

AP1605L

IP Audio Broadcasting Terminal

High Performance IP Audio Broadcasting Terminal

Product Overview



AddPac

AddPac Technology

Sales and Marketing

www.addpac.com

Contents

- Product Overview
- Product Highlight
- Hardware Specification
- APOS™ Service Features
- IP Audio Broadcasting Signal Flow
- Unicast & Multicast Service Feature
- MBMS v2.0 Software Features
- IP Audio Broadcasting Solution
- Application Area
- Ordering Information

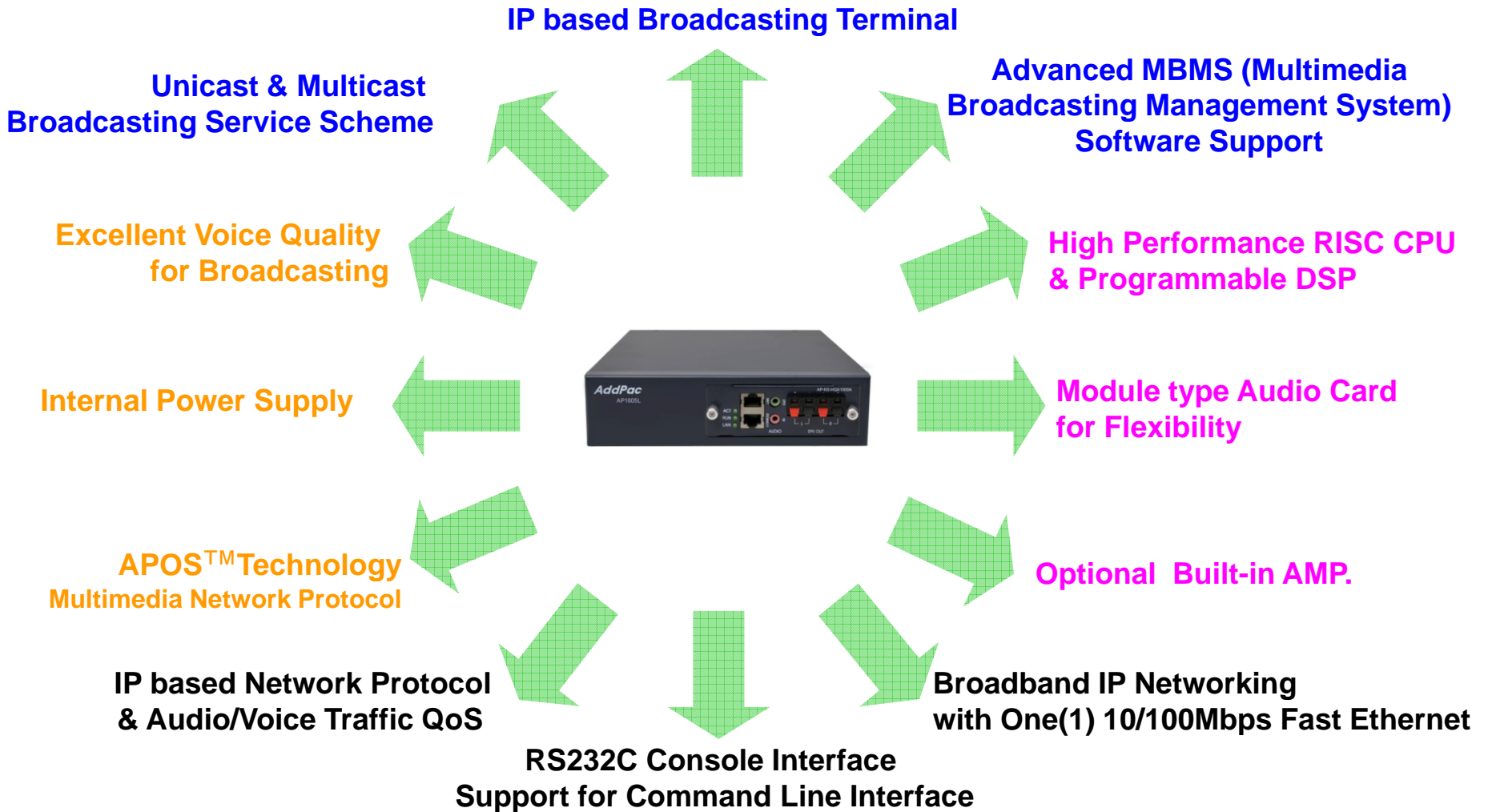
Product Overview

AP1605L IP Audio Broadcasting Terminal

- 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 (High Quality Codec, G.711, etc)
- Unicast and Multicast Broadcasting Scheme
- Enhanced MBMS (Multimedia Broadcasting Management System) Support
- One(1) channel Audio IN/OUT Port
- **Optional Built-In Digital AMP.**
- High-Quality Audio/Voice Service
- Firmware Upgradeable Architecture
- Broadcasting Solution with Outstanding Network Service Capability
- Internal Power Supply

Product Highlights

AP1605L IP Audio Broadcasting Terminal



Hardware Specification

AP1605L IP Audio Broadcasting Terminal

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
- Internal Power Supply Support
- Option Module : AP-N3-HQA1000
 - One(1) 10/100Mbps Fast Ethernet (RJ45)
 - One(1) RS-232C Interface (RJ45) for Command Line Interface
 - Stereo Audio Input/Output Connector
- Option Module : AP-N3-HQA1000A
 - One(1) 10/100Mbps Fast Ethernet (RJ45)
 - One(1) RS-232C Interface (RJ45) for Command Line Interface
 - Stereo Audio Input/Output Connector
 - Built-in Audio AMP.

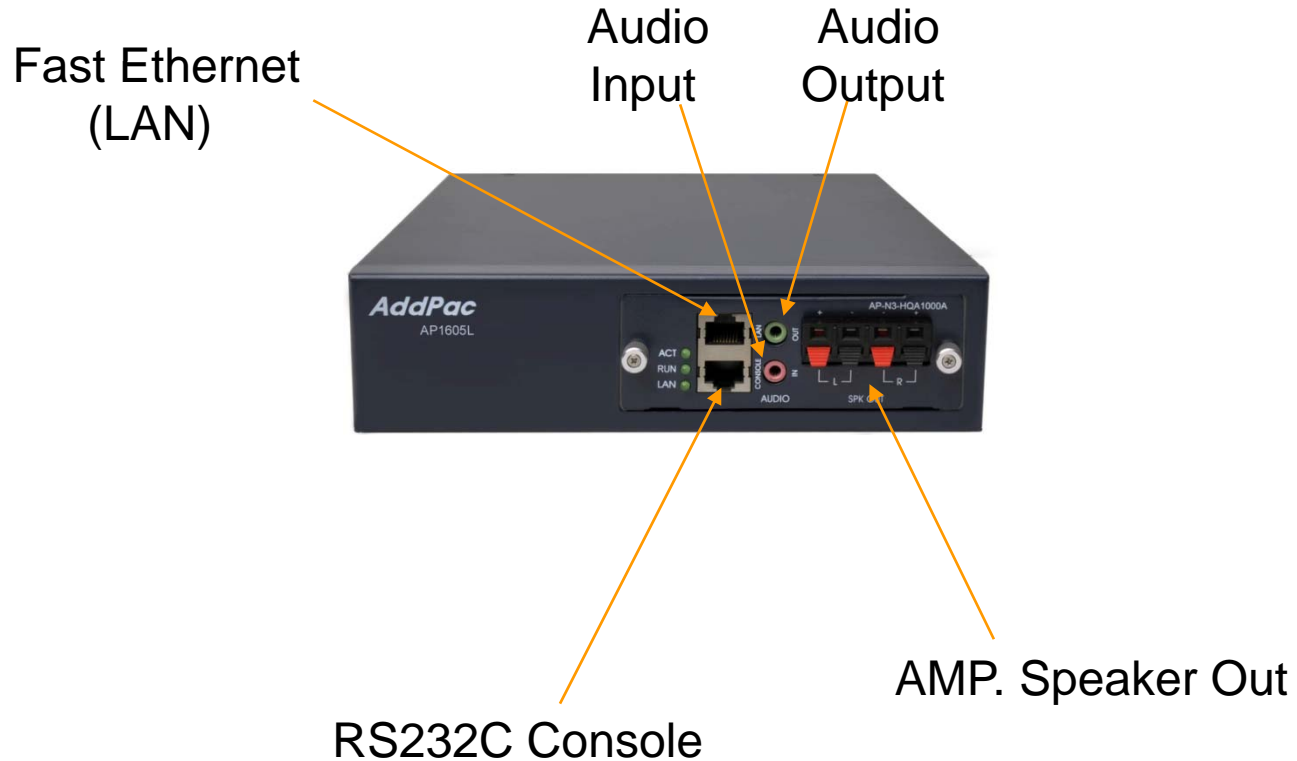
Hardware Specification

AP1605L IP Audio Broadcasting Terminal

RISC
CPU

High-end
DSP

Front Side



Hardware Specification

AP1605L IP Audio Broadcasting Terminal

RISC
CPU

High-end
DSP

Back Side



Power Switch

AC Power
Supply Input

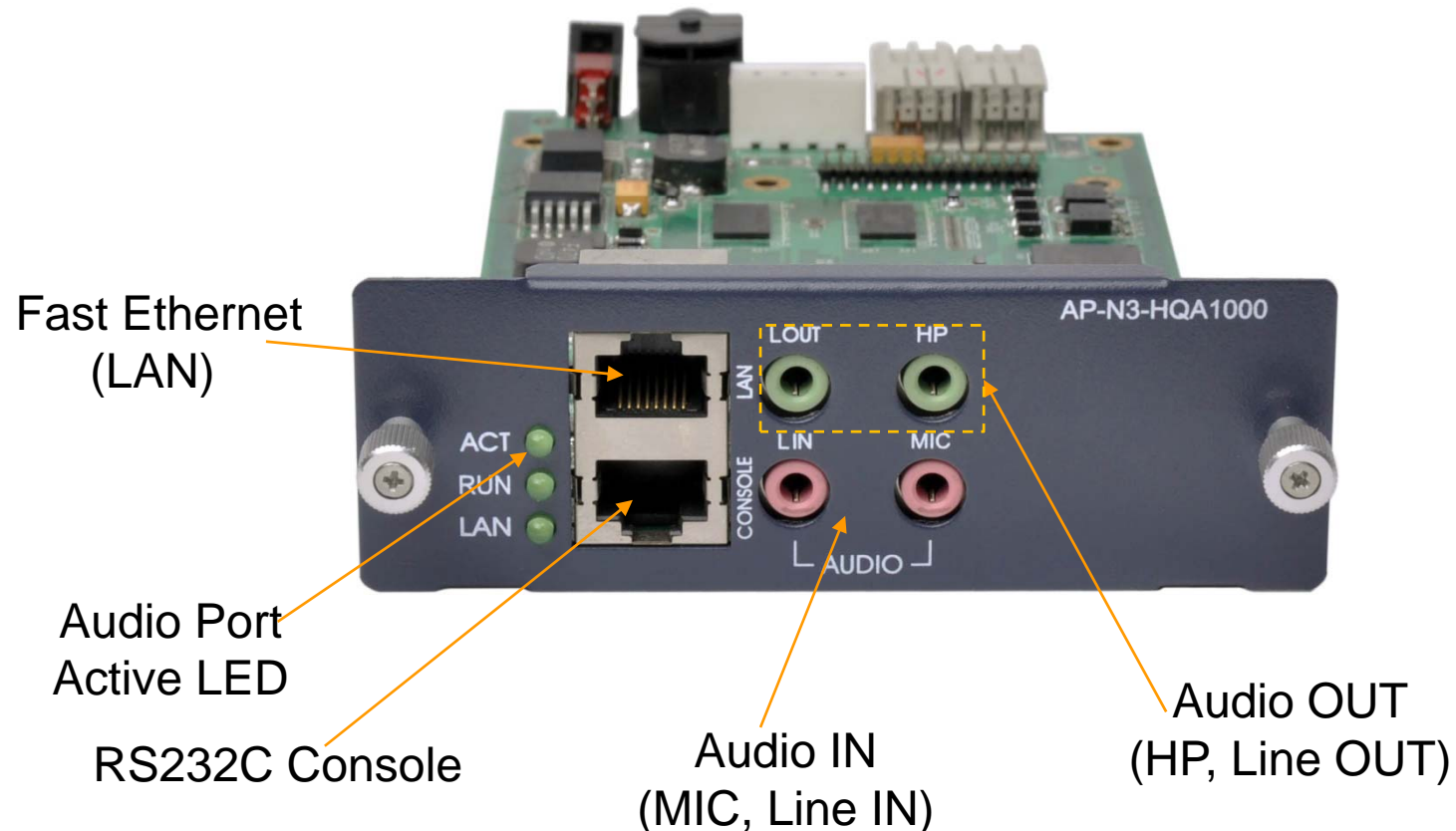
Hardware Specification

AP1605L IP Audio Broadcasting Terminal

RISC
CPU

High-end
DSP

AP-N3-HQA1000 Board



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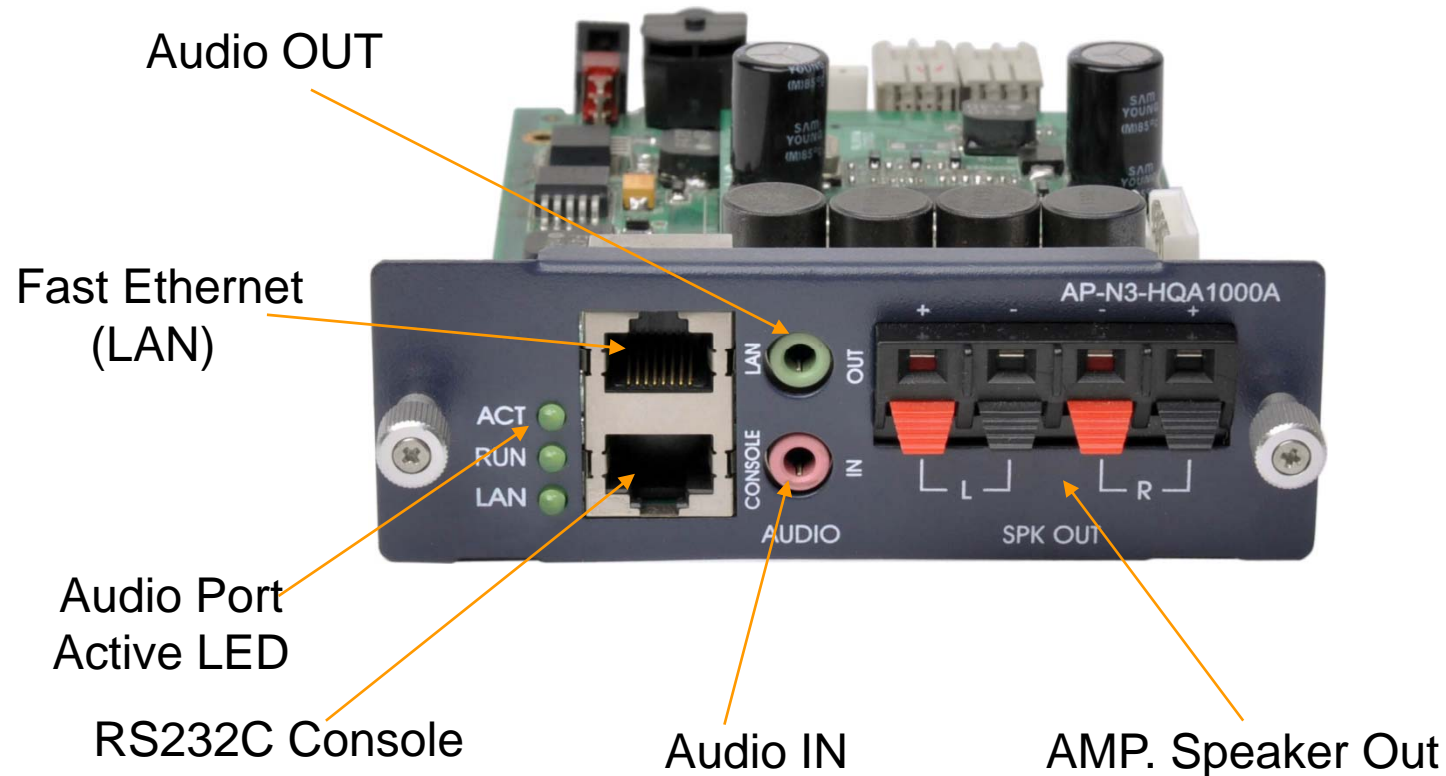
Hardware Specification

AP1605L IP Audio Broadcasting Terminal

RISC
CPU

High-end
DSP

AP-N3-HQA1000A Board



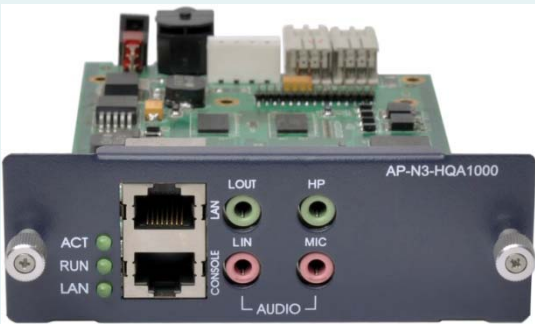
Hardware Specification

AP1605L IP Audio Broadcasting Terminal

RISC
CPU

High-end
DSP

AP1605L Audio Module

| Audio Module Type | Audio Module Features |
|--|---|
| <p data-bbox="562 703 893 743">AP-N1-HQA1000</p>  <p>The image shows the AP-N1-HQA1000 audio module, a dark grey PCB with various ports and components. On the left side, there are three status LEDs labeled ACT, RUN, and LAN. Next to them are a BNC connector and a LAN port. The front panel features a 'CONSOLE' port, a 'LAN' port, and a 'MIC' port. On the right side, there are 'L OUT' and 'HP' ports, and a 'LIN' port. The model number 'AP-N1-HQA1000' is printed on the top right of the module.</p> | <p data-bbox="1178 699 1742 738">One(1)-Channel Audio In/Out Port</p> <p data-bbox="1178 762 1608 802">One(1) Fast Ethernet Port</p> <p data-bbox="1178 826 1525 866">One(1) RS232C Port</p> <p data-bbox="1178 890 1742 930">Audio Encoding/Decoding Service</p> <p data-bbox="1178 954 1559 994">Audio IN : MIC, Line IN</p> <p data-bbox="1178 1010 1765 1050">Audio OUT : Headphone, Line OUT</p> <p data-bbox="1178 1066 1518 1106">3.5mm Stereo JACK</p> <p data-bbox="1178 1145 1854 1185">High Quality Codec, G.711 Audio Codec</p> |

Hardware Specification

AP1605L IP Audio Broadcasting Terminal

RISC
CPU

High-end
DSP

AP1605L Audio Module

| Audio Module Type | Audio Module Features |
|-------------------|---|
| AP-N1-HQA1000A | One(1)-Channel Audio In/Out Port |
| | One(1) Fast Ethernet Port |
| | One(1) RS232C Port |
| | Audio Encoding/Decoding Service |
| | Audio IN |
| | Audio OUT |
| | AMP. Built-in Speaker Out (Left, Right) |
| | 4ohm Speaker : 50Watt |
| | 8ohm Speaker : 30Watt |
| | High Quality Codec,G.711 Audio Codec |

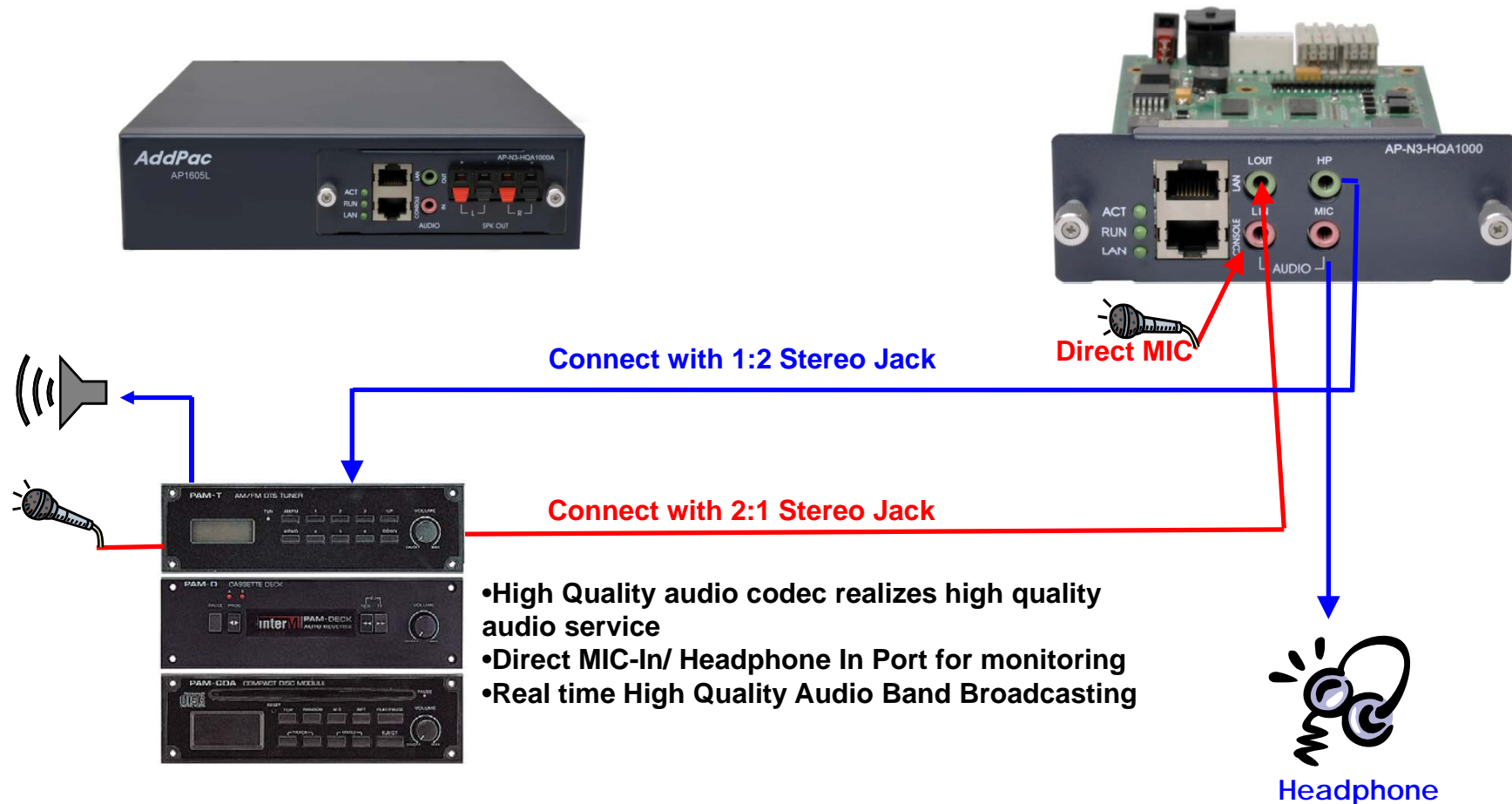


AP-N3-HQA1000 Module

AP1605DC IP Audio Broadcasting Terminal

RISC
CPU

High-end
DSP

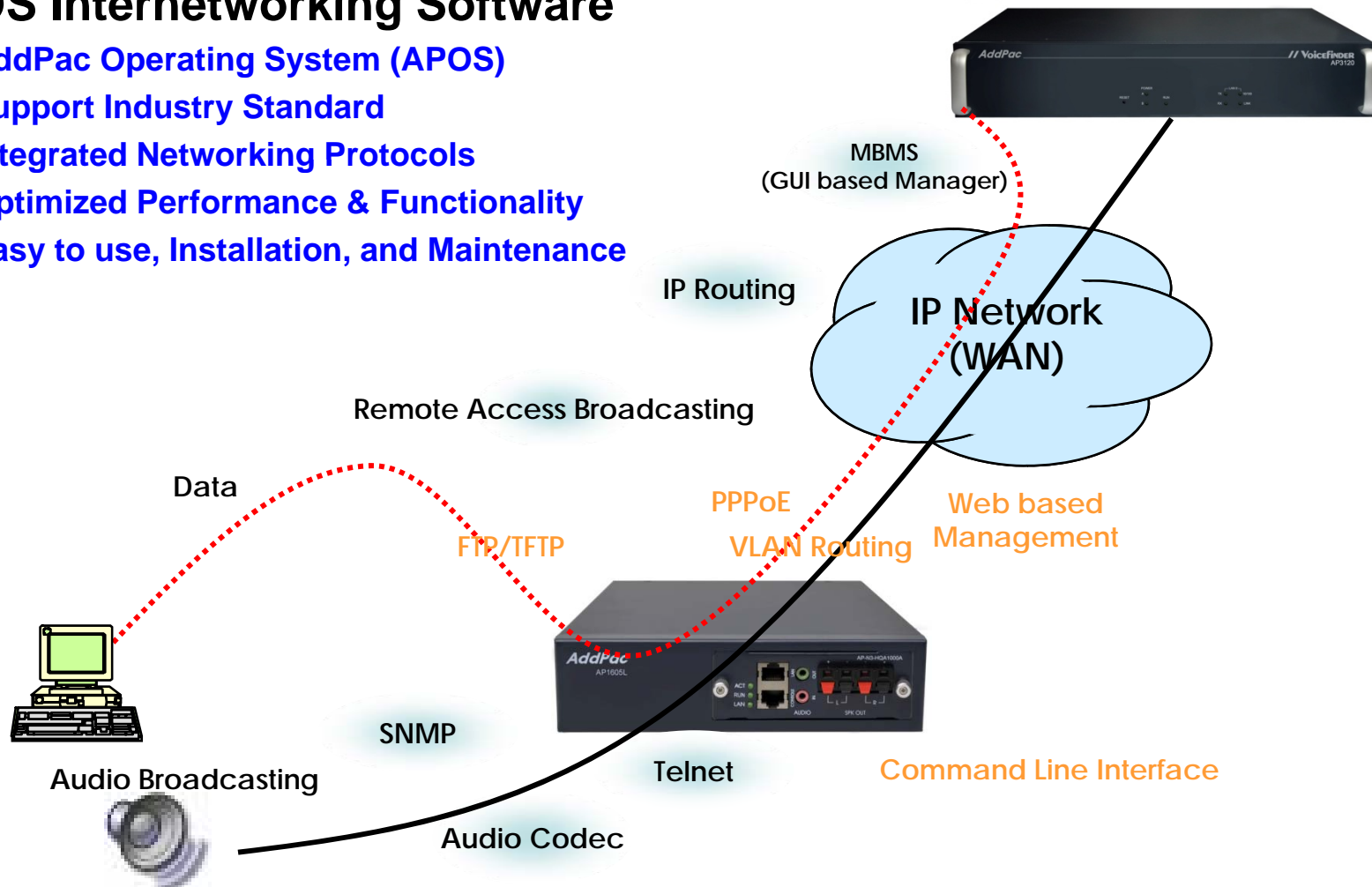


APOS™ Service Features

AP1605L IP 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



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APOS™ Service Features

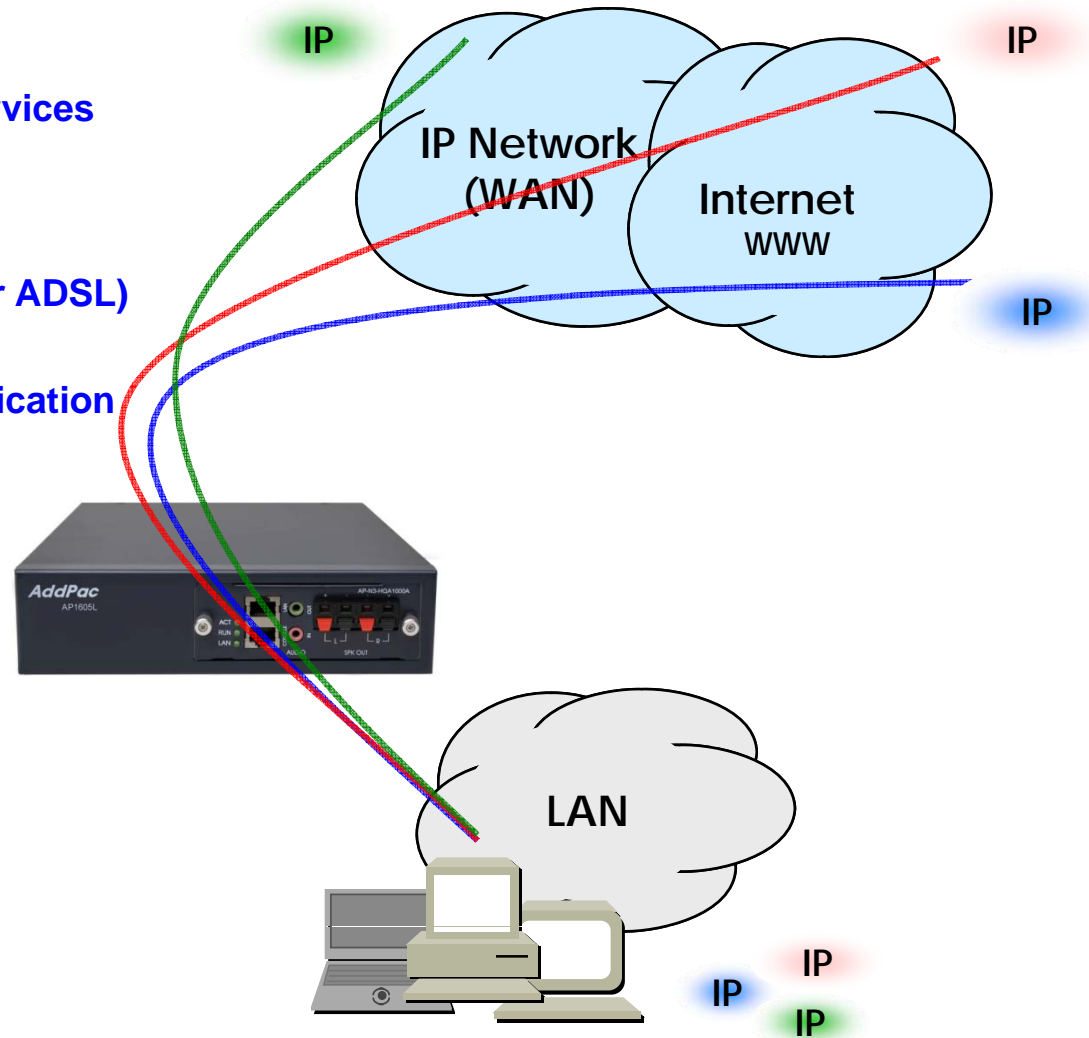
AP1605L IP Audio Broadcasting Terminal

- **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



APOS™ Service Features

AP1605L IP 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™ Service Features

AP1605L IP 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

AP1605L IP Audio Broadcasting Terminal

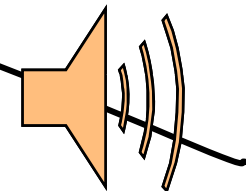
- Audio Codec for AP-HQA Module

- High Quality Audio Codec
- G.711 Audio Codec

IP Broadcasting

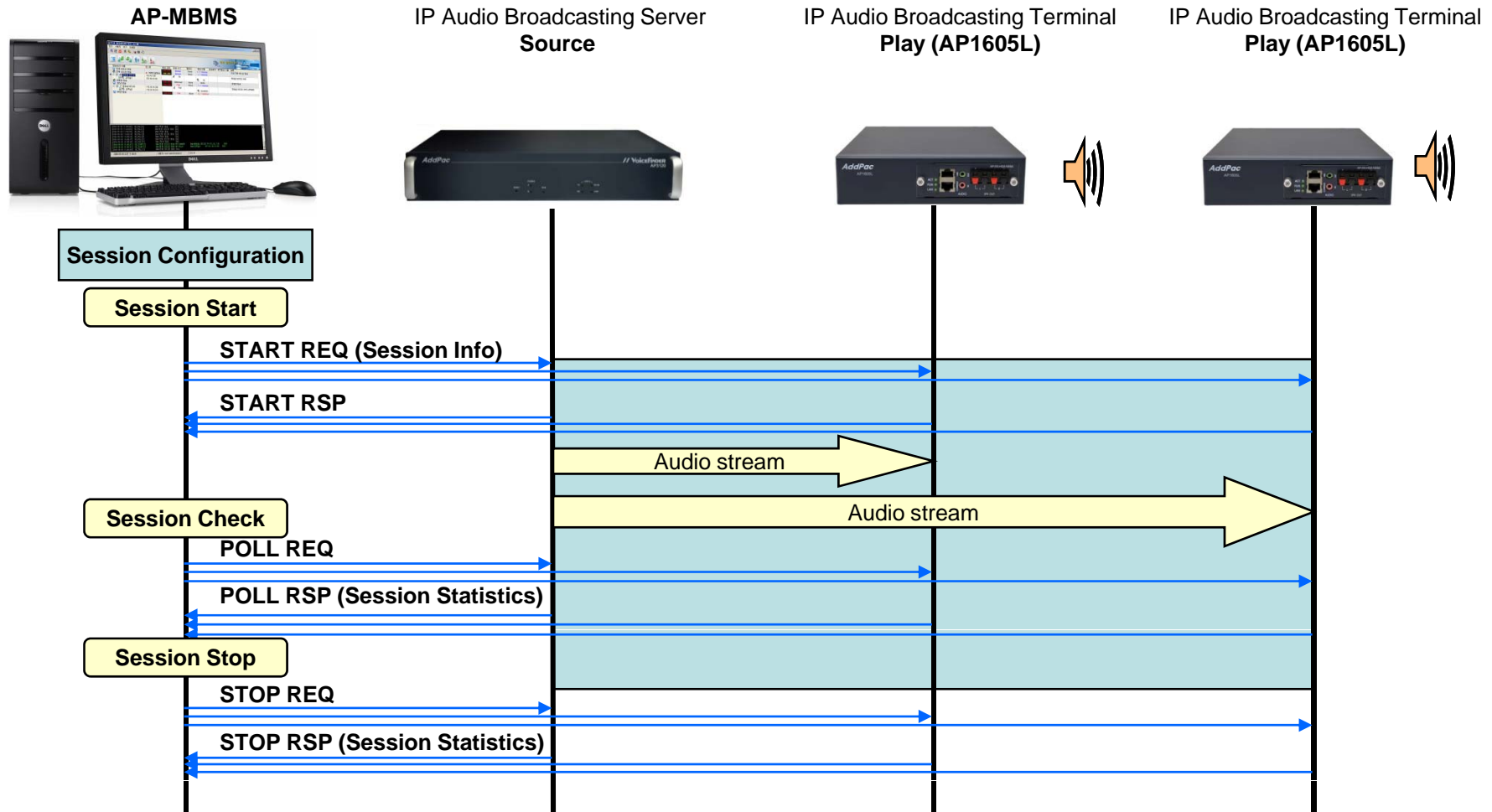
- RTP Protocols

- 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



IP Audio Broadcasting Signal Flow (CASE1)

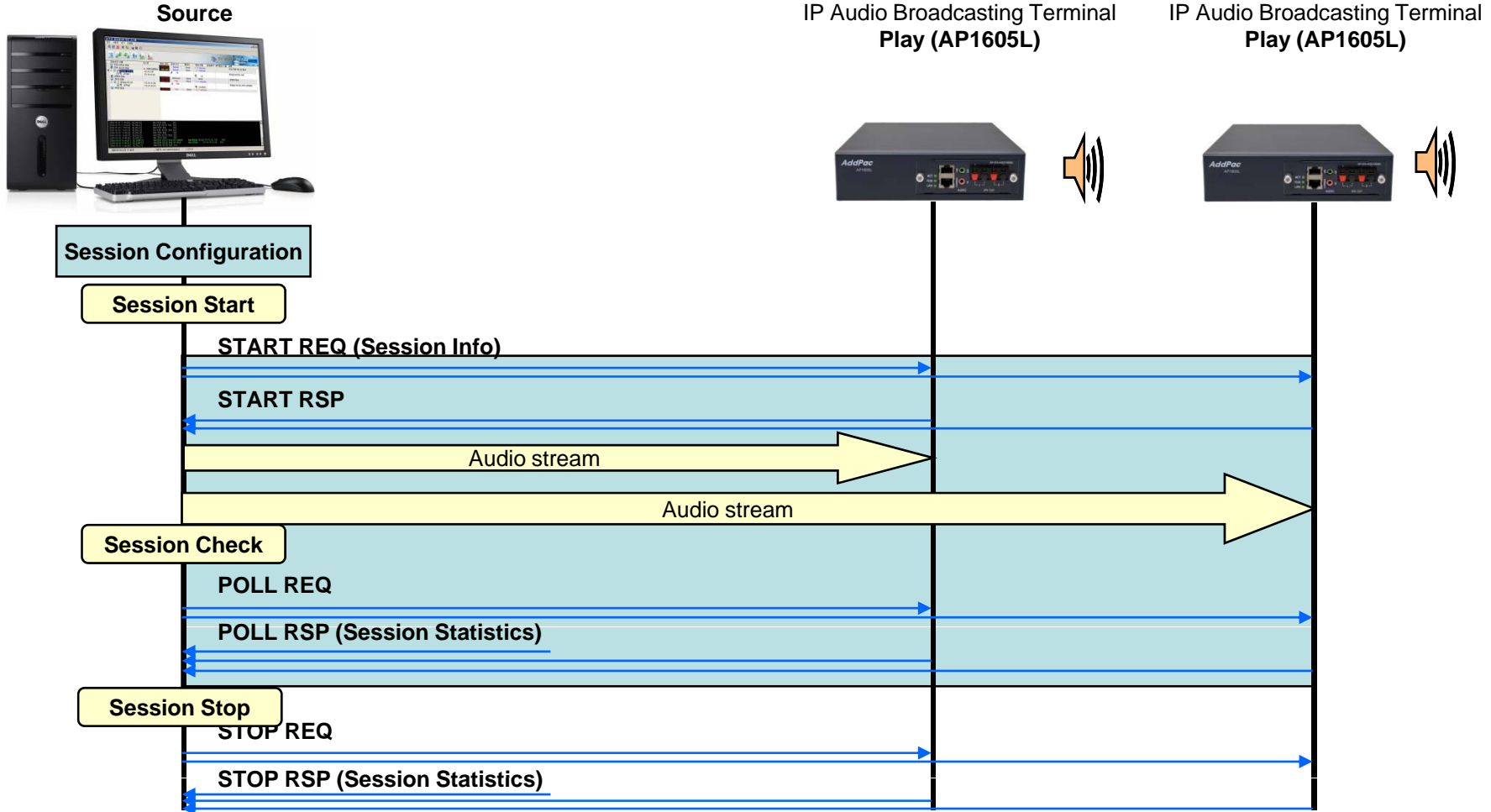
AP1605L IP Audio Broadcasting Terminal



IP Audio Broadcasting Signal Flow (CASE 2)

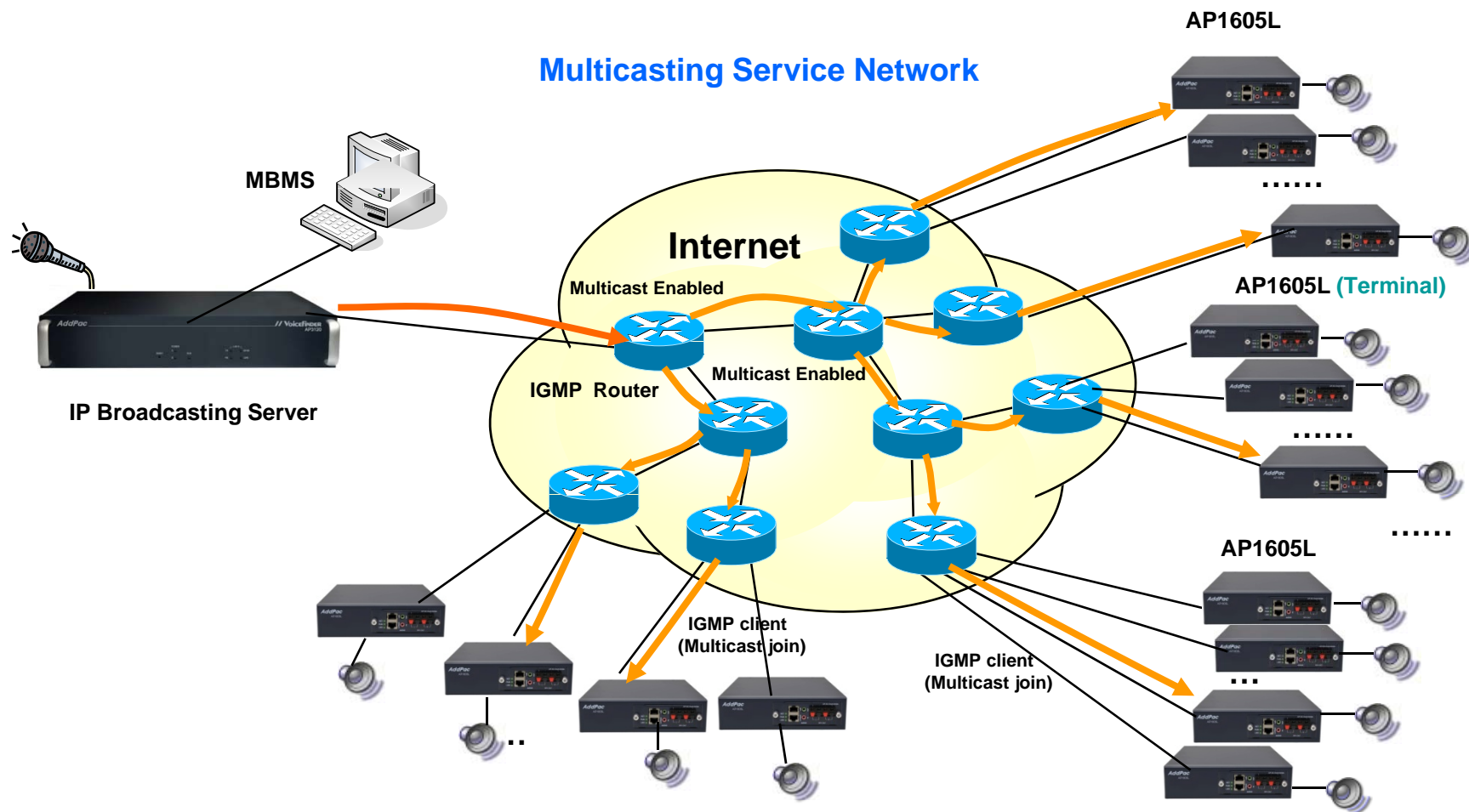
AP1605L IP Audio Broadcasting Terminal

IP Audio Broadcasting Server + Management



Multicast Service Network Diagram

AP1605L IP Audio Broadcasting Terminal

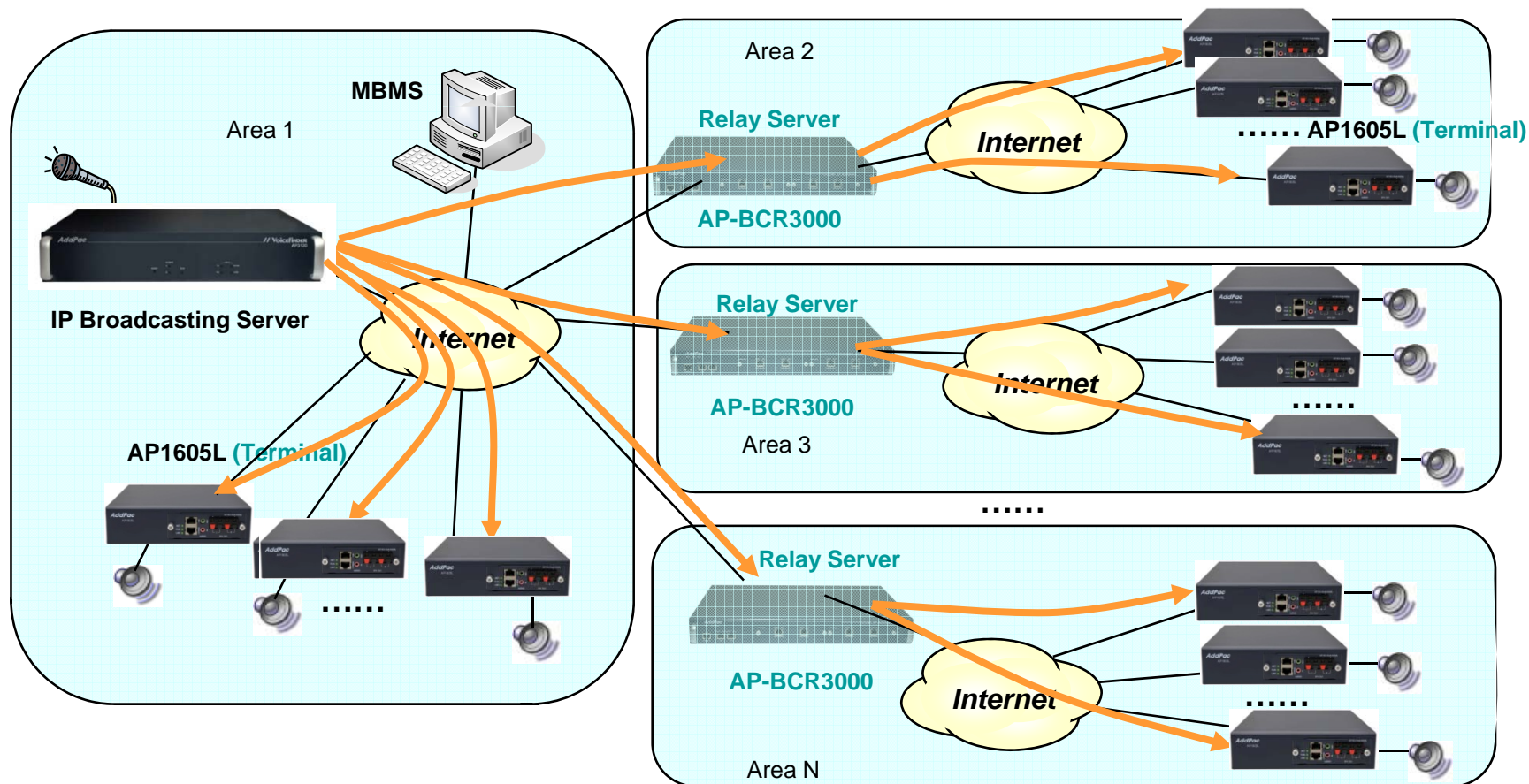


- Multicast protocol based such as **IGMP Protocol**
- Available to broadcast multi destination with single channel bandwidth

Unicast Service Network Diagram

AP1605L IP Audio Broadcasting Terminal

Unicasting Service Network



MBMS 2.0 Software Features

AP1605L IP 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

AP1605L IP Audio Broadcasting Terminal



MBMS S/W Startup (Example)

AP1605L IP Audio Broadcasting Terminal

학교 멀티미디어 방송 시스템

관리 사용자 보기 도움말

학교 멀티미디어 방송 시스템 AddPac

| 방송채널 이름 | 호스트 | 방송 상태 | 방송 소스 | 릴레이 | 방송 단말 | 방송예약 | 예약방송 이름 | 설명 |
|---|--------------------------------|--------|---------|------|--------------|------|---------|---------------------|
| 전체 비디오 방송 | | ON-AIR | Normal | None | 1 / 1 Normal | | | 학교 전체 비디오 방송 |
| 전체 오디오 방송 | 화재긴급방송 | ON-AIR | Normal | None | 1 / 1 Normal | | | |
| <input checked="" type="checkbox"/> 방송실 오디오 <input checked="" type="checkbox"/> 교무실1 | 172.16.7.55 172.16.19.101 | | Ok | | Ok | | | 방송실 오디오 서버 |
| 운동장 방송 | | ON-AIR | Unknown | None | None | | | 운동장 방송 |
| 1학년 방송 | | ON-AIR | Fail | None | 1 / 1 Normal | | | |
| <input checked="" type="checkbox"/> 방송실 비디오 <input checked="" type="checkbox"/> 교무실1 | 172.16.19.102 172.16.19.101 | | Fail | | NoSESS | | | 방송실 비디오 서버 (AP5840) |
| 2학년 방송 | | ON-AIR | Fail | None | 0 / 1 Normal | | | |

```

[2006-05-09 11:44:46] BC_POLL [5] SNA=1학년 방송 [Ok]
[2006-05-09 11:44:58] BC_POLL [1] SNA=전체 오디오 방송 [Ok]
[2006-05-09 11:45:06] BC_POLL [5] SNA=1학년 방송 [Ok]
[2006-05-09 11:45:16] BC_POLL [1] SNA=전체 오디오 방송 [Ok]
[2006-05-09 11:45:26] BC_POLL [5] SNA=1학년 방송 [Ok]
[2006-05-09 11:45:37] BC_POLL [1] SNA=전체 오디오 방송 [Ok]
[2006-05-09 11:45:46] BC_POLL [5] SNA=1학년 방송 [Ok]
[2006-05-09 11:45:51] BC_START [1] SNA=전체 오디오 방송 NTY=SOURCE ENA=방송실 오디오 IP=172.16.7.55 [Ok]
[2006-05-09 11:45:51] BC_START [1] SNA=전체 오디오 방송 NTY=PLAY ENA=교무실1 IP=172.16.19.101 [Ok]
[2006-05-09 11:45:56] BC_POLL [1] SNA=전체 오디오 방송 [Ok]
    
```

2006-05-09 오전 11:46:01 사용자: root (administrator) 1,0,0,14

Broadcasting Equipment Management (Example)

AP1605L IP Audio Broadcasting Terminal

방송 장비 관리

| 방송장비 이름 (방송 이름) | 호스트 주소 (ON... | 장비 모델명 | 입력포트 | 출력 포트 | 설명 | 포트 이름 |
|-----------------|---------------|----------|------|-------|------------|-------|
| 과학실 | 1.1.1.1 | AP1601 | | | | |
| 교무실1 | 172.16.19.101 | AP2520 | | | | |
| 1학년 방송 | | | 1-1 | 1-1 | | |
| 2학년 방송 | | | 0-1 | 0-1 | | |
| 전체 오디오 방송 | | | 1-1 | 1-1 | | |
| 미술실 | 1.1.1.2 | AP2120 | | | | |
| 방송실 비디오 | 172.16.19.102 | AP5840 | | | 방송실 비디... | |
| 1학년 방송 | | | 2-1 | 2-0 | | |
| 2학년 방송 | | | 1-1 | 1-0 | | |
| 전체 비디오 방송 | | | 1-1 | 1-0 | 학교 전체 비... | |
| 방송실 오디오 | 172.16.7.55 | AP3150 | | | 방송실 오디... | |
| 전체 오디오 방송 | | | 7-1 | 7-1 | | |
| 비디오 단말 | 172.16.39.24 | AP-VP300 | | | vp200 단말 | |
| 전체 비디오 방송 | | | 0-1 | 0-0 | 학교 전체 비... | |

Total : 6 Selected count : 1

2006-05-09 오후 12:00:43 사용자: root (administrator) 1.0.0.14

Broadcasting Configuration (Example)

AP1605L IP Audio Broadcasting Terminal

학교 멀티미디어 방송 시스템

관리 사용자 보기 도움말

학교 멀티미디어 방송 시스템
AddPac

방송선 구성

방송선 이름: 전체 오디오 방송

| 방송 장비 이름 | IP 주소 |
|----------|---------------|
| 방송실 오디오 | 172.16.7.55 |
| 교무실1 | 172.16.19.101 |

| 방송 장비 이름 | IP 주소 | 설명 | 포트 설명 |
|-----------|---------------|------------|-------|
| 과학실 | 1,1,1,1 | | |
| AP-AUDIO2 | (0/1, 0/1) | | |
| AP-AUDIO2 | (0/0, 0/0) | | |
| 교무실1 | 172.16.19.101 | | |
| AP-AUDIO2 | (1/0, 1/0) | | |
| AP-AUDIO2 | (1/1, 1/1) | | |
| AP-AUDIO2 | (0/1, 0/1) | | |
| AP-AUDIO2 | (0/0, 0/0) | | |
| 미술실 | 1,1,1,2 | | |
| AP-AUDIO2 | (1/1, 1/1) | | |
| AP-AUDIO2 | (1/0, 1/0) | | |
| 방송실 비디오 | 172.16.19.102 | 방송실 비디... | |
| AP-AV1000 | (2/1, 2/0) | | |
| AP-AV1000 | (1/1, 1/0) | | |
| 방송실 오디오 | 172.16.7.55 | 방송실 오디오... | |
| AP-AUDIO2 | (7/1, 7/1) | | |
| AP-AUDIO2 | (7/0, 7/0) | | |
| AP-AUDIO2 | (6/1, 6/1) | | |
| AP-AUDIO2 | (6/0, 6/0) | | |
| AP-AUDIO2 | (5/1, 5/1) | | |

Total : 6

2006-05-09 오후 12:18:22 사용자: root (administrator) 1,0,0,14

Broadcasting Scheduling (Example)

AP1605L IP Audio Broadcasting Terminal

| 방송세션 이름 | 예약 방송 이름 | 예약 방송 종류 | 요일 | 시작 시간 | 종료 시간 | 설명 |
|-----------|----------|----------|----|----------|----------|----|
| 전체 오디오 방송 | 2교시 종료 | 월요일-금요일 | | 10:50:00 | 10:50:15 | |
| 전체 오디오 방송 | 2교시 시작 | 월요일-금요일 | | 10:00:00 | 10:00:15 | |
| 전체 오디오 방송 | 1교시 종료 | 월요일-금요일 | | 09:50:00 | 09:50:15 | |
| 전체 오디오 방송 | 1교시 시작 | 월요일-금요일 | | 09:00:00 | 09:00:15 | |
| 전체 오디오 방송 | 점심 방송 | 월요일-금요일 | | 12:00:00 | 13:00:00 | |
| 전체 오디오 방송 | 아침 방송 | 월요일-금요일 | | 07:30:00 | 08:30:00 | |
| 전체 오디오 방송 | 3교시 종료 | 월요일-금요일 | | 11:50:00 | 11:50:15 | |
| 전체 오디오 방송 | 3교시 시작 | 월요일-금요일 | | 11:00:00 | 11:00:15 | |

Event Log (Example)

AP1605L IP Audio Broadcasting Terminal

이벤트 이력 조회

일자&시간: 2006-05-08 오후 12:16:21 ~ 2006-05-09 오후 12:16:21

| 일자&시간 | 이벤트 | 동작 | 방송종류 | 방송이름 | 장비종류 | 장비이름 | IP주소 | 장비상태 | 예약방송이름 |
|---------------------|----------|-------|---------|------------|--------|------|----------------|--------------|--------|
| 2006-05-08 14:43:33 | Request | STOP | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:43:05 | Request | START | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:43:03 | Request | START | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:42:56 | Request | STOP | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:42:49 | Request | START | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:42:48 | Request | START | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:42:48 | Request | START | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:42:48 | Request | START | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:42:47 | Request | STOP | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:42:46 | Request | START | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:42:46 | Request | STOP | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:07:19 | Request | START | UNICAST | 테스트 비디오 방송 | | | | | |
| 2006-05-08 14:07:17 | Response | STOP | UNICAST | 테스트 오디오 방송 | PLAY | 교실 | 172.16.19.1... | Not Response | |
| 2006-05-08 14:07:17 | Response | STOP | UNICAST | 테스트 오디오 방송 | SOURCE | 방송실 | 172.16.7.55 | Not Response | |
| 2006-05-08 14:07:16 | Request | STOP | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:07:07 | Response | START | UNICAST | 테스트 오디오 방송 | PLAY | 교실 | 172.16.19.1... | Not Response | |
| 2006-05-08 14:07:07 | Response | START | UNICAST | 테스트 오디오 방송 | SOURCE | 방송실 | 172.16.7.55 | Not Response | |
| 2006-05-08 14:07:06 | Request | START | UNICAST | 테스트 오디오 방송 | | | | | |
| 2006-05-08 14:05:09 | Request | STOP | UNICAST | 테스트 비디오 방송 | | | | | |
| 2006-05-08 13:57:05 | Request | START | UNICAST | 테스트 비디오 방송 | | | | | |






2006-05-09 12:16:57 BC_POLL [1] SNA=전체 오디오 방송 [Ok]

2006-05-09 오후 12:16:56 사용자: root (administrator) 1,0,0,14



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 AP1605DC |
|---|--|---|---|
|  |  |  |  |
| <p>Window based Audio Broadcasting Management Software.</p> | <p>Embedded Hardware based Audio Codec. Ten(10) HQ Audio Codec Module. High Quality Codec,G.711 Audio Codec.</p> | <p>1:N Audio Broadcasting Router. Gigabit Ethernet Support</p> | <p>Embedded Hardware based Audio Terminal. Volume Control Rotary Switch. One(1) HQ Audio Codec Module. Built-in AMP. High Quality Codec,G.711 Audio Codec. Optional DC Power Supply</p> |

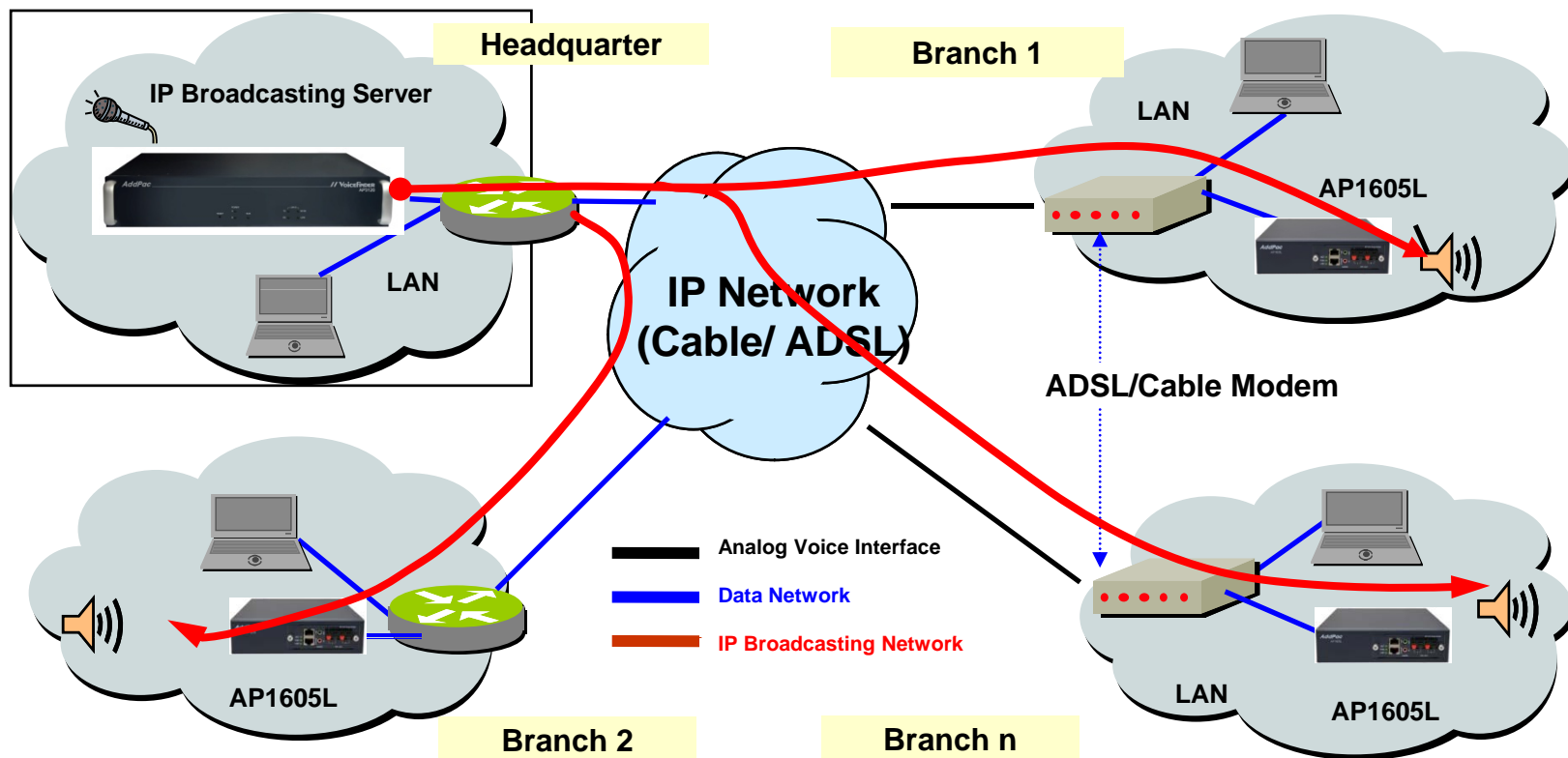
IP Broadcasting Solution

| Audio Broadcasting Manager S/W | IP Broadcasting Server | Audio Broadcasting Router (Relay Server) | HQ Audio Broadcasting Terminal AP1605L |
|---|--|---|--|
|  |  <p>AP3120</p>  <p>AP3110 (small site)</p> |  |  |
| <p>Window based Audio Broadcasting Management Software.</p> | <p>Embedded Hardware based Broadcasting Server, Voice Codec Module, Voice Codec,G.711, G.726</p> | <p>1:N Audio Broadcasting Router. Gigabit Ethernet Support</p> | <p>Embedded Hardware based Audio Terminal. Volume Control Rotary Switch. One(1) HQ Audio Codec Module. Built-in AMP. High Quality Codec,G.711 Audio Codec.</p> |

IP Voice Broadcasting Solution (Simple Application for Small Site)

| | |
|---|--|
| <p>Audio Broadcasting Manager + IP broadcasting server S/W</p> | <p>HQ Audio Broadcasting Terminal AP1605L</p> |
|  |  |
| <p>Window based Audio Broadcasting Management & Server Software.</p> | <p>Embedded Hardware based Audio Terminal. Volume Control Rotary Switch. One(1) HQ Audio Codec Module. Built-in AMP. High Quality Codec,G.711 Audio Codec.</p> |

Application Service (IP Broadcasting Service)



Ordering Information

- **AP1605L IP Audio Broadcasting Terminal Hardware**
 - AP1605L Main Body
 - RISC Microprocessor with High-end Programmable DSP Architecture
 - Option : AP-N3-HQA1000 Module , AP-N3-HQA1000A Module
 - Including Network Cable Set & Power Supply, etc.
- **Built-in APOS Internetworking Software for AP1605L**
- **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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