AP1601N™
IP High Quality Audio Broadcasting Terminal

High Performance IP based Multichannel IP High Quality Audio Broadcasting Terminal

MBMS Management Software

AP1601N Broadcasting Terminal

HQA Module

AP-ABS5000 Broadcasting Server

AddPac Technology

2010, Sales and Marketing

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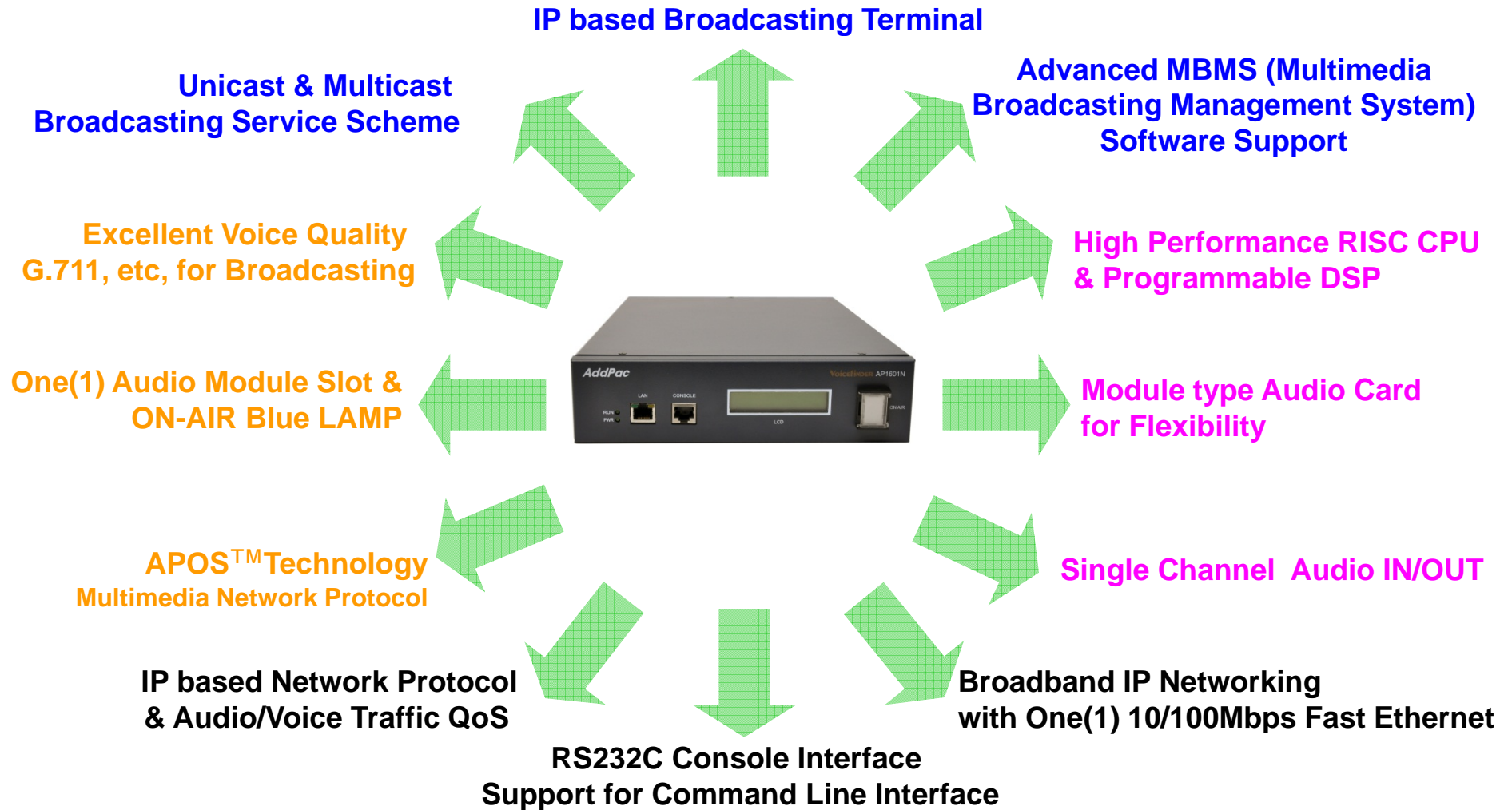- Application Area
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Product Overview

- IP based Audio Broadcasting Terminal Solution
- Hardware Architecture for Audio Broadcasting Terminal Service
- One(1) Module Slot for Audio Encoding & Decoding Service
- Remote Broadcasting Service at terminal side
- High Quality Audio Codec Support (G.711, etc)
- Unicast and Multicast Broadcasting Scheme
- Enhanced MBMS (Multimedia Broadcasting Management System) Support
- One(1) channel Audio IN/OUT Port
- On-AIR Blue LAMP
- High-Quality Audio/Voice Service
- Firmware Upgradeable Architecture
- Broadcasting Solution with Outstanding Network Service Capability

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Product Highlights

AP1601N IP High Quality Audio Broadcasting Terminal

IP based Broadcasting Terminal

**Unicast & Multicast
Broadcasting Service Scheme**

**Advanced MBMS (Multimedia
Broadcasting Management System)
Software Support**

**Excellent Voice Quality
G.711, etc, for Broadcasting**

**High Performance RISC CPU
& Programmable DSP**

**One(1) Audio Module Slot &
ON-AIR Blue LAMP**

**Module type Audio Card
for Flexibility**

**APOS™ Technology
Multimedia Network Protocol**

Single Channel Audio IN/OUT

**IP based Network Protocol
& Audio/Voice Traffic QoS**

**Broadband IP Networking
with One(1) 10/100Mbps Fast Ethernet**

**RS232C Console Interface
Support for Command Line Interface**

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Hardware Specification

RISC CPU

High-end DSP

- RISC Microprocessor Computing Power

- High-end Programmable DSP Hardware Architecture

- One(1) Module Slot for Audio Broadcasting Codec Module

- High Quality Audio Encoding/Decoding Service

- ON-AIR Blue LAMP

- High Quality Audio and Voice Interface
  - Stereo Audio Input Connector
  - Stereo Audio Output Connector

- Network Interface
  - One(1) 10/100Mbps Fast Ethernet (RJ45)
  - One(1) RS-232C Interface (RJ45) for Command Line Interface

Hardware Specification

AP1601N IP High Quality Audio Broadcasting Terminal

AP1601N Front Side

AP1601N Back Side

Audio Input

Audio Output

Fast Ethernet (LAN0, LAN1)

RS232C Console

Status LCD

On-Air Blue LAMP

Audio Port Active LED

Audio Broadcasting Service Module

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RISC CPU

High-end DSP

AP-N1-HQA1000 Board

Audio IN
(MIC, Line IN)

ON-AIR Blue LAMP

Audio OUT
(HP, Line OUT)

AP1601N IP High Quality Audio Broadcasting Terminal

RISC
CPU

High-end
DSP

AP1601N Audio Module
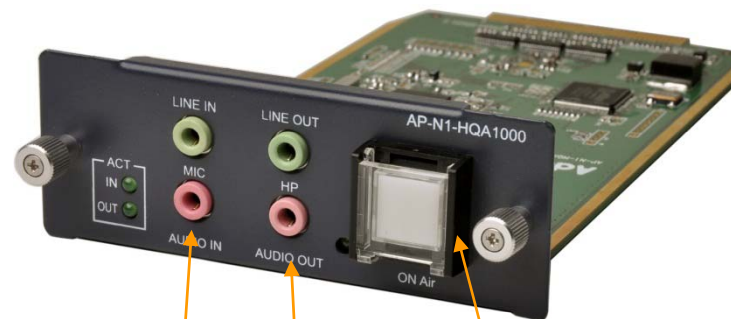
Audio Module Type (AP-N1-HQA1000)	Audio Module Features
	One(1)-Channel Audio In/Out Port
	Audio Encoding/Decoding Service
	Audio IN : MIC, Line IN Audio OUT : Headphone, Line OUT 3.5mm Stereo JACK
	High Quality G.711, etc, Audio Codec

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AP-HQA Module

AP1601N IP High Quality Audio Broadcasting Terminal
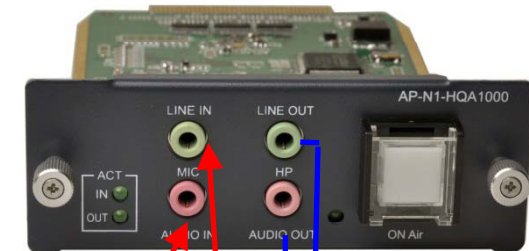
Connect with 1:2 Stereo Jack

Direct MIC

Connect with 2:1 Stereo Jack

•**High quality codec realizes high quality audio service**
•**Direct MIC-In/ Headphone In Port for monitoring**
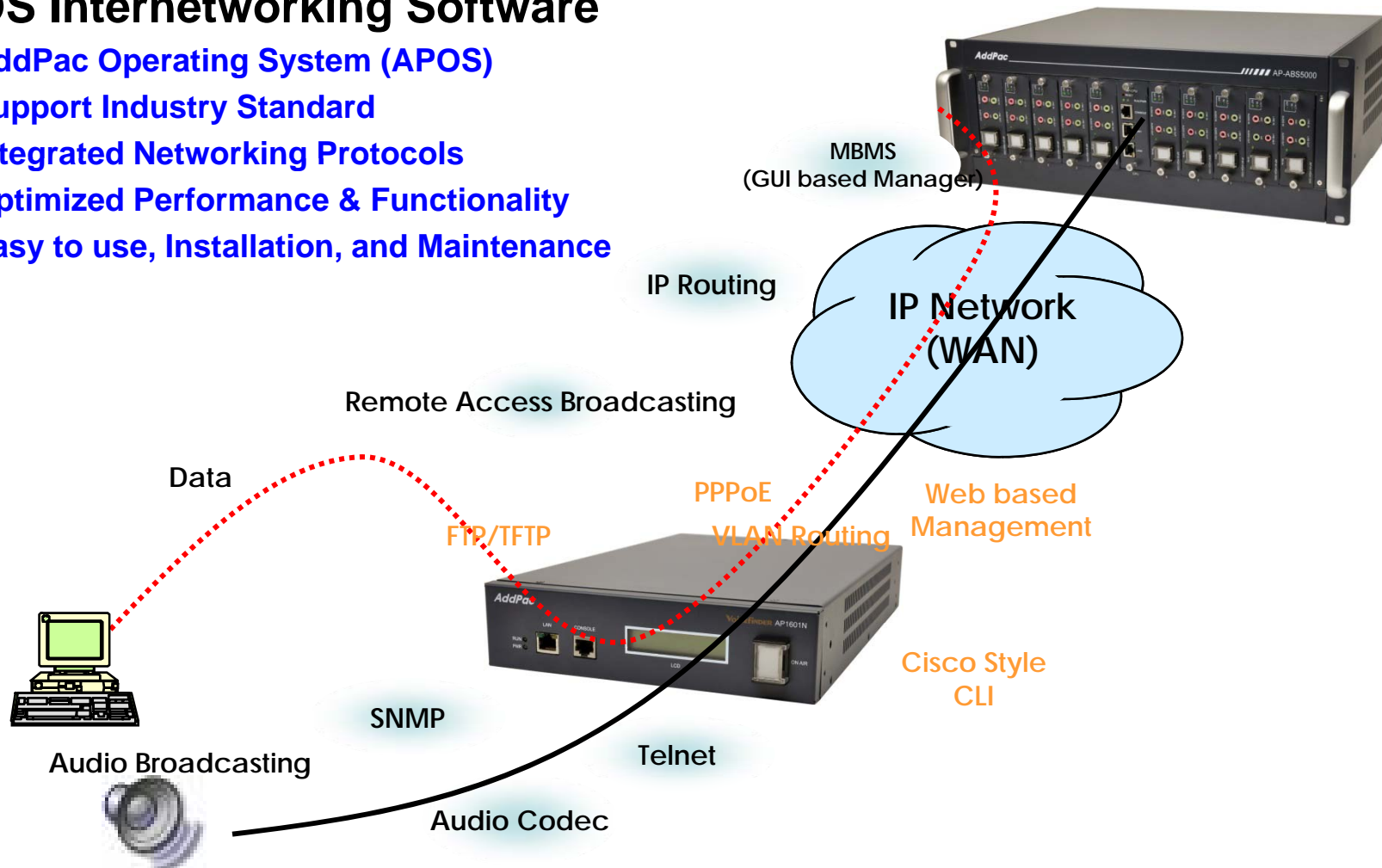•**Real time High Quality Audio Band Broadcasting**

Headphone

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APOS™ Service Features

AP1601N IP High Quality Audio Broadcasting Terminal

- **APOS Internetworking Software**
  - **AddPac Operating System (APOS)**
  - **Support Industry Standard**
  - **Integrated Networking Protocols**
  - **Optimized Performance & Functionality**
 - **Easy to use, Installation, and Maintenance**

MBMS
(GUI based Manager)

IP Routing

**IP Network
(WAN)**

Remote Access Broadcasting

Data

PPPoE

Web based
Management

FTP/TFTP

VLAN Routing

Cisco Style
CLI

SNMP

Telnet

Audio Broadcasting

Audio Codec

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APOS^{TM} Service Features

AP1601N IP High Quality Audio Broadcasting Terminal

- **IP Routing Protocols**
  - **Multi-protocol Internetworking Services**
  - **Static & Default IP routing**

- **WAN Protocols**
  - **Point-to-Point Protocol (PPPoE for ADSL)**
  - **IEEE 802.3 Ethernet**
  - **PPTP support for secure communication**

IP

IP Network (WAN)

Internet WWW

IP

IP

LAN

IP

IP

IP

IP

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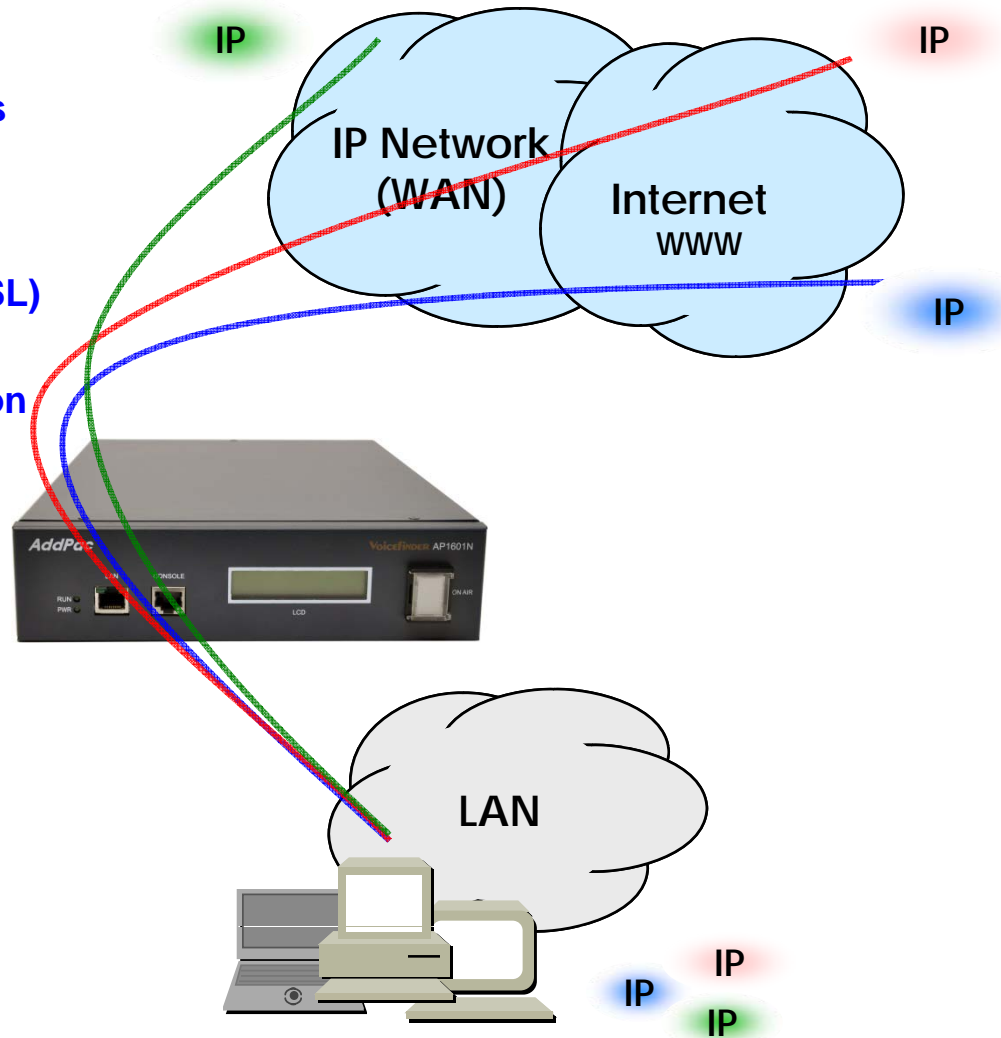
APOS™ Service Features

AP1601N IP High Quality Audio Broadcasting Terminal

- **Network Managements**
  - Standard SNMP Agent (MIB v2) Support
  - Remote Management using Console, Telnet
  - Web based Management using HTTP Server Interface

- **Security Functions**
  - Standard & Extended IP Access List
  - Enable/Disable for Specific Network Protocols
  - Multi-level User Account Management
  - Auto-disconnect for Telnet/Console Sessions
  - PPP User Authentication Supports (PAP & CHAP)

- **Operation & Managements**
  - System Performance Analysis for Process, CPU, Connection Interface
  - Debugging, System Auditing, and Diagnostics Support
  - System Booting and Auto-rebooting with Watchdog Feature
  - System Managements with Data Logging
  - IP Traffic Statistics with Accounting

APOS^{TM} Service Features

AP1601N IP High Quality Audio Broadcasting Terminal

- **Network Protocols**
  - DHCP Server & Relay Functions
  - Network Address Translation (NAT) Function
  - Port Address Translation (PAT) Function
  - Transparent Bridging (IEEE Standard) Function
    - Spanning Tree Bridging Protocol Support
    - Remote Bridging Support
    - Concurrent Routing and Bridging Support
  - Cisco Style Command Line Interface (CLI)
  - Network time Protocol (NTP) Support

- **MBMS (Multimedia Broadcast Management System)**
  - MS Windows Graphical User Interface (GUI) based Audio Broadcasting Management
  - Service Group Configuration
  - Scheduled Broadcasting
  - Status Monitoring
  - Report Service
  - Embedded Media file Manager

APOS™ Service Features

- Audio Codec for AP-HQA Module
  - G.711 Audio Codec, etc

IP Broadcasting

- RTP Protocols
  - Redundant RTP packet transmission in case of severe packet loss
  - Dynamic jitter buffer management and RPT packet jitter and loss compensation with heuristic & DSP error concealment
  - Static jitter buffer setting support
  - Voice frame per RTP packet number control for each codec

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IP Audio Broadcasting Signal Flow

AP1601N IP High Quality Audio Broadcasting Terminal

AP-MBMS

IP Audio Broadcasting Server
Source (AP-ABS5000)

IP Audio Broadcasting Terminal
Play (AP1601N)

IP Audio Broadcasting Terminal
Play (AP1601N)

Session Configuration

Session Start

START REQ (Session Info)

START RSP

Audio stream

Session Check

Audio stream

POLL REQ

POLL RSP (Session Statistics)

Session Stop

STOP REQ

STOP RSP (Session Statistics)

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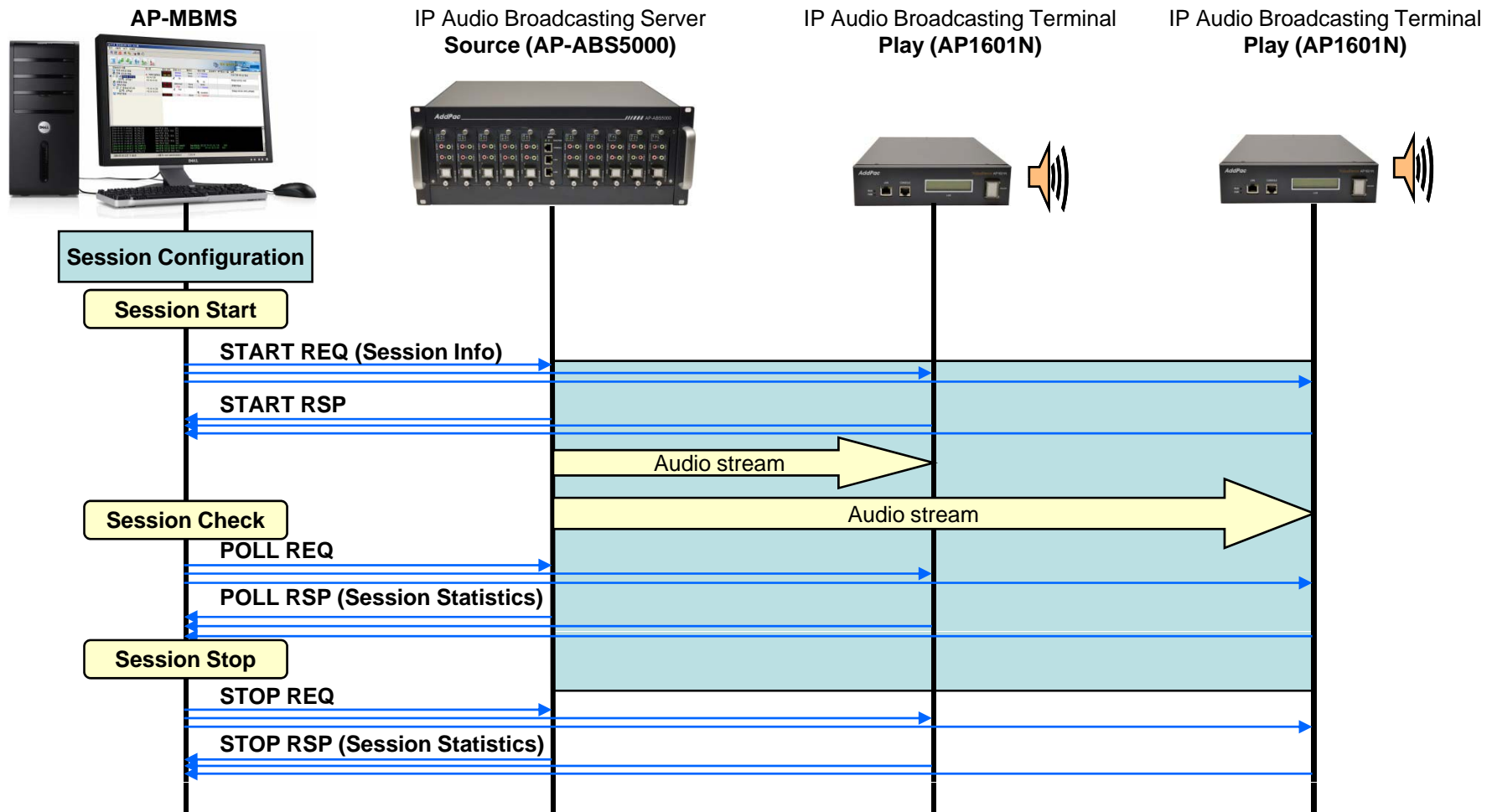
Multicast Service Network Diagram

AP1601N IP High Quality Audio Broadcasting Terminal

Multicasting Service Network

AP1601N

MBMS

Internet

Multicast Enabled

AP-ABS5000

IGMP Router

Multicast Enabled

AP1601N (Terminal)

IGMP client
(Multicast join)

IGMP client
(Multicast join)
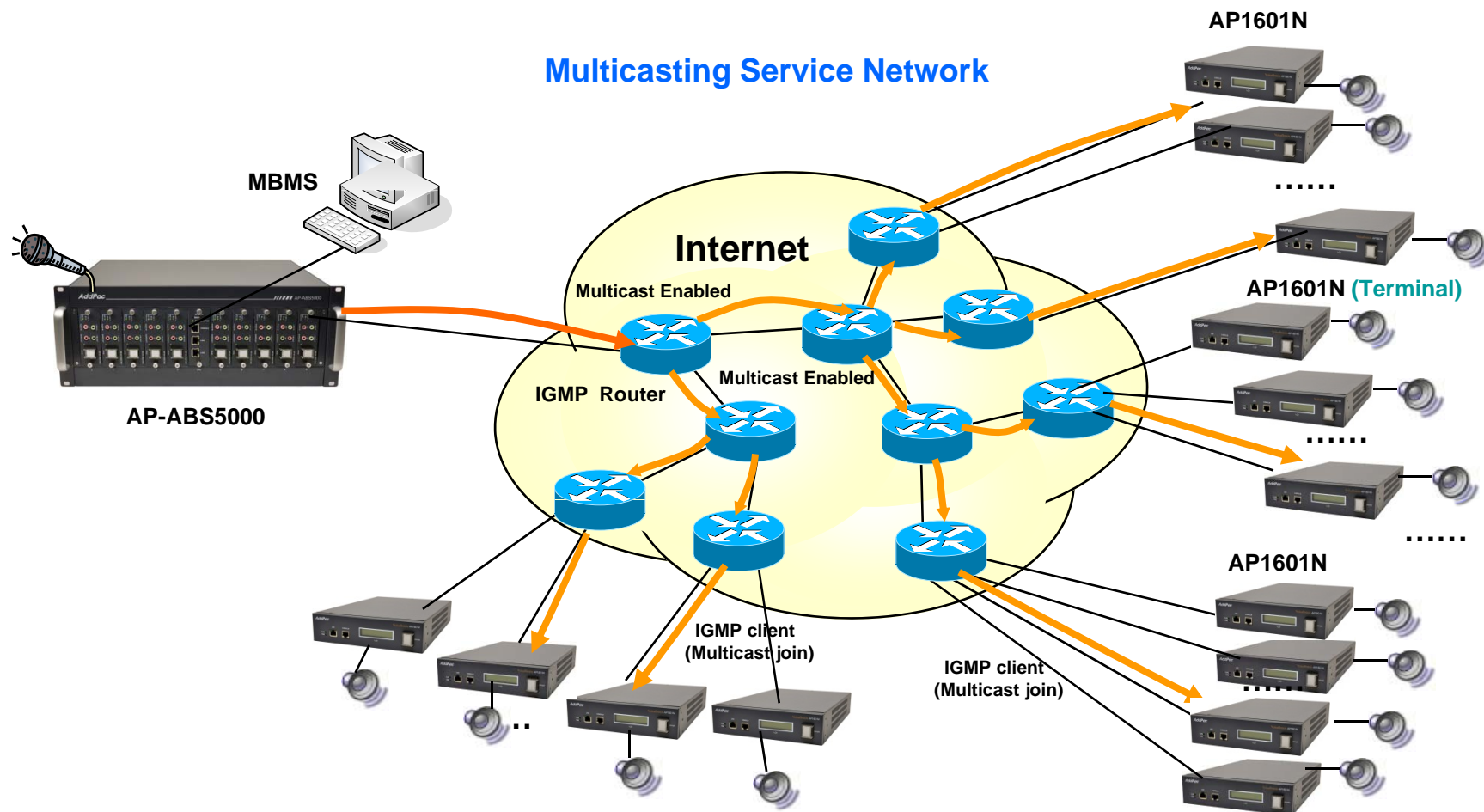
AP1601N

– **Multicast protocol based such as IGMP Protocol**
– **Available to broadcast multi destination with single channel bandwidth**

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Unicast Service Network Diagram

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Unicasting Service Network
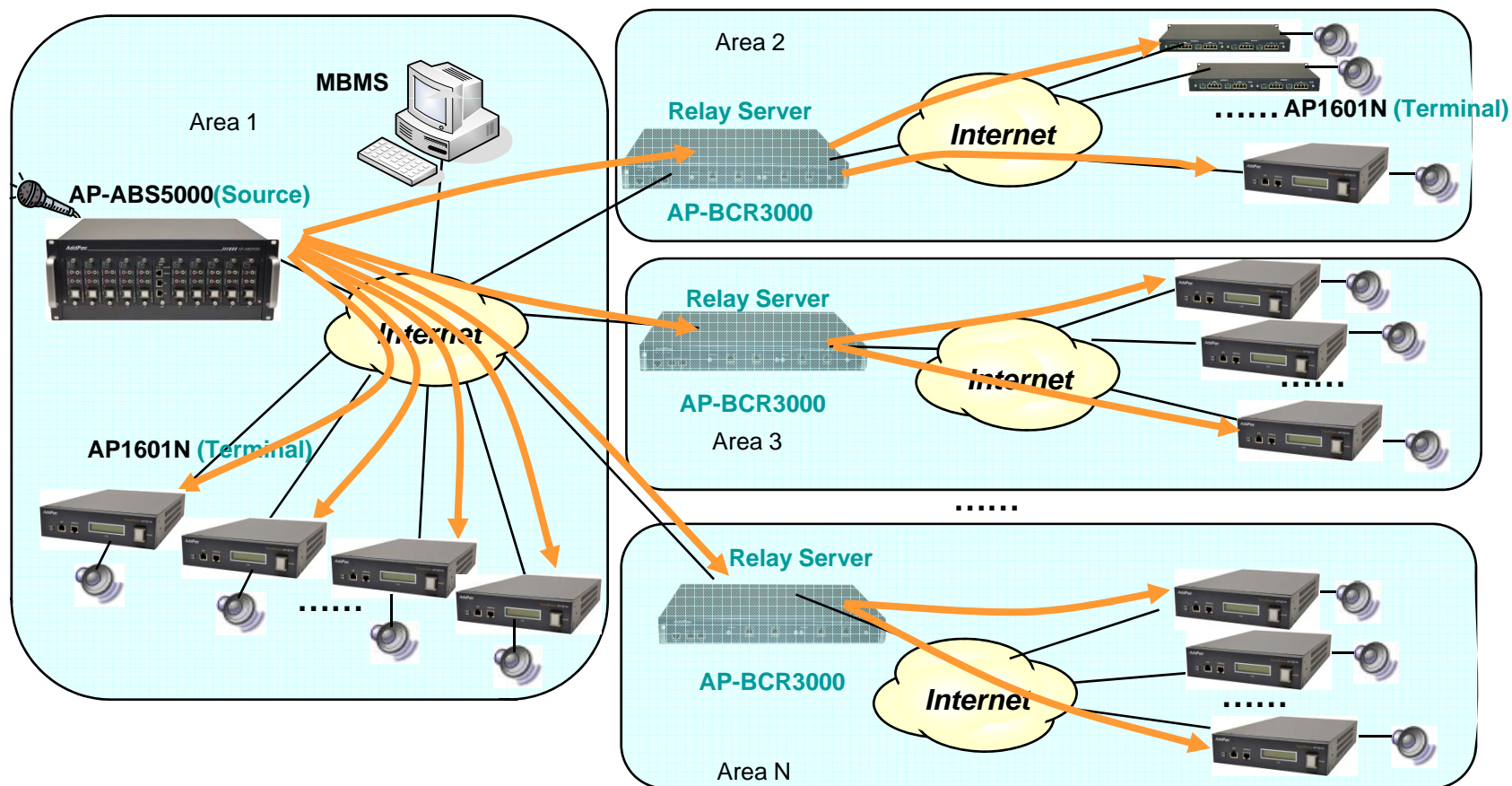
MBMS 2.0 Software Features

AP1601N IP High Quality Audio Broadcasting Terminal

- User Registration Management
- User Access Restriction
- Broadcasting System Management
- Broadcasting Session Management
- Scheduling Broadcasting and On-time Broadcasting
- Emergency Broadcasting Management
- Scheduling Stop Management
- Event Log Management
- MBMS System Redundancy & Auto Data Backup

MBMS 2.0 Software Features

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MBMS S/W Startup (Example)

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Broadcasting Equipment Management (Example)
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Broadcasting Configuration (Example)

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Broadcasting Scheduling (Example)

AP1601N IP High Quality Audio Broadcasting Terminal

Event Log (Example)

AP1601N IP High Quality Audio Broadcasting Terminal

IP HQ Audio Broadcasting Solution

Audio Broadcasting Manager S/W	HQ Audio Broadcasting Server AP-ABS5000	Audio Broadcasting Router (Relay Server)	HQ Audio Broadcasting Terminal AP1601N	AMP. On/Off Power Switch Box AP-PSB
Window based Audio Broadcasting Management Software.	Embedded Hardware based Audio Codec. Ten(10) HQ Audio Codec Module. G.711, etc, Audio Codec.	1:N Audio Broadcasting Router. Gigabit Ethernet Support	Embedded Hardware based Audio Terminal One(1) HQ Audio Codec Module. G.711, etc, Audio Codec.	AMP. Power ON/OFF Switch Box. Background Noise Remove at OFF-AIR

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Application Service
(IP Broadcasting Service)

Headquarter

Branch 1

AP-ABS5000

LAN

AP1601N

LAN

**IP Network
(Cable/ ADSL)**

ADSL/Cable Modem

Analog Voice Interface

Data Network

IP Broadcasting Network

AP1601N

Branch 2

LAN

AP1601N

Branch n
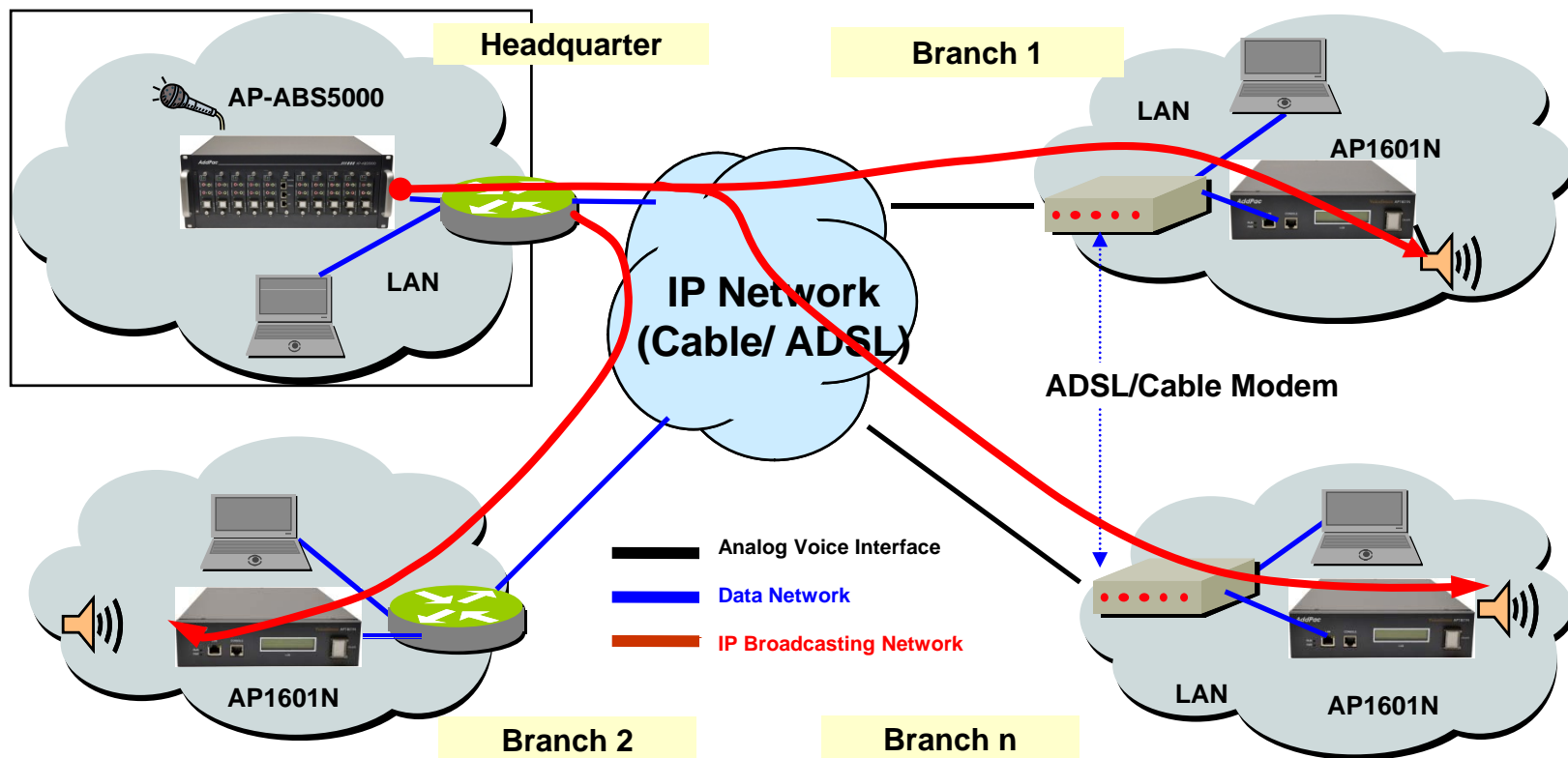
Ordering Information

- **AP1601N IP High Quality Audio Broadcasting Terminal Hardware**
  - AP1601N Main Body
  - RISC Microprocessor with High-end Programmable DSP Architecture
  - 1-ports 10/100Mbps Fast Ethernet and 1-port RJ45 RS-232C Console
  - One(1) AP-HQA1000 Module
  - Including Network Cable Set & Power Supply, etc.
- **Built-in APOS Internetworking Software for AP1601N**
- **Including 1 Year Hardware Warranty**
- **Product Documents**
  - Install and Operation Guide (PDF)
- **Pricing**
  - AddPac Technology Regional Sales Manager
  - Authorized Sales and Marketing Representatives
  - Please Contact www.addpac.com

Thank you!

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