SoftKey
  - Conference Control

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IP Telephony Service and Features

- **User & Device Management**
  - LDAP (Light weight Directory Access Protocol) Support
    - Supports Hierarchical Organization
  - Auto Discovery of IP Phones & Video Phones
  - Monitoring Status of Phones

- **Miscellaneous***
  - Distinctive Ring by Calling User
  - Auto Config & Upgrade
  - Personal Directory
  - Downloadable Ring
  - Do not Disturb

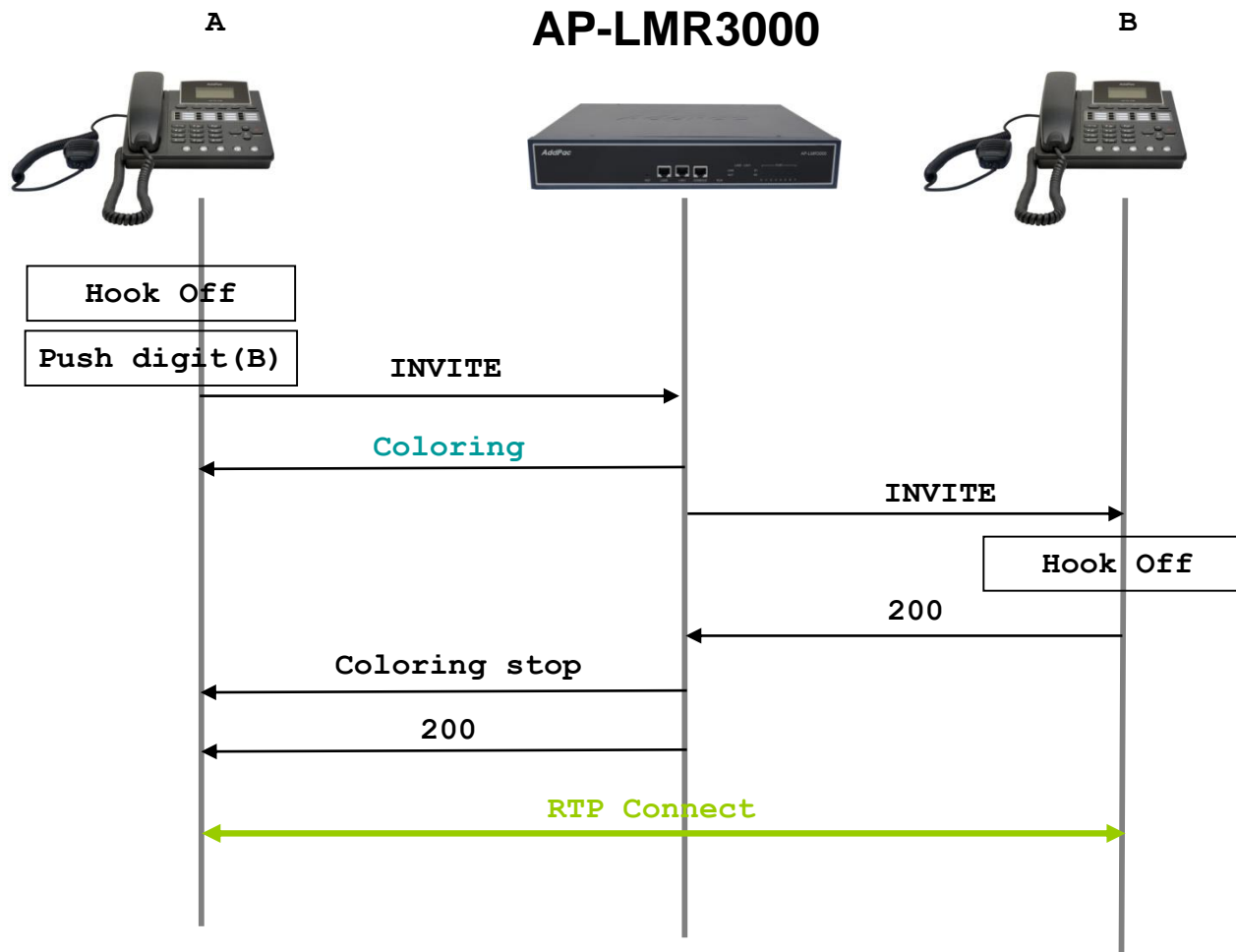**AddPac**

IP Telephony Service and Features

- **Conference**
  - G.711 (4-party Conference, 2 session) : Basic
  - G.711/G.729/G.723 (4-party Conference, 2session) Internal MCU Module : Option
  - Ad-hoc Conference
  - Dial-Out Conference
  - Meet-me Conference
  - Multiple External MCU support(Video, Audio, etc) : AddPac AP-MC1000, etc
  - Conference Chair and Participants Management
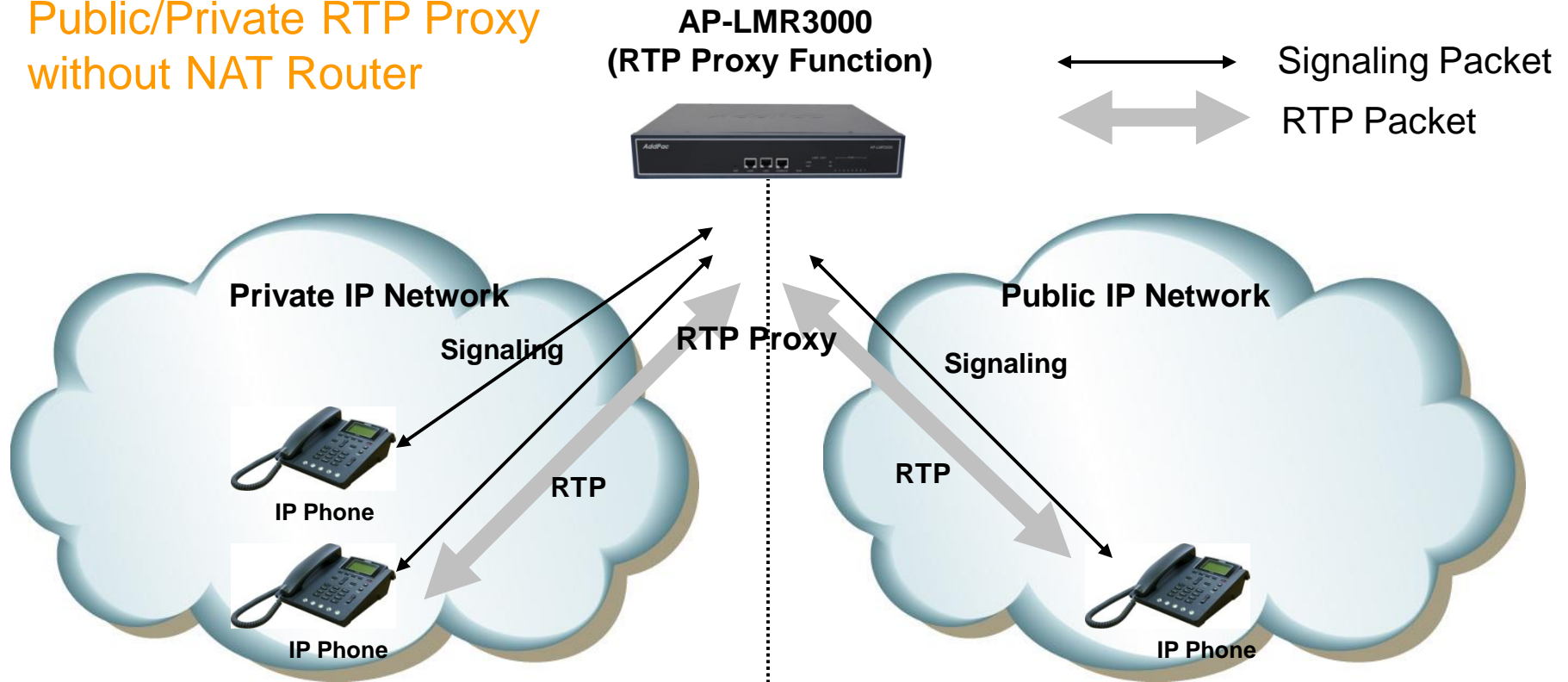
- **Music & Announcement**
  - Music on Hold
  - Replaceable Announcements
  - Dialing Music / Tone Service

SIP based Basic Call Scenario

RTP Proxy Service

Public/Private RTP Proxy without NAT Router

AP-LMR3000 (RTP Proxy Function)

Signaling Packet

RTP Packet

Private IP Network

Signaling

RTP Proxy

Public IP Network

Signaling

RTP

IP Phone

RTP

IP Phone

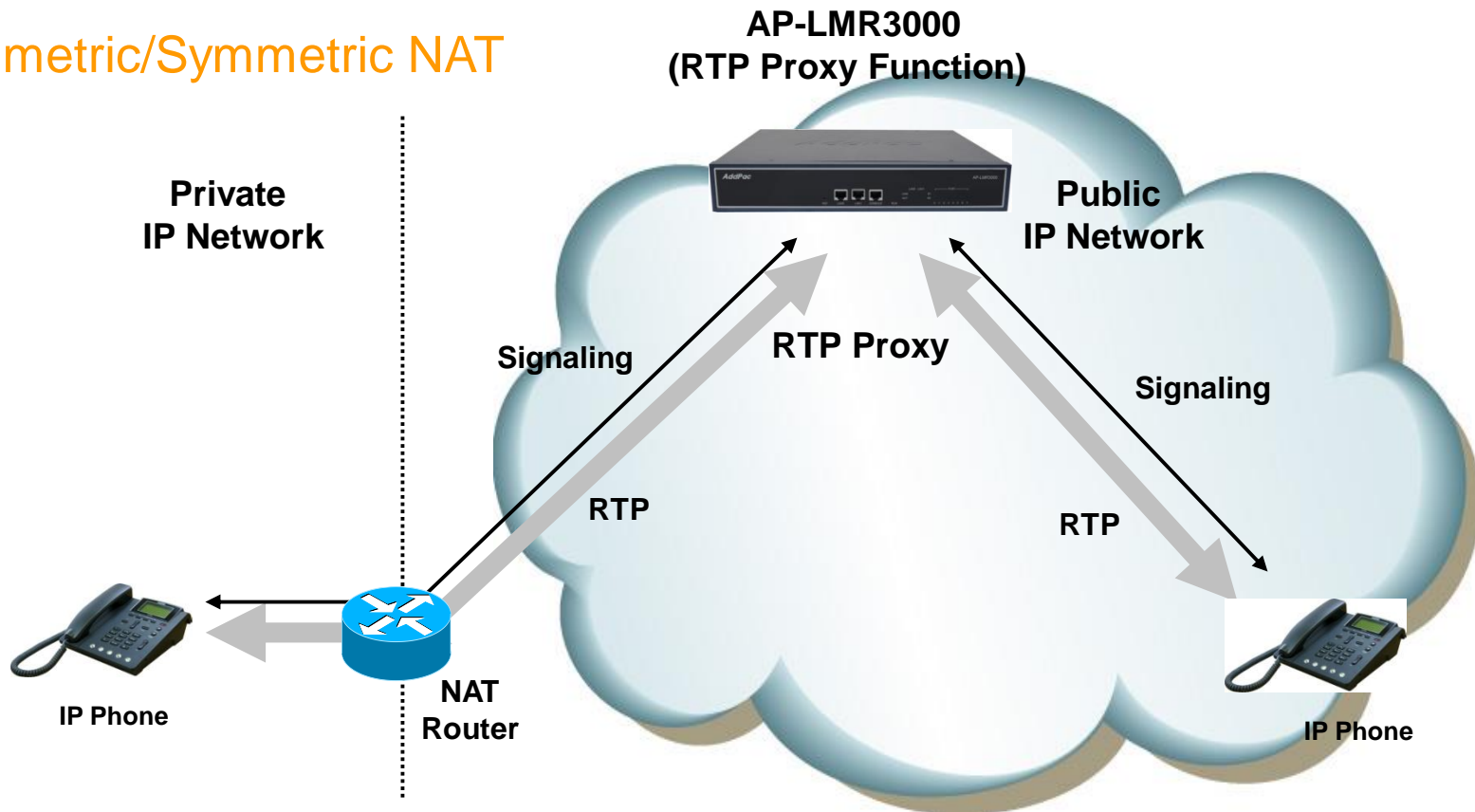**IP Phone**

- Located between public and private network
- AP-LMR3000(Call manager + RTP proxy) has public and private address
- AP-LMR3000 determine that the call is internal or external

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RTP Proxy Service

Asymmetric/Symmetric NAT

**AP-LMR3000
(RTP Proxy Function)**

**Private
IP Network**

**Public
IP Network**

Signaling

RTP Proxy

Signaling

RTP

RTP

IP Phone

**NAT
Router**

IP Phone

• Located in public network
• RTP Proxy has single public address
• Auto detect for asymmetric NAT via incoming RTP packet

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RTP Proxy Service

RTP Proxy Communication between Private IP

AP-LMR3000
(RTP Proxy Function)

Signaling Packet

RTP Packet

RTP Packet

Public IP Network

Signaling

Signaling

RTP Proxy

Signaling

RTP

RTP

RTP

IP Phone

Private IP Network

NAT Router

IP Phone

Private IP Network

NAT Router

IP Phone
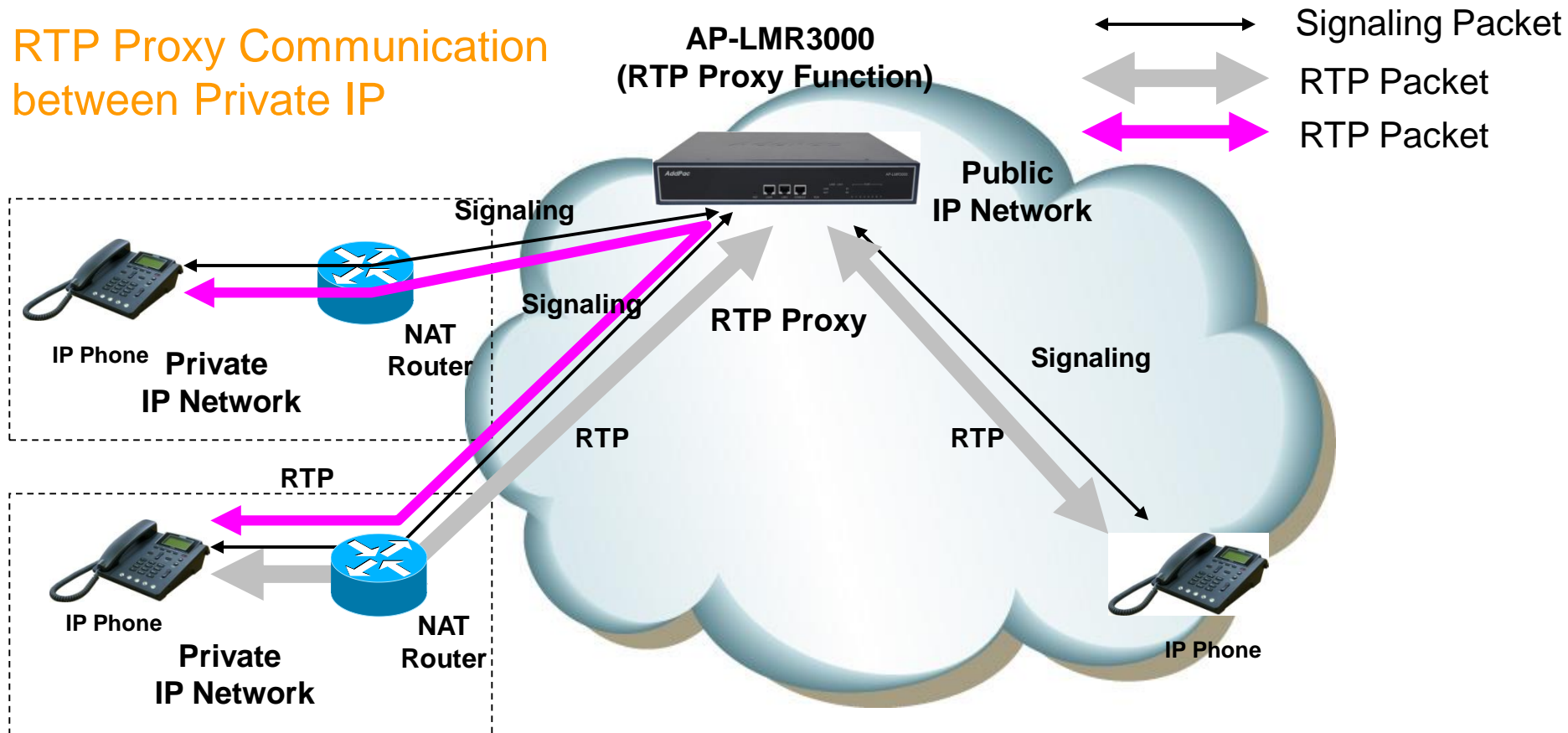
• Located in public network
• RTP Proxy has single public address
• Auto detect for asymmetric NAT via incoming RTP packet

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RTP Proxy Service

AP-LMR3000
(RTP Proxy Function)

IPv4/IPv6 RTP Proxy

IPv4 Network

IPv6 Network

Signaling

RTP Proxy

Signaling

RTP

RTP

IP Phone

IP Phone

• AP-LMR3000 (Call manager + RTP proxy) has IPv4 and IPv6 address

User Presence Service for UC

PC

Smart Messenger

AP-VP280PTT

PC

Smart Messenger

AP-VP280PTT

PC

Smart Messenger

AP-VP280PTT

LAN

AP-LMR3000
(RTP Proxy Function)

User Presence Information (Busy, Away, On-line, etc)

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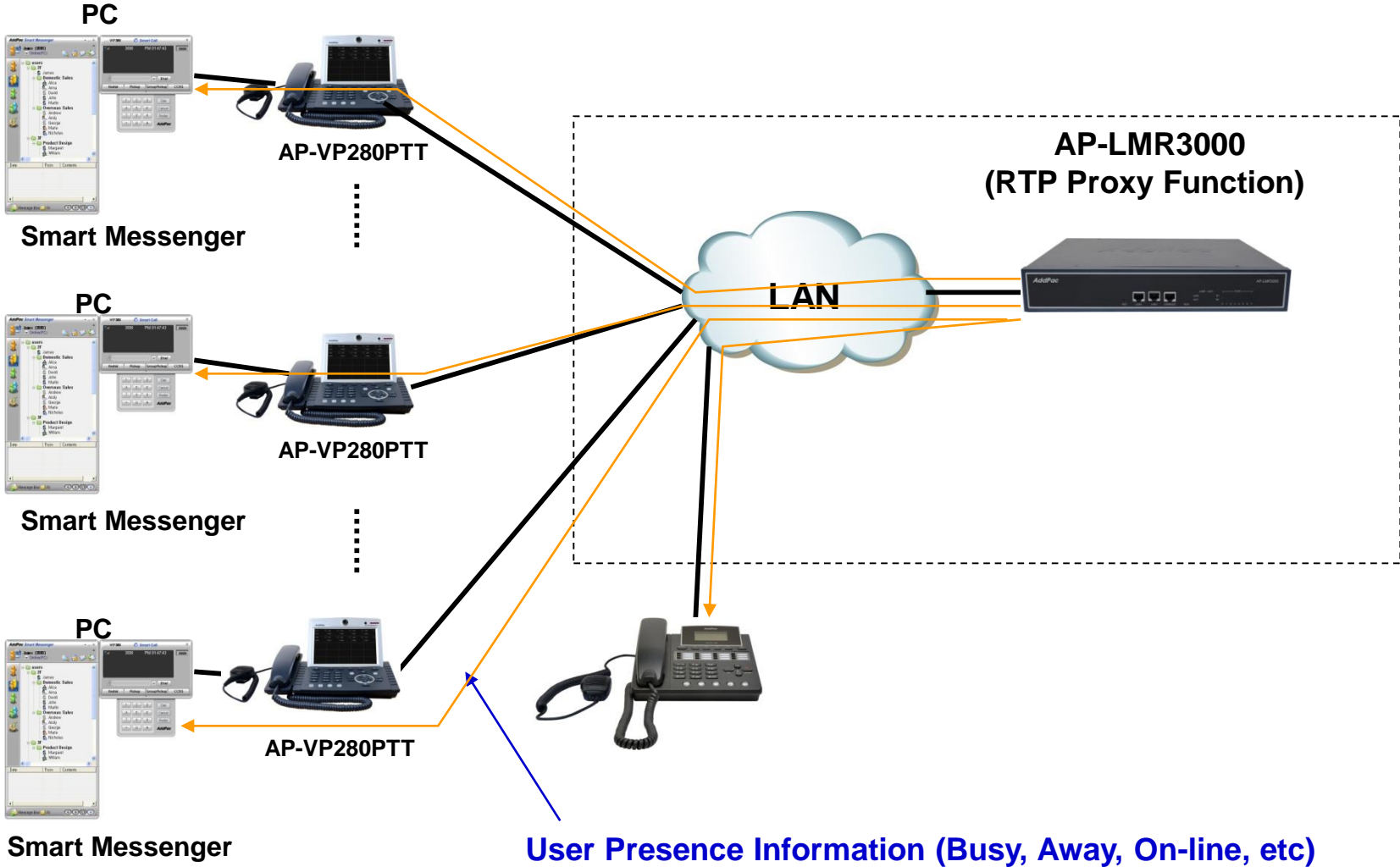
Network Service and Features

Basic Network Protocols
 - ARP, IP, IPv6, TCP, UDP, ICMP, ICMPv6, SCTP, IGMP, MLD

Routing Protocol
  - IPv4 : Static
  - IPv6 : Static

Service Protocol
  - FTP, Telnet, TFTP, DHCP Server/Relay, SNMP Server
  - CDP (Cisco Discovery Protocol)
  - DNS Resolver , DDNS(nsupdate)
  - Bridge
  - Syslog
  - IP/IPv6 policy control (QoS)
  - VPDN (Virtual Provate Dial-up Network : L2TP Server)

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Network Service and Features

IPv4/IPv6 Interworking
- NAT/PAT for IPv4
- IP connect (formerly ip-share) and device cascade for IPv4
- IP/IP, IP/GRE tunneling
- NAT-PT
- 6to4, Autoconfig tunneling

IPv4 Address Configuration
- Fixed (Static)
- DHCP
- PPPoE

IPv6 Address Configuration
- Fixed (Static)
- EUI-64
- Autoconfig (Neighbor Advertisement and Solicitation)

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Network Service and Features

Miscellaneous
- Cisco Style CLI
- Standard & Extended IPv4/IPv6 Access List
- Multi-level User Account Management
- IP accounting
- fsh (Embedded file system shell)
- STUN Client

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Network Service and Features

SNMP MIBs

- MIB-II
- RMON MIBs (Statistsics, History, Alarm, Hosts Group)
- RFC2465 Management Information Base for IP Version 6: Textual Conventions and General Group
- RFC2466 Management Information Base for IP Version 6: ICMPv6 Group
- RFC2452 IP Version 6 Management Information Base for the Transmission Control Protocol
- RFC2454 IP Version 6 Management Information Base for the User Datagram Protocol
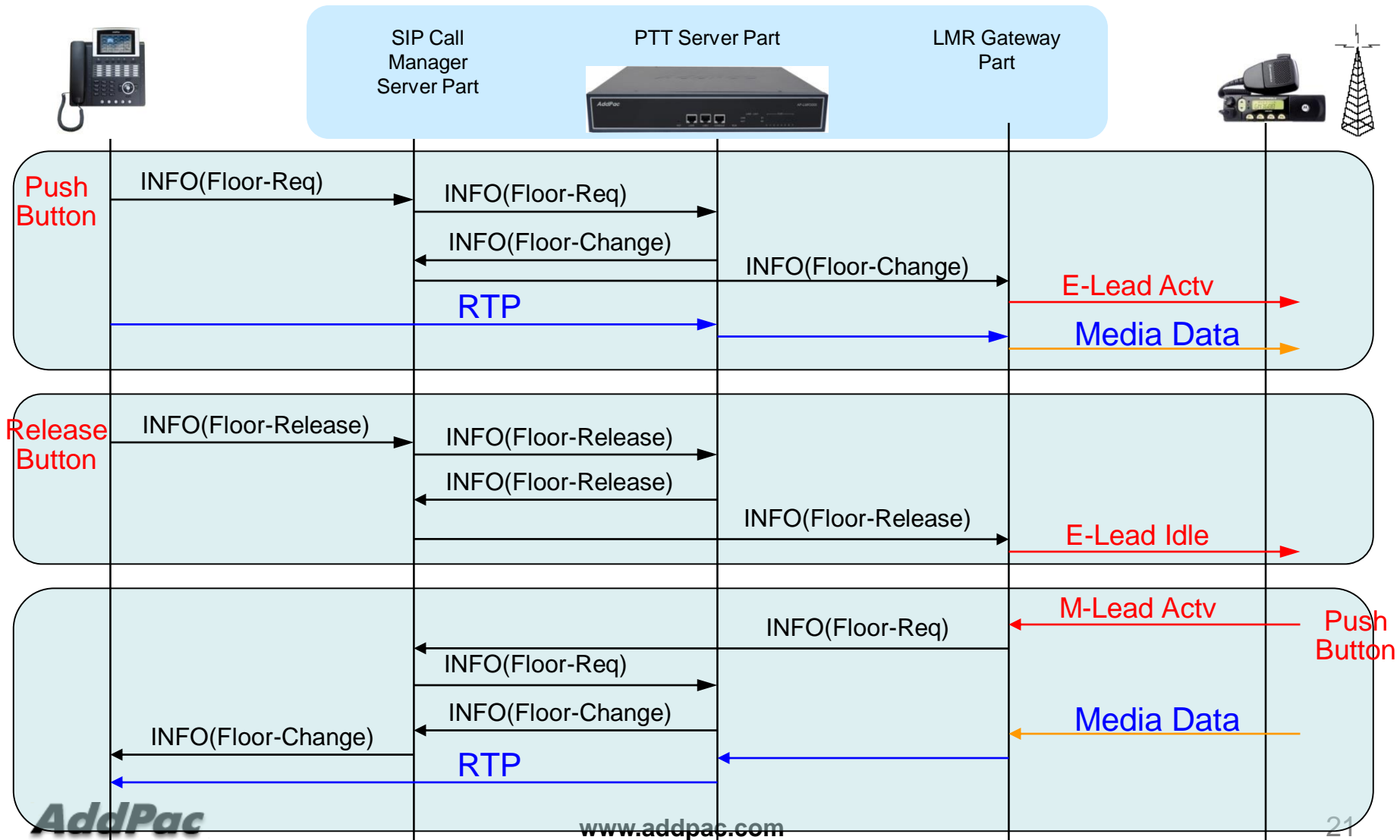- AddPac Enterprise MIBs
- etc

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PTT Service

- 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)

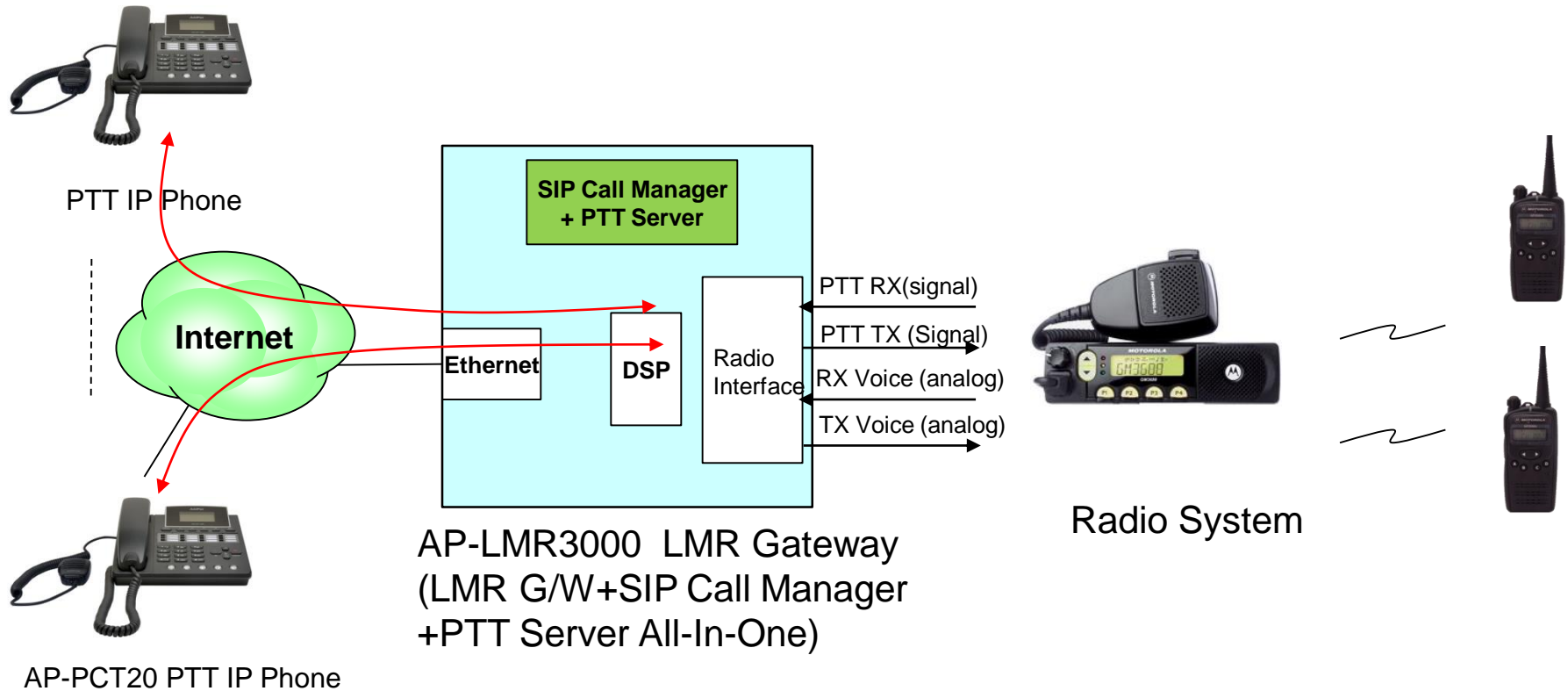- PTT Solution with Outstanding Network Service Capability

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RoIP System Message Flow
(SIP Call Manager + PTT Server Integrated Server Model)
SIP Message Flow (Floor Control : Push To Talk)

SIP Call Manager Server Part | PTT Server Part | LMR Gateway Part

Push Button
- INFO(Floor-Req)
- INFO(Floor-Req)
- INFO(Floor-Change)
- INFO(Floor-Change)
- E-Lead Actv
- RTP
- Media Data

Release Button
- INFO(Floor-Release)
- INFO(Floor-Release)
- INFO(Floor-Release)
- INFO(Floor-Release)
- E-Lead Idle

M-Lead Actv
- INFO(Floor-Req)
- INFO(Floor-Req)
- INFO(Floor-Change)
- INFO(Floor-Change)
- Media Data
- RTP

Push Button

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Network Diagram

PTT IP Phone

Internet

AP-PCT20 PTT IP Phone

SIP Call Manager + PTT Server

Ethernet

DSP

Radio Interface

PTT RX(signal)

PTT TX (Signal)

RX Voice (analog)

TX Voice (analog)

AP-LMR3000 LMR Gateway
(LMR G/W+SIP Call Manager
+PTT Server All-In-One)

Radio System

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Thank you!

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