# Full HD Video Codec Solution for AiR to LAND Video Transmission






AddPac

**AddPac Technology**

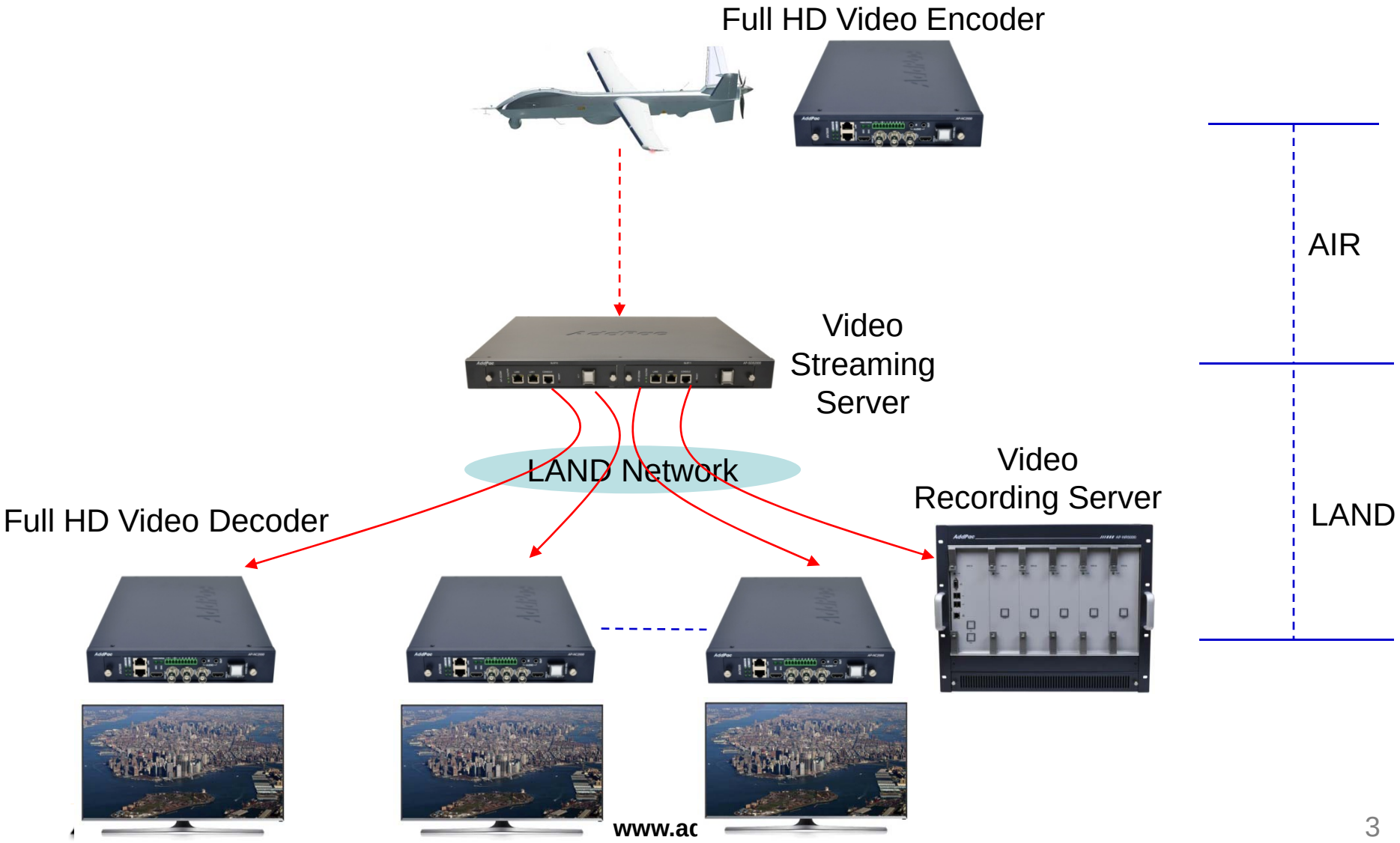
Sales and Marketing

**www.addpac.com**

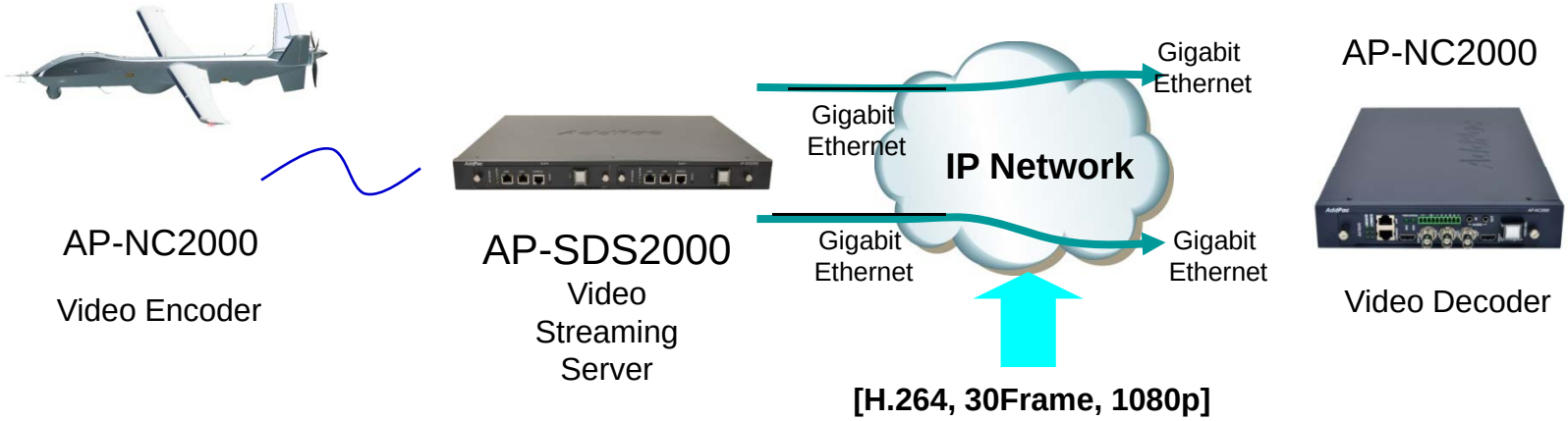
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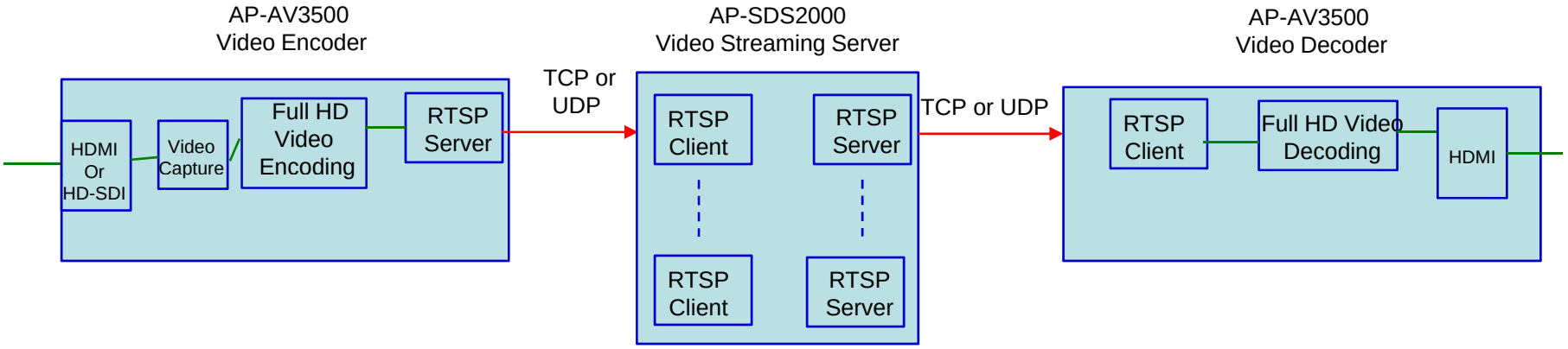

- Network Diagram
- Full HD Video Transmission Codec Module
  - AV3500 Video Codec Module
  - AV6000N Video Codec Module
- Full HD Video Streaming Server
  - AP-SDS2000 Full HD Video Streaming Server
- Full HD Video Recording Server
  - AP-SDRS5000 Video Recording Server
- Full HD Video Transmission Hardware Platforms

# Network Diagram



# Network Diagram



# AV3500

## Full HD Video Codec Module



# Main Features

## AV3500 Full HD Video Codec Module

- Full HD (1080i) Video Encoding/Decoding Service Features
- Video Codec : H.264 HP/MP/BP
- Video Input Interface : HDMI, HD-SDI, Analog (NTSC, PAL)
- Video Output Interface : HDMI, HD-SDI, Analog (NTSC, PAL)
- RTSP/RTP, TCP/UDP Protocol Support
- AES_EBU HD-SDI Audio Service Support
- IP based Dolby Relay Support
- IP based Full HD Video Transmission Solution
- High-performance Video, Audio, and Voice Service
- Firmware Upgradeable Architecture
- Video Solution with Outstanding Network Service Capability
- Web based Management Service
- AP-NC2000, AP-NC3000, AP-NC3500, AP-NC5000 Platform Available

# Hardware Specification

## AV3500 Full HD Video Codec Module




- RISC + Video Processor Computing Power
- AV3500 Video Module
  - Network Interface
    - One(1) 10/100/1000Mbps Gigabit Ethernet
  - Video Interface
    - One(1) Channel HD-SDI Input
    - One(1) Channel HDMI Input
    - One(1) Channel CVBS Input or Output (selected by DIP Switch)
    - One(1) Channel HD-SDI Output
    - One(1) Channel HDMI Output
  - One(1) RS-232 Console Interface (RJ45)
  - Camera Control Interface
    - One(1) RS-232C, RS485 Interface
  - I/O Interface
    - Two(2) Alarm Input /One(1) Relay Out

# Hardware Specification

## AV3500 Full HD Video Codec Module

RISC CPU

High-End VP

AV3500 HD Video Encoder/Decoder Module(H.264)




Gigabit Ethernet

Alarm & Relay Camera Control Interface

Blue Lamp

Audio In/Output

HDMI Input

HD-SDI Video Output

CVBS Video In/Output

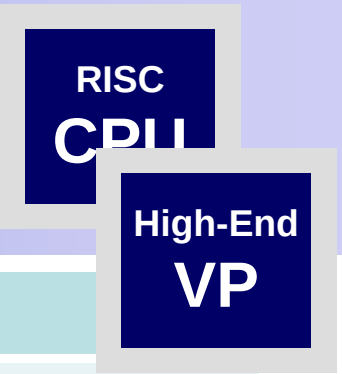
RS232C Console Port

HDMI Output

HD-SDI Video Input

# AV3500 Technical Specification

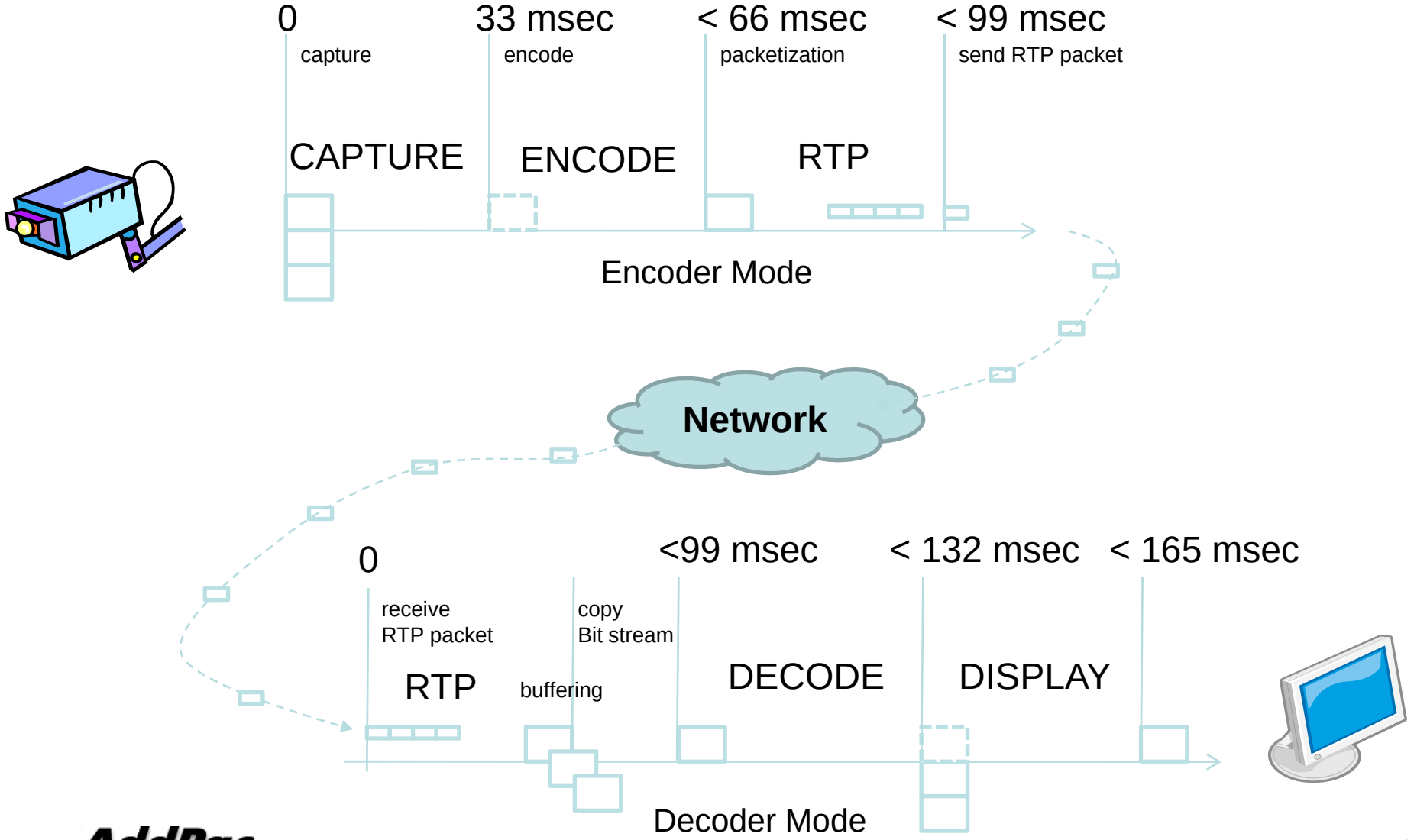
## AV3500 Full HD Video Codec Module




| AV3500 Specification | | |
|---|---|---|
| Video | Input | HD-SDI, HDMI, Analog CVS |
| | Output | HD-SDI, HDMI, Analog CVS |
| | Format | 1080i, 720P, D1(NSTC, PAL) |
| | Coding | H.264 (HP/MP/BP) |
| Audio | Input | 4 x AES pair in HD-SDI(AES_EBU), 1 x Analog Stereo Pair |
| | Output | 4 x AES pair in HD-SDI(AES_EBU), 1 x Analog Stereo Pair |
| | Coding | Dolby Pass-Thru(Relay), G.711, G.726, etc |
| Network Interface | | 1 x 10/100/1000Mbps Gigabit Ethernet,<br>1 x RS232 Interface for Console |
| Protocol | | RTSP (TCP, UDP), RTP |

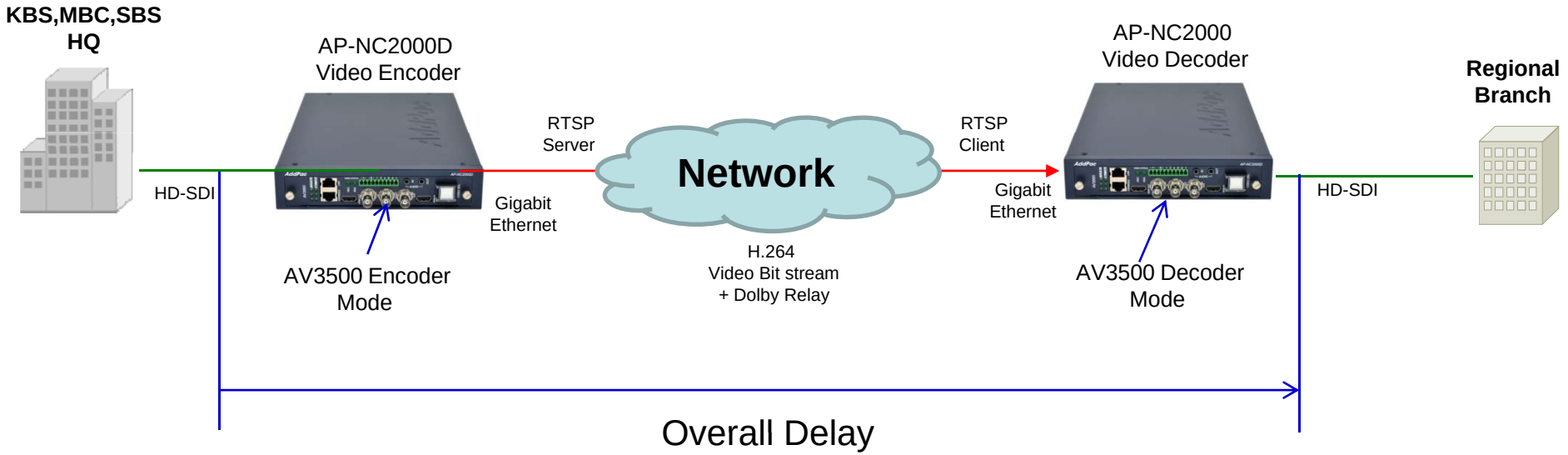
# AV3500 IP Video Codec Latency

## AV3500 Full HD Video Codec Module



# AV3500 IP Video Codec Latency

## AV3500 Full HD Video Codec Module




Overall Delay =< 165msec + Network Delay + RTP Rx Buffering Delay

# AV6000N

## Full HD Video Codec Module



# Product Overview

## AV6000N Full HD Video Codec Module

- Full HD (1080i) Video Encoding/Decoding Service Features
- Video Codec : H.264 HP/MP/BP
- Robust H.264 Temporal Domain SVC(Scalable Video Codec) Support
- Video Input Interface : HDMI, HD-SDI, Analog (NTSC, PAL)
- Video Output Interface : HDMI, HD-SDI, Analog (NTSC, PAL)
- Triple Bit Streaming Support
- RTSP/RTP, TCP/UDP Protocol Support
- AES_EBU HD-SDI Audio Service Support
- IP based Dolby Relay Support
- IP based Full HD Video Transmission Solution
- High-performance Video, Audio, and Voice Service
- Firmware Upgradeable Architecture
- Video Solution with Outstanding Network Service Capability
- Web based Management Service
- AP-NC2000, AP-NC3000, AP-NC3500, AP-NC5000 Platform Available

# Hardware Specification

## AV6000N Full HD Video Codec Module




- **RISC + Video Processor Computing Power**
- **AV6000N Video Module**
  - **Network Interface**
    - One(1) 10/100/1000Mbps Gigabit Ethernet
  - **Video Interface**
    - One(1) Channel HD-SDI Input
    - One(1) Channel HDMI Input
    - One(1) Channel CVBS Input or Output (selected by DIP Switch)
    - One(1) Channel HD-SDI Output
    - One(1) Channel HDMI Output
  - **One(1) RS-232 Console Interface (RJ45)**
  - **Camera Control Interface**
    - One(1) RS-232C, RS422, RS485 Interface for External Camera Control
  - **I/O Interface**
    - Two(2) Alarm Input /One(1) Relay Out

# Hardware Specification

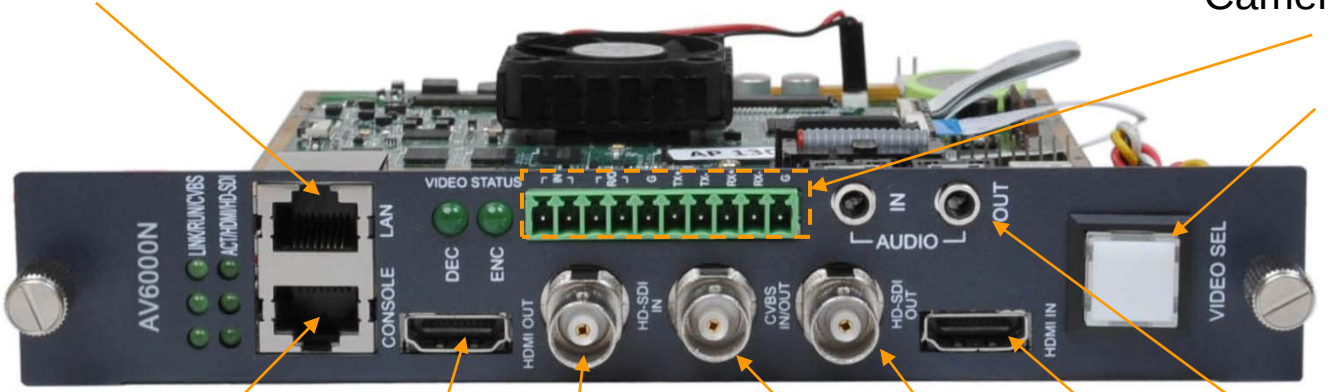
AV6000N Full HD Video Codec Module

RISC CPU

High-End VP

## Hardware Module Specification

AV6000N HD Video Encoder/Decoder Module(H.264)




Gigabit Ethernet

Alarm & Relay Camera Control Interface

Blue Lamp

Audio In/Output

HDMI Input

HD-SDI Video Output

CVBS Video In/Output

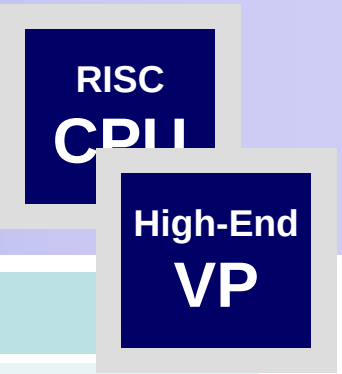
RS232C Console Port

HDMI Output

HD-SDI Video Input

# AV6000N Technical Specification

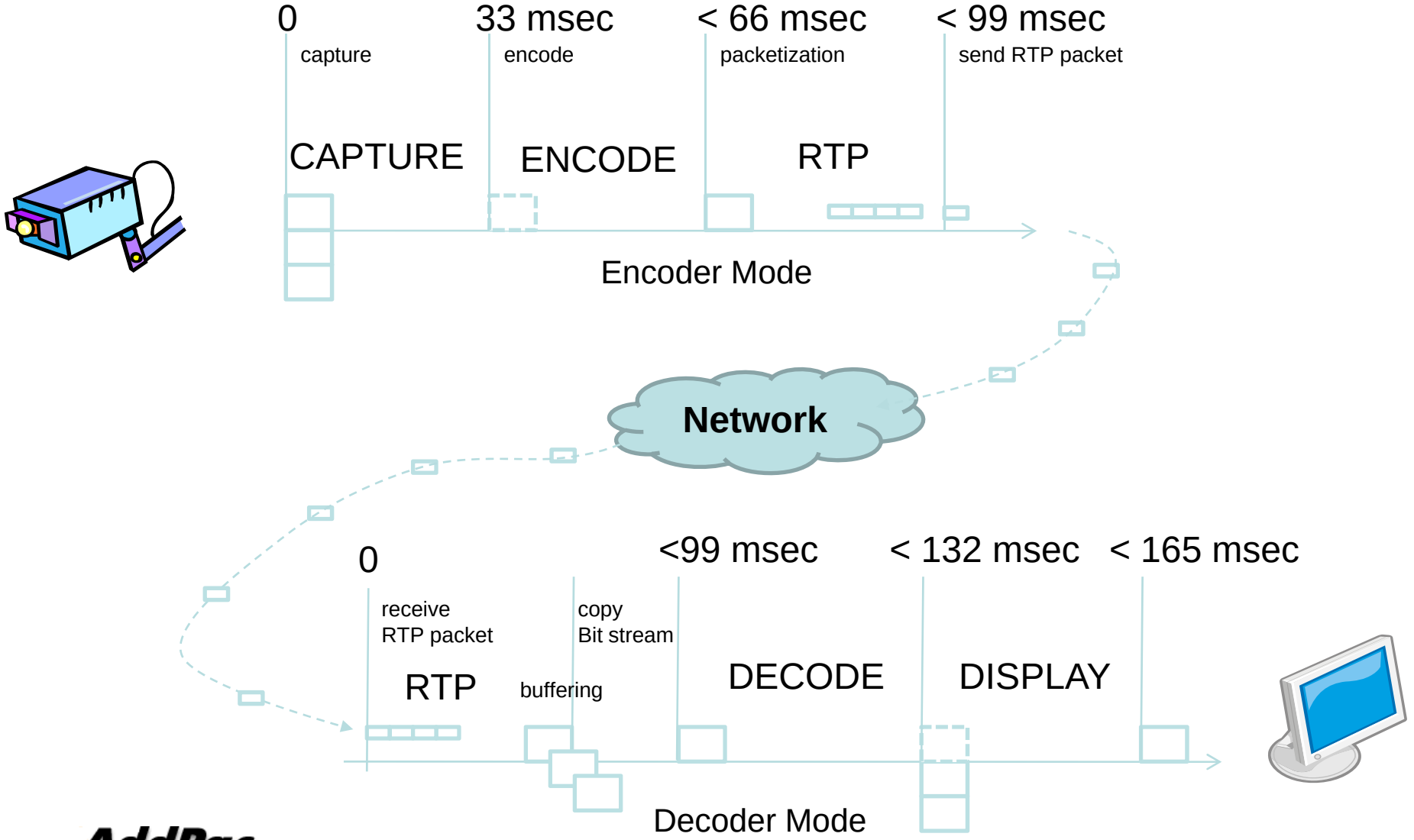
## AV6000N Full HD Video Codec Module




| AV6000N Specification | | |
|---|---|---|
| Video | Input | HD-SDI, HDMI, Analog CVS |
| | Output | HD-SDI, HDMI, Analog CVS |
| | Format | 1080i/P, 720P, D1(NSTC, PAL) |
| | Coding | H.264 (HP/MP/BP) |
| Audio | Input | 4 x AES pair in HD-SDI(AES_EBU), 1 x Analog Stereo Pair |
| | Output | 4 x AES pair in HD-SDI(AES_EBU), 1 x Analog Stereo Pair |
| | Coding | Dolby Pass-Thru(Relay), AAC, G.711, G.726, etc |
| Network Interface | | 1 x 10/100/1000Mbps Gigabit Ethernet,<br>1 x RS232 Interface for Console |
| Protocol | | RTSP (TCP, UDP), RTP |

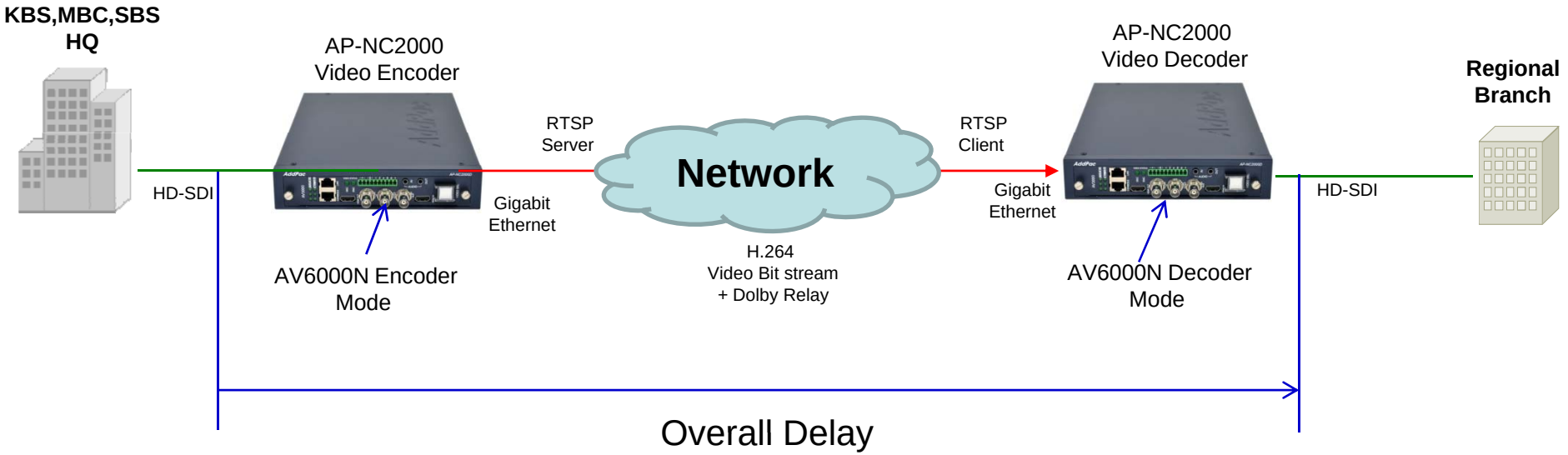
# AV6000N IP Video Codec Latency

## AV6000N Full HD Video Codec Module



# AV6000N IP Video Codec Latency

## AV6000N Full HD Video Codec Module




Overall Delay =< 165msec + Network Delay + RTP Rx Buffering Delay

# Hardware Platform for AV6000N (Example)

## AV6000N Full HD Video Codec Module

AP-NC2000 Front View



AV6000N Full HD Video Module





AC Power Input

Power On/Off Switch

# AP-SDS2000
# HD Video Streaming Server



# Product Overview

## AP-SDS2000 HD Streaming Server

- RTSP based Full HD/HD/D1 Streaming Server
- Embedded H/W Platform with Dual CPU Module Slots
- Fault Tolerant and Reliability Service
- RTSP Server & Client Architecture
- HD Video Encoder, HD Video Decoder, HD Storage Server, HD Display Server RTSP based Interworking
- Maximum 32 Channel HD Video Bit-Stream  Input
- Maximum 64 Channel HD Video Bit-Stream Output
- Load Balance using RTSP Redirect Service
- Server Function for Web based Smart DVR Manager
- HD Video Solution with Outstanding Network Service Capability

# Benefits and Features

## AP-SDS2000 HD Streaming Server

- RTSP based Streaming Service for Full HD, HD, D1 Video Bit Stream
- TCP/UDP Transport Protocol Support
- Two(2) Module Slots for HD Streaming Server
- Embedded Streaming Service Module
- Fault Tolerant and High Reliability Service using Dual Streaming Service CPU Module
- Load Balance and Hot-Swap Service
- Compact Size, Low Noise and Low Power Consumption compare with Commercial Server
- IP based Network Protocol Support
- Video Application
  - Network Surveillance Solution

# Hardware Specification

## AP-SDS2000 HD Streaming Server

High-end DSP

- High-end Programmable RISC Hardware Architecture
- Two(2) Module Slots for HD Streaming Service
- Smart DVR Streaming Service Module (AP-SDSM)
  - Network Interface
    - Two(2) 10/100/1000Mbps Gigabit Ethernet
    - One(1) Console Port



# Hardware Specification

## AP-SDS2000 HD Streaming Server

High-end
RISC

### AP-SDS2000 Front View




HD Streaming Service Module

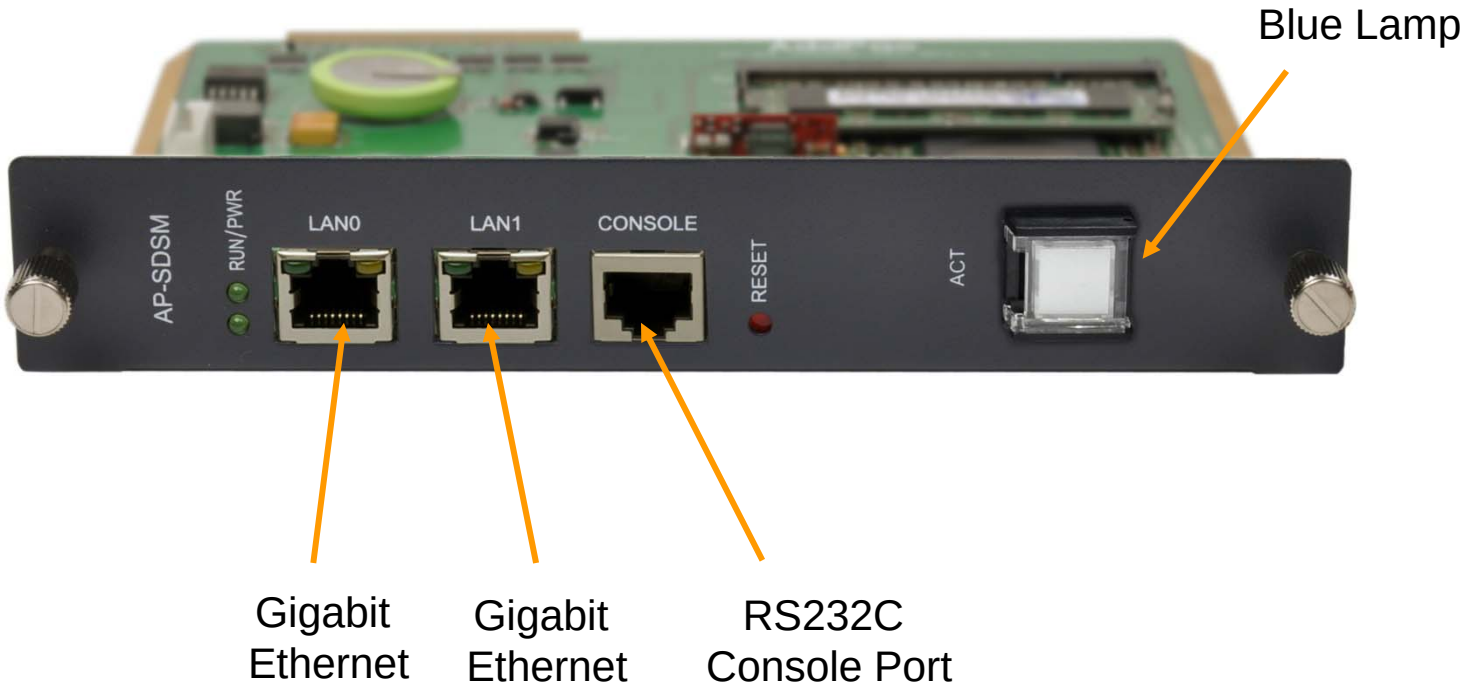


# Hardware Specification

## AP-SDS2000 HD Streaming Server

High-end DSP

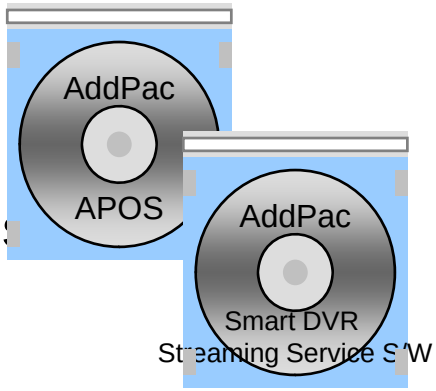
### AP-SDSM Streaming Service Module



# Software Service

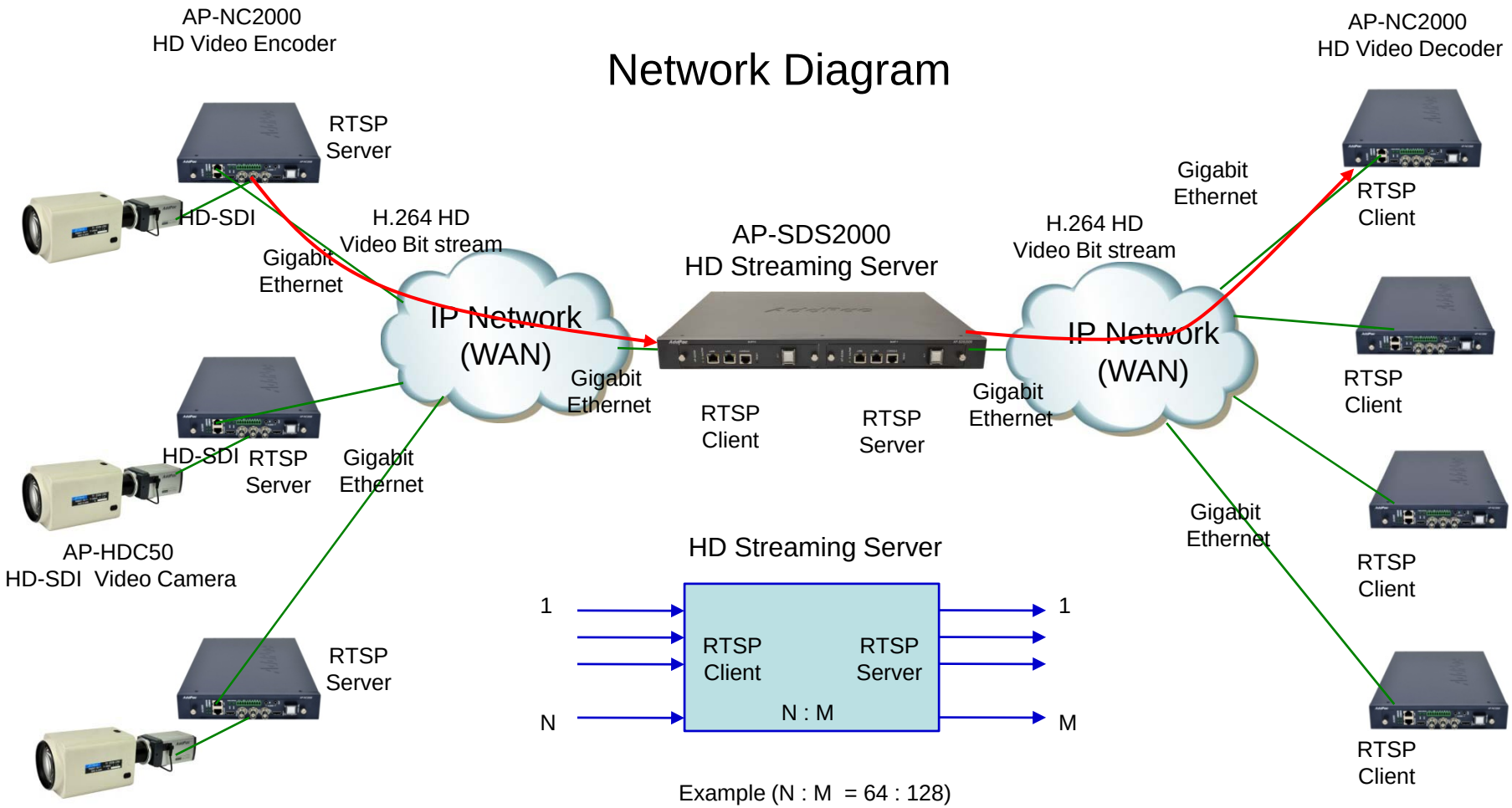
## AP-SDS2000 HD Streaming Server

- Built-in AddPac APOS Internetworking Software
  - Scalability, Functionality, and Stability Features
  - Video Traffic QoS Control
- Firmware Upgradeable RISC Computing Architecture
- Industry Standard IP based Network Protocol Features
- RTSP based HD Streaming Service
  - Server and Client Architecture
  - TCP/UDP RTSP server/client support
  - Various RTSP Device Support (Video Encoder/Decoder, Recording Server, Display System, etc)
- Smart NMS (Network Management System) for DVR Solution



# RTSP based Streaming Service Diagram

## AP-SDS2000 HD Streaming Server



# Network Service and Features

AP-SDS2000 HD Streaming Server

- RTSP (Real Time Streaming Protocol)
  - TCP transport
  - Session Description Protocol (SDP)
- Load balance
  - 302 Moved Temporarily
  - REDIRECT method (Optional, when the client support REDIECT)
- Video and Audio Support
  - Video Only
  - Audio Only
  - Video + Audio

# Network Service and Features

AP-SDS2000 HD Streaming Server

- 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

# AP-SDRS5000 RTSP based HD/D1 NVR Storage Server Solution

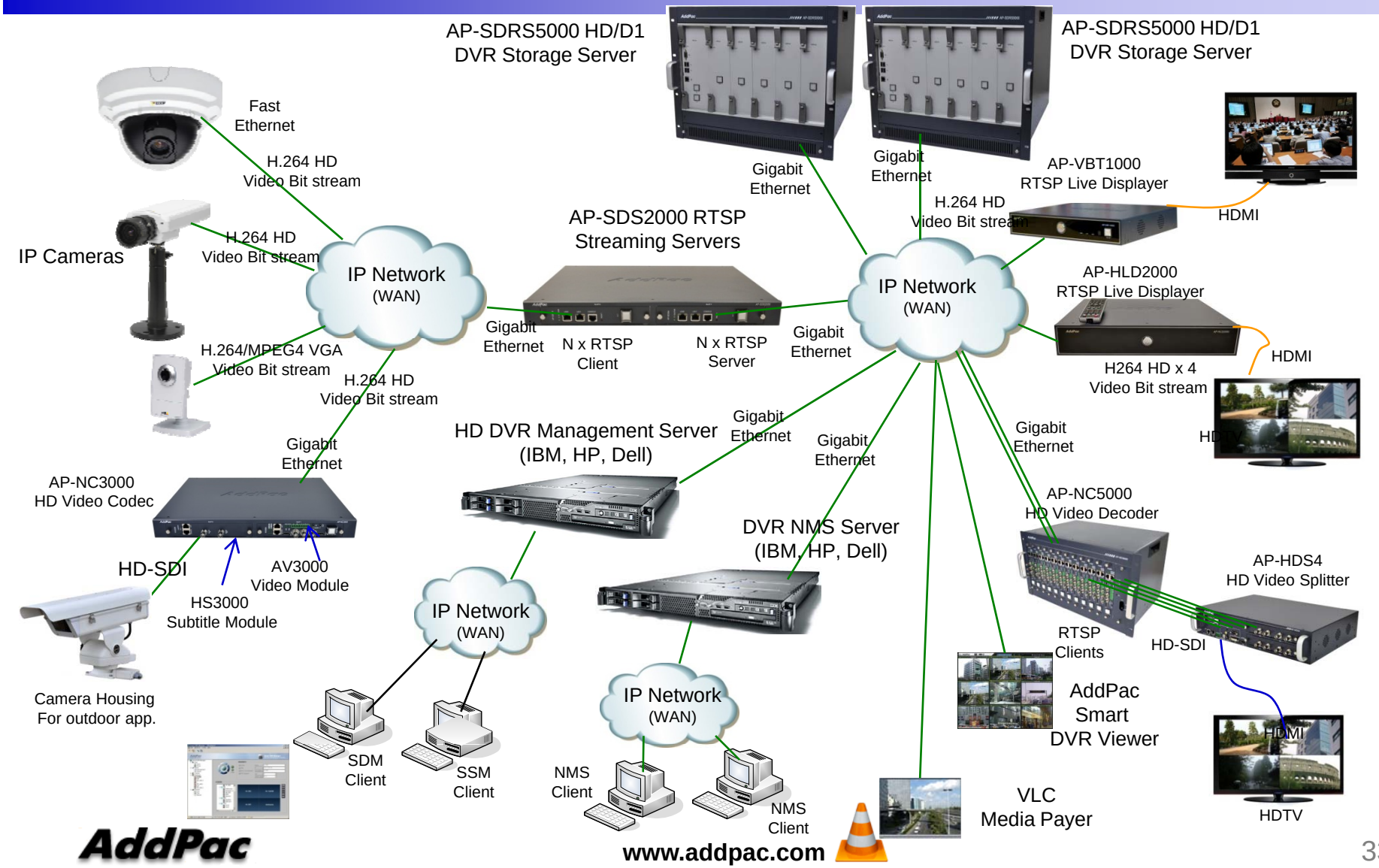


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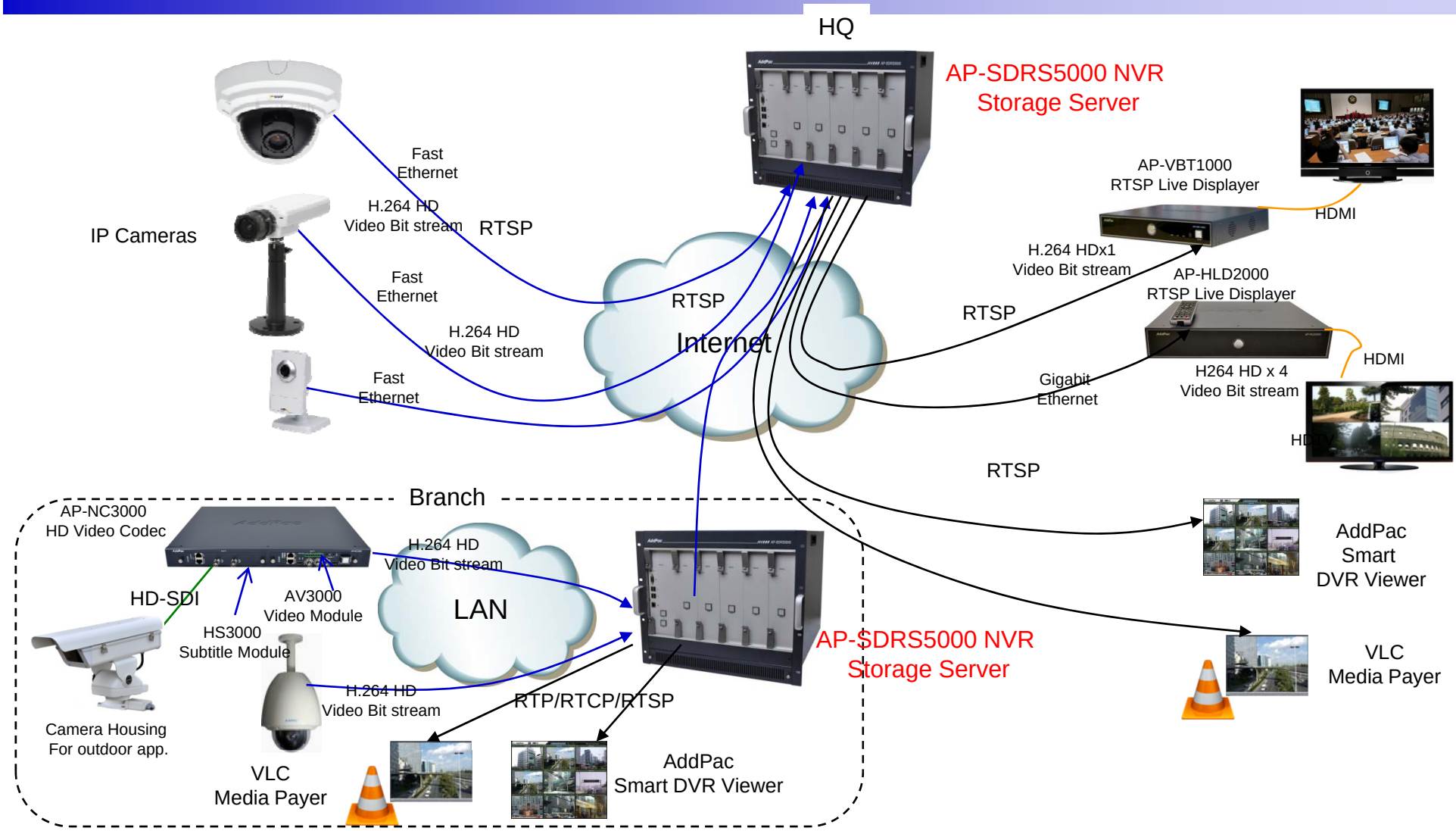

- HD NVR Storage Server Service Diagram
  - Medium & Large Scale NVR Solution
  - Small Scale NVR Solution
- HD NVR Storage Server Protocol Block Diagram
  - Medium & Large Scale NVR Solution
  - Small Scale NVR Solution
- Basic RTSP Message Flow
- HD NVR Storage Solution Component Features
  - AP-SDRS5000 HD NVR Storage Server
  - Smart DVR Manager
  - Smart DVR Media Manager

# HD NVR Storage Server Service Diagram

# HD NVR Service Diagram (Large Scale)



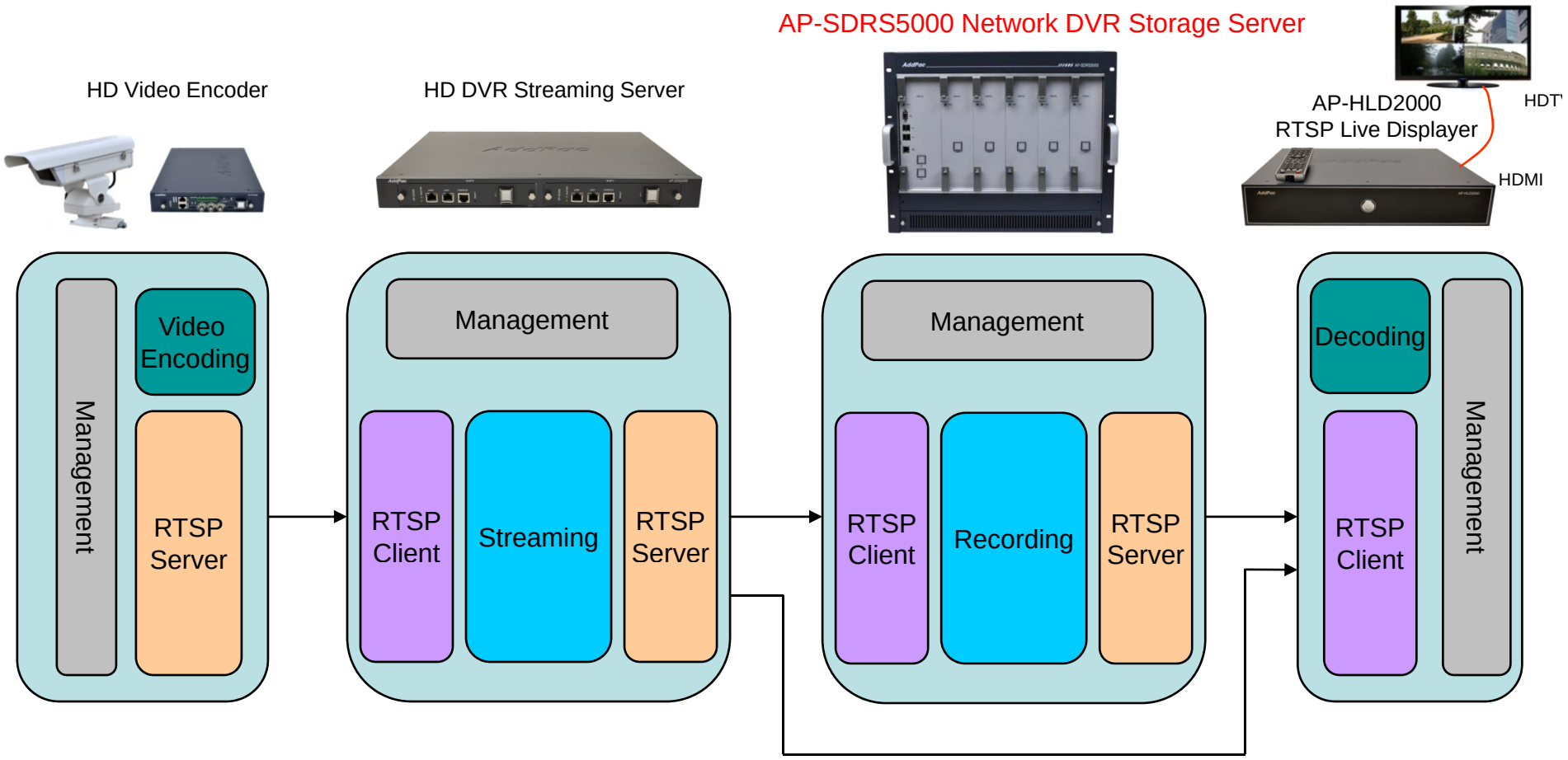
# HD NVR Service Diagram(Small Scale)



# HD NVR Storage Server Protocol Block Diagram

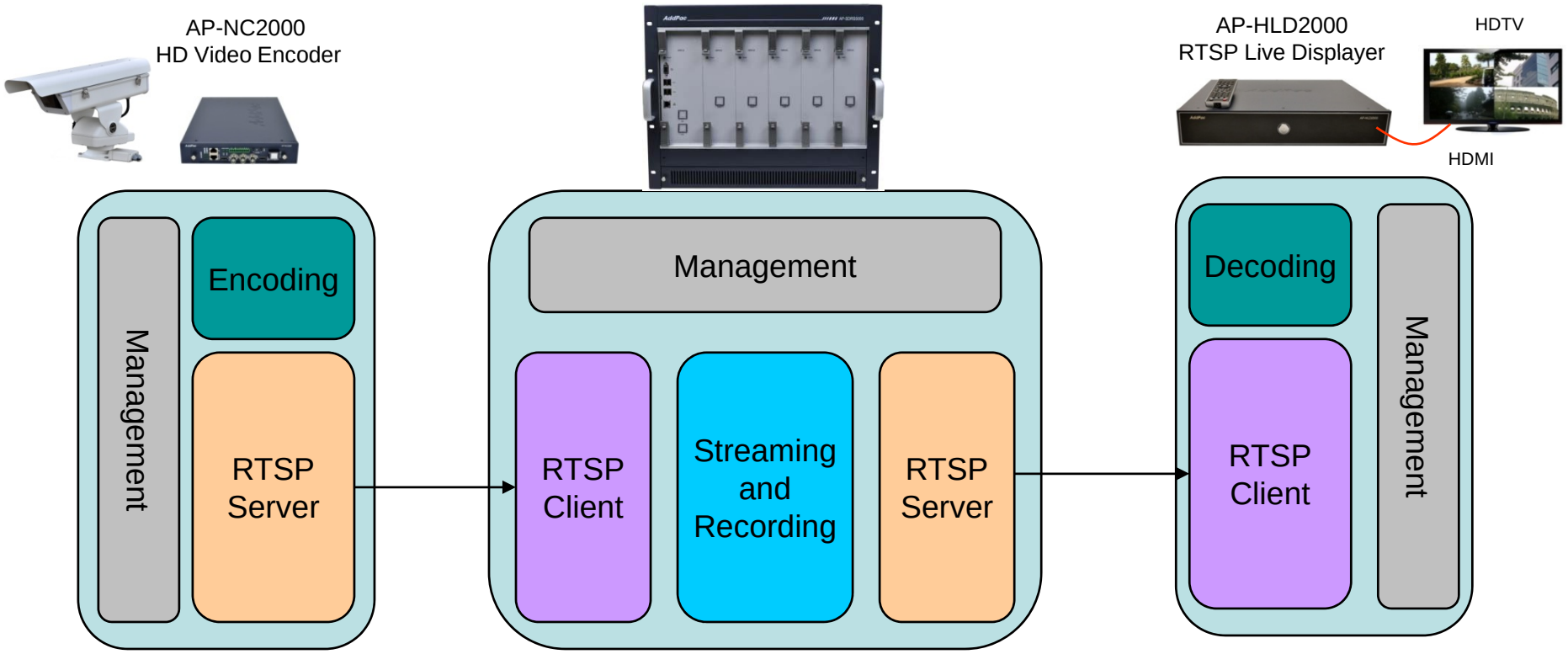
# NVR Storage Server Protocol Block Diagram

## Medium & Large Scale Network DVR Solution

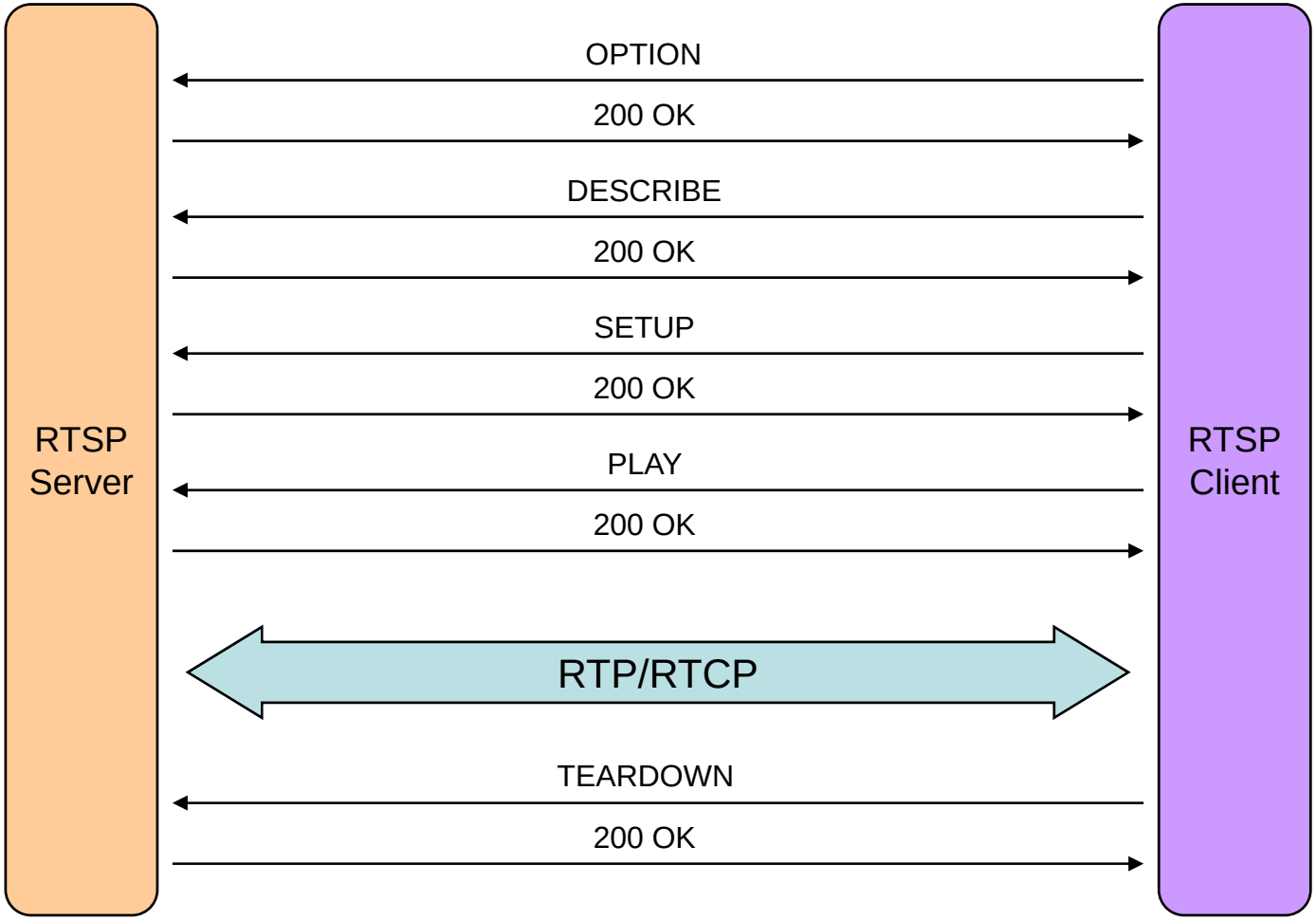


# NVR Storage Server Protocol Block Diagram

## Small Scale Network DVR Solution (All in One)



# Basic RTSP Message Flow



# HD NVR Storage Solution Component Features

# AP-SDRS5000
# HD NVR Storage Server

# Product Overview

## AP-SDRS5000 HD NVR Storage Server

- High-Performance HD/D1 Network DVR Features
- Linux Operating System
- H.264 Video Codec BP/MP/HP
- Full HD, HD, D1 Video Resolution Support
- HD Video Recording and Streaming Service
- Smart DVR Viewer Support (MS-Window S/W)
- Smart DVR Manager Support (MS-Window S/W)
- File Back Manager Support (MS-Window S/W)
- Powerful Management and User Friendly Features
- High-performance Audio and Video Service
- Firmware Upgradeable Architecture
- Module Type High Performance Processor Board Assembly
- Module Type Hard Disk Board Assembly
- Module Type Dual Power Supply for Power Redundancy
- Up to 5 x 3.5Inch Hard Disk (SATA Type, 2Tera or 4Tera Byte Support)
- One(1) 10/100/1000Mbps Gigabit Ethernet Interface
- USB  Interface Support

# Hardware Specification

## AP-SDRS5000 HD NVR Storage Server

High End Processor

- High Performance Computing Power
- Main Processor Board
  - Network Interface
    - One(1) 10/100/1000Mbps Gigabit Ethernet
  - Video Output Interface
    - RGB Video Output
  - USB 2.0 Interfaces for Mouse, Keyboard, etc
- Hard Disk Board
  - Module Type Design
  - Up Five(5) Hard Disk Slots
  - 10~20 Tera HDD Capacity
- Power Supply
  - Dual Power Supply for Power Redundancy
  - Module Type Power Supply

# Hardware Specification

## AP-SDRS5000 HD NVR Storage Server

High End Processor

### AP-SDRS5000 Front Side

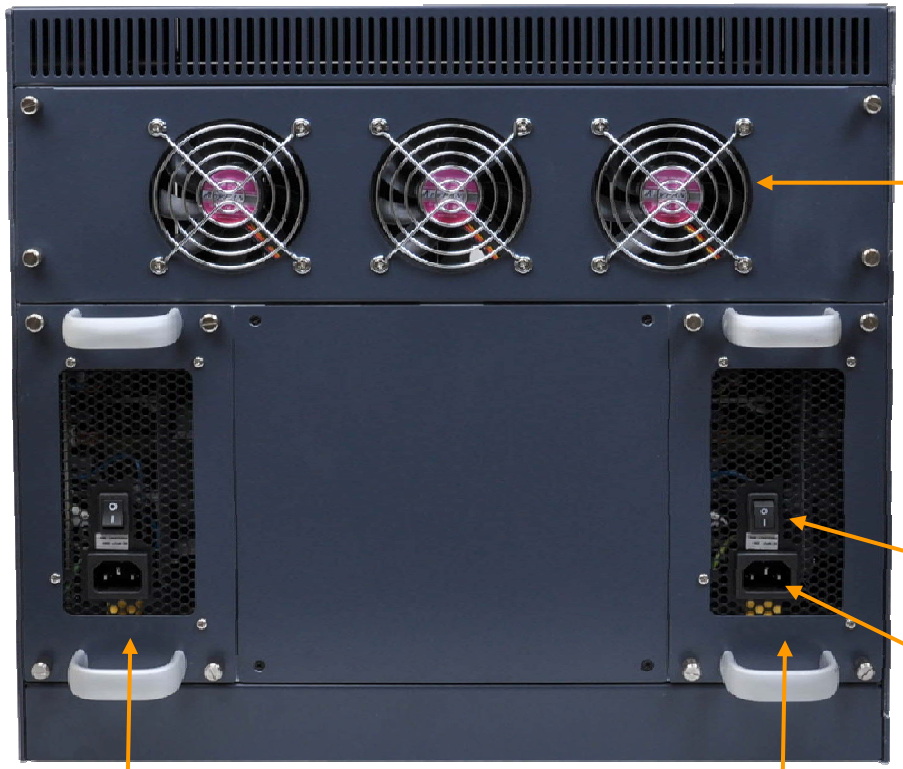


# Hardware Specification

AP-SDRS5000 HD NVR Storage Server

High End Processor

## AP-NR5000 Back Side



# HD NVR Storage Server Features

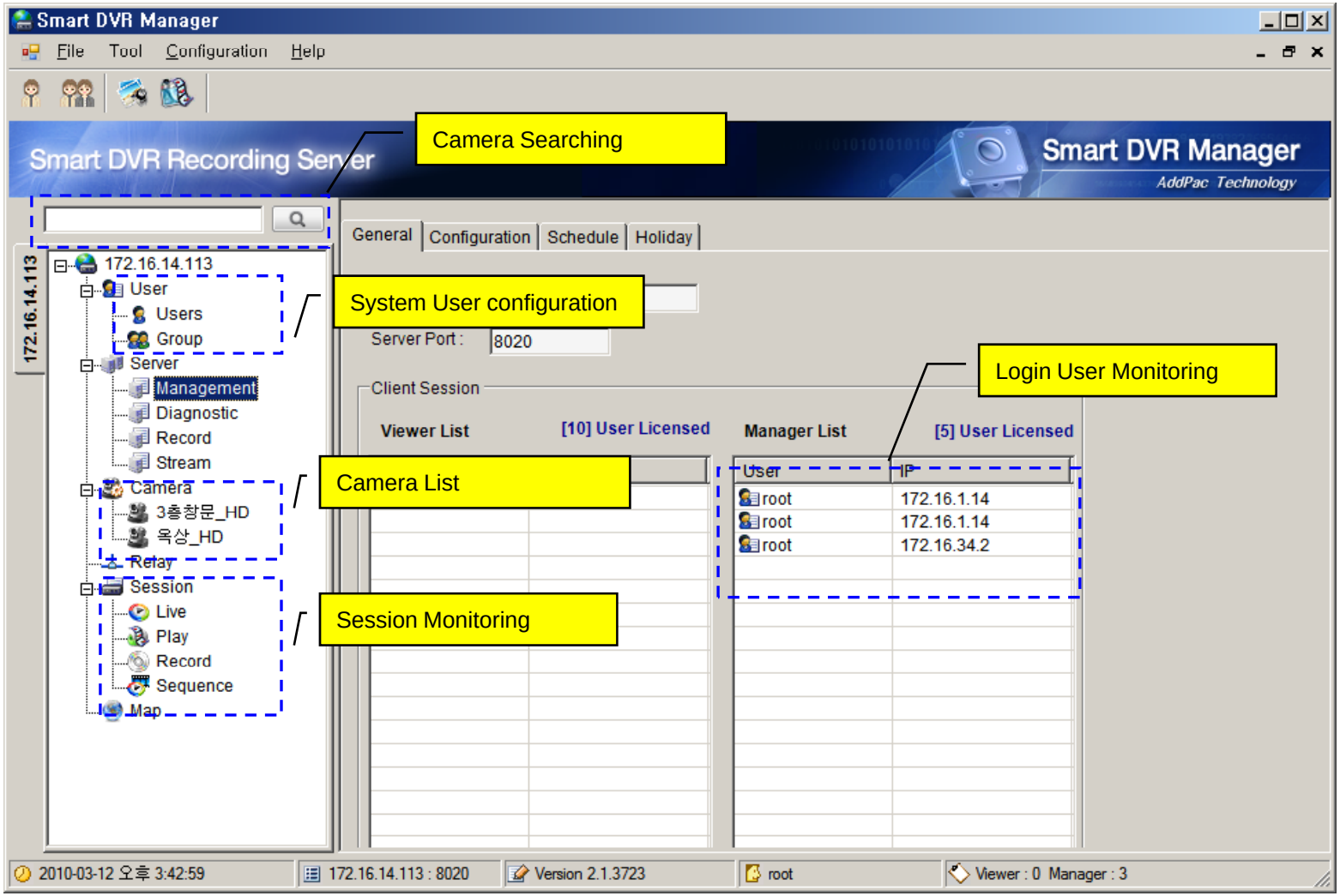
- Encoder / Decoder Interface
  - UDP/RTP
  - RTSP (Real Time Streaming Protocol)
- Recording
  - Manual Recording
  - Schedule Based Recording
  - Recording Monitoring
  - Recording Media File Maintenance
- Management
  - Web Based Management
  - Smart DVR Manager (SDM)
  - SNMP (Simple Network Management Protocol)

# Smart DVR Manager

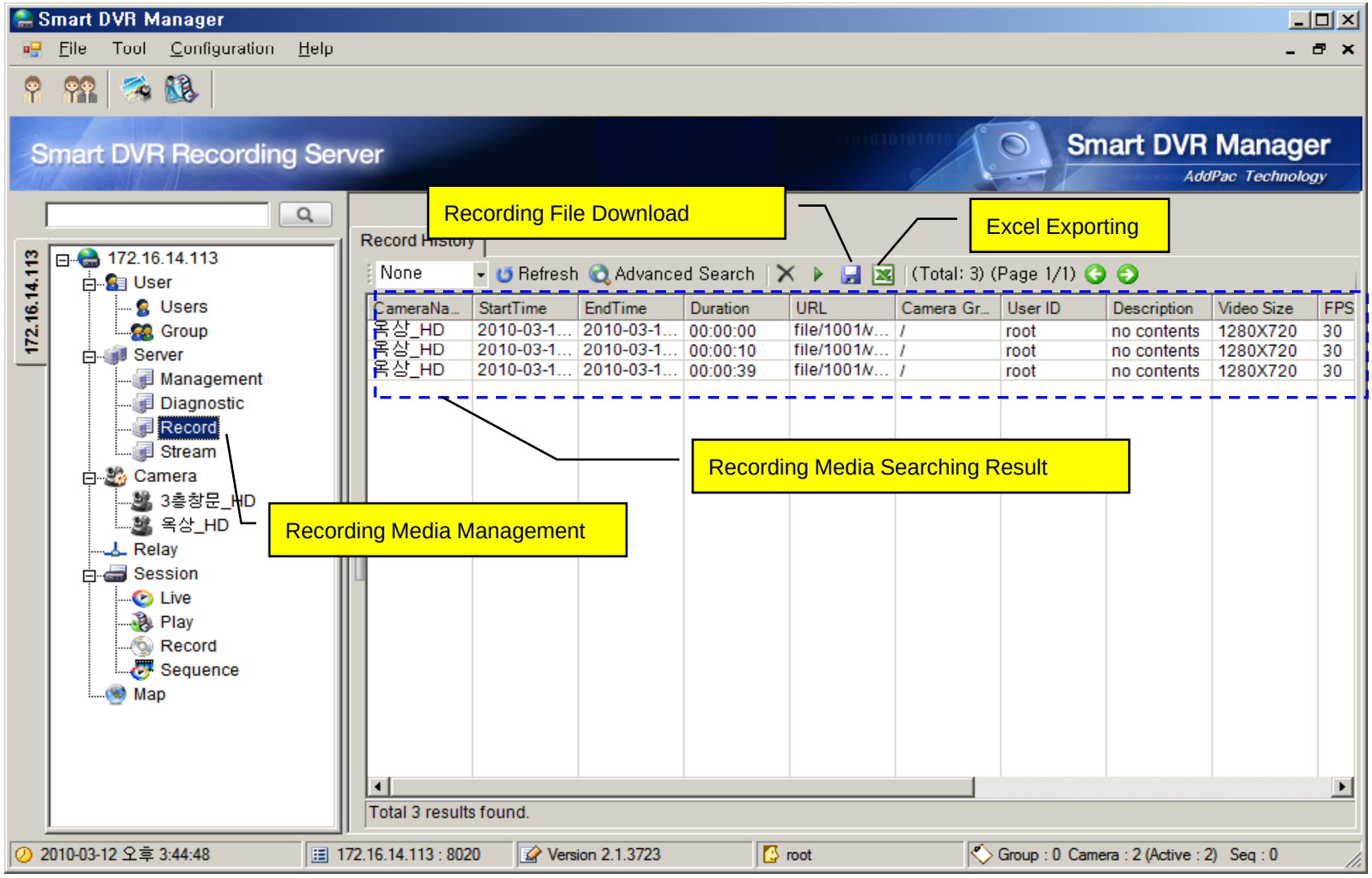
# Smart DVR Manager Features

- System Management
  - User, Group Management
  - Camera Management
  - Schedule Management
- Recording
  - Recording Start/Stop
  - Recording Media File Searching and Maintenance
  - File Download and Excel Exporting
- Monitoring
  - System Resource Monitoring (CPU, Memory, HDD and etc)
  - Live Session Monitoring
  - Media File Play Session Monitoring

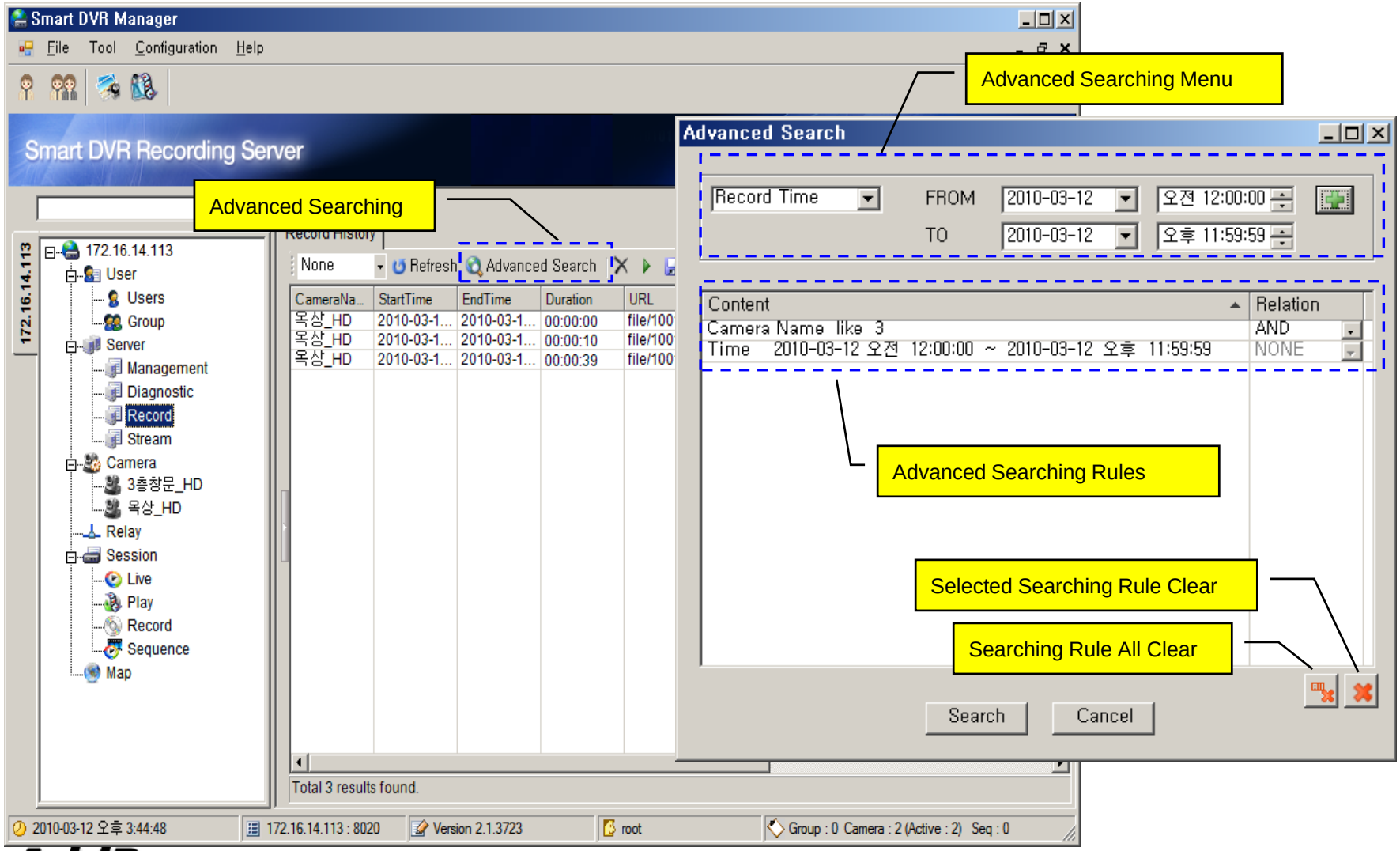
# Smart DVR Manager : Main Layout



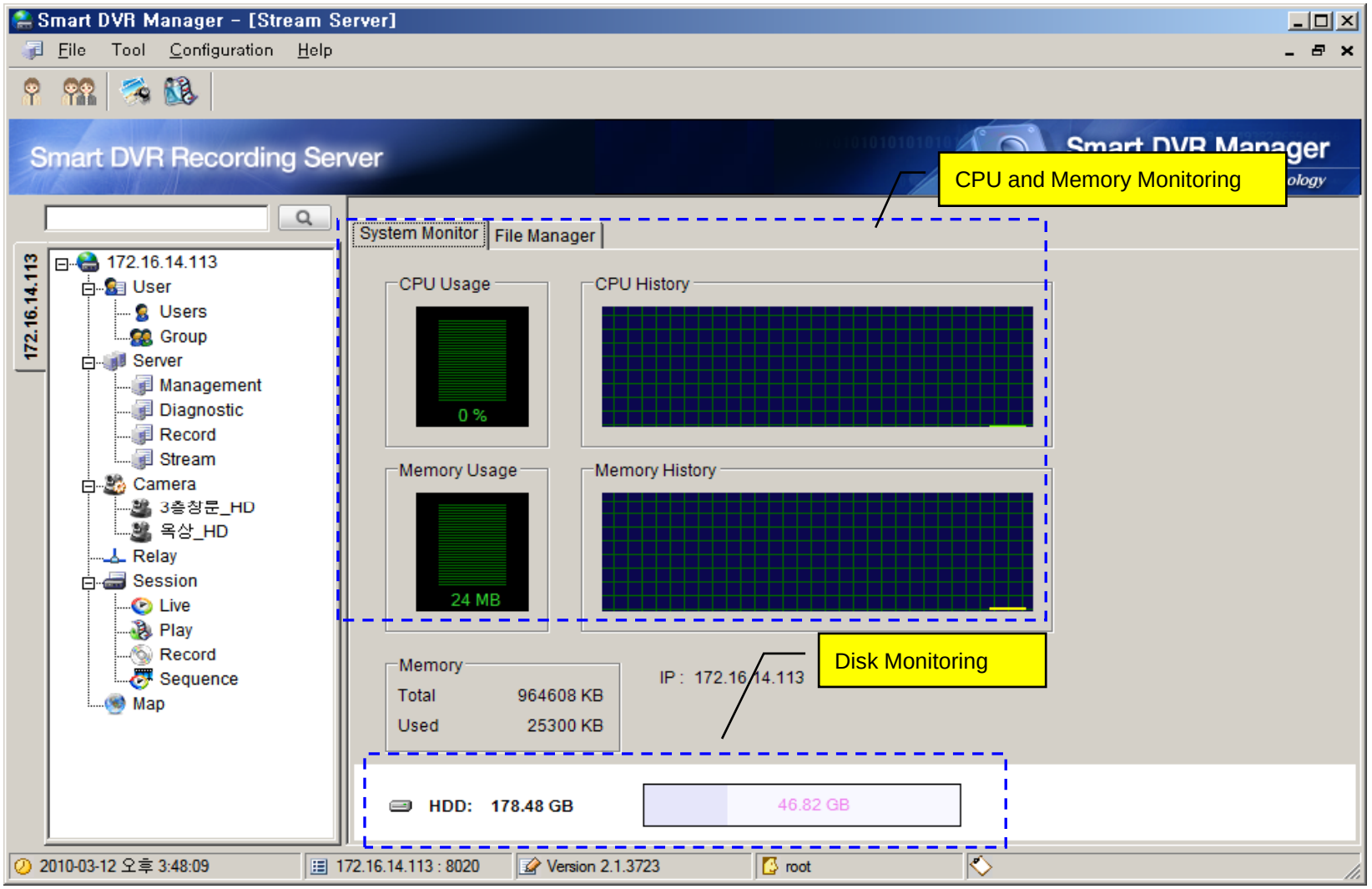
# Smart DVR Manager : Recording File Searching



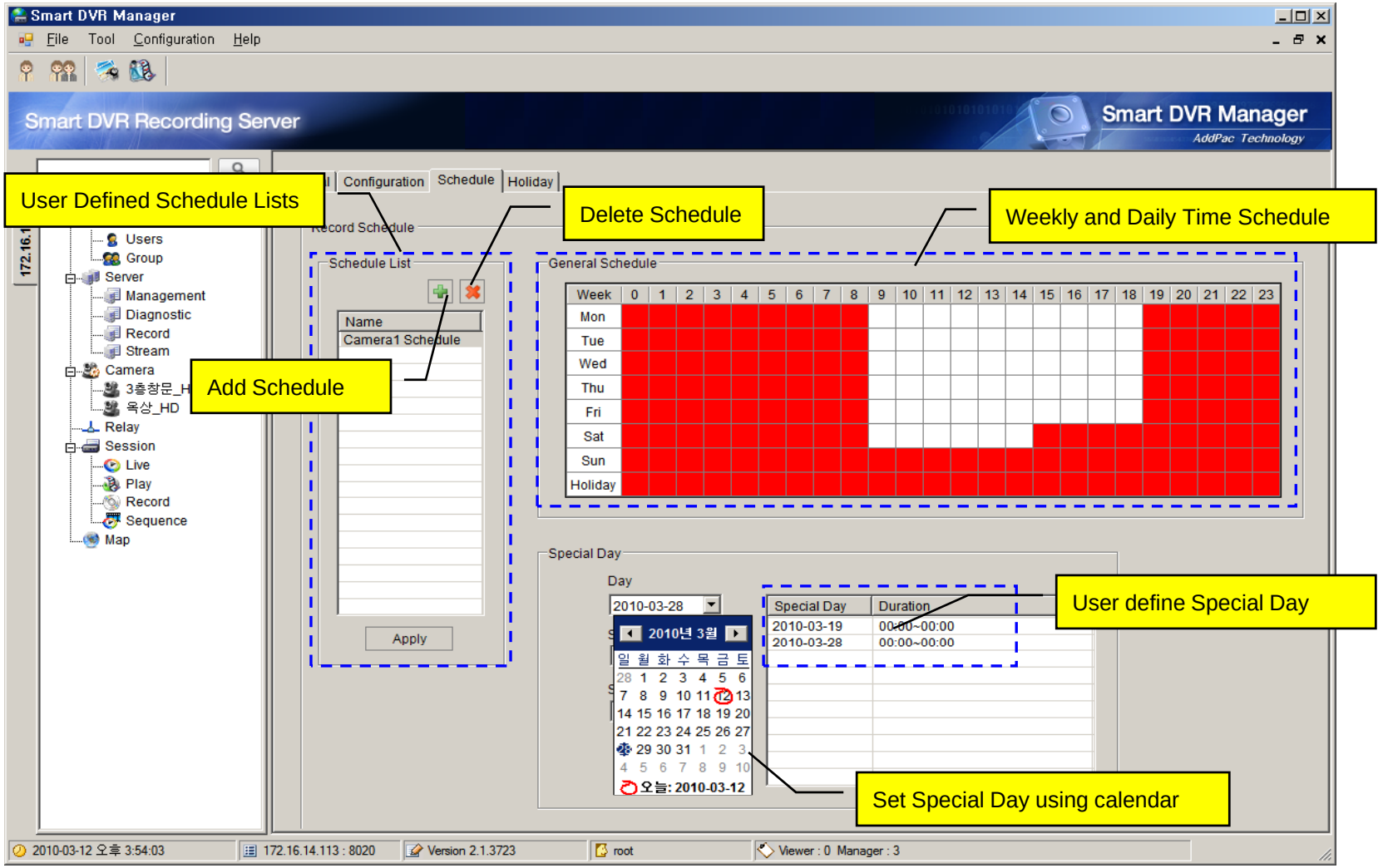
# Smart DVR Manager : Advanced Recording Searching



# Smart DVR Manager : System Monitoring



# Smart DVR Manager : Schedule



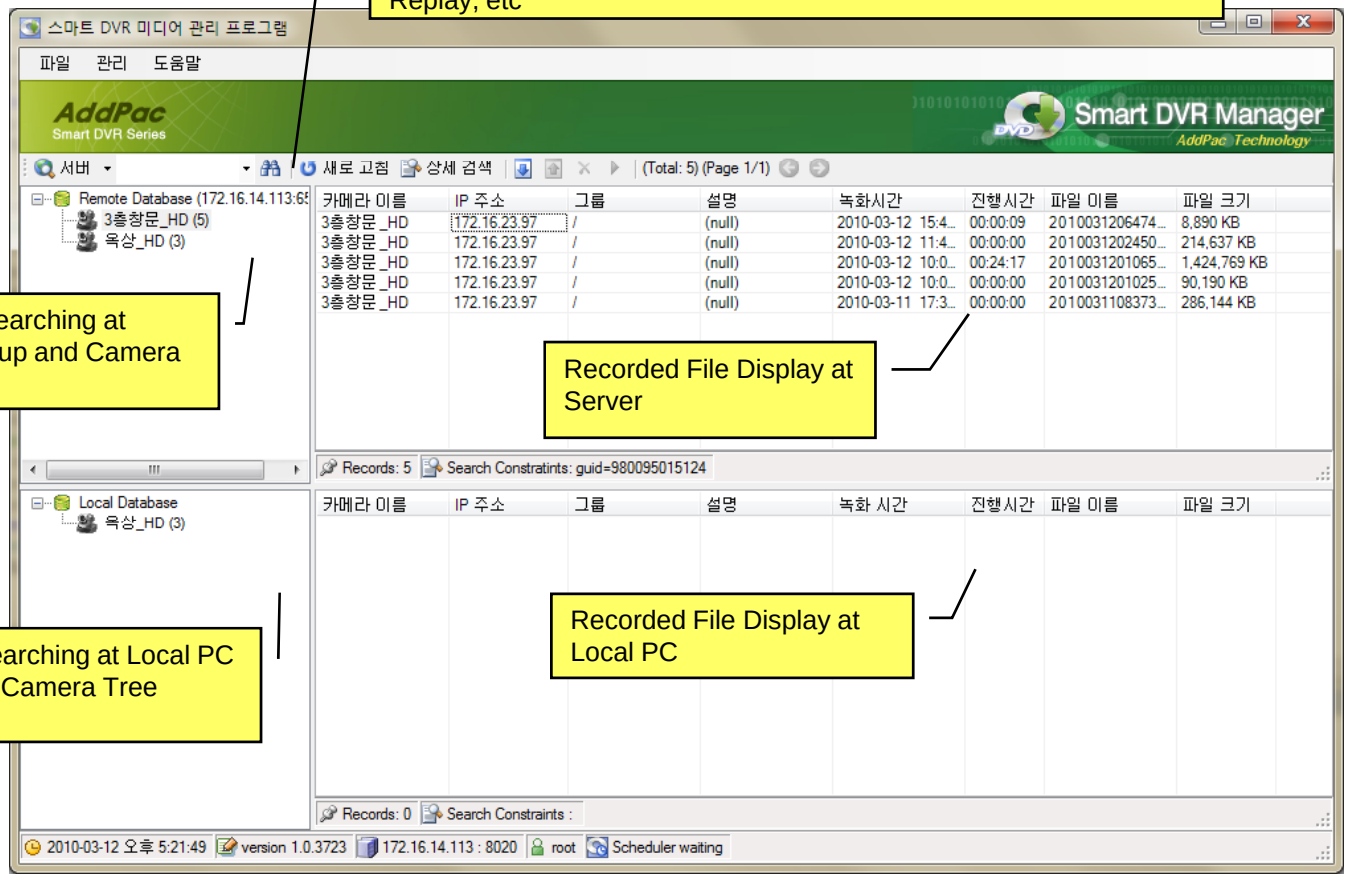
# Smart DVR Media Manager

# Smart DVR Media Manager Features

- Recording History Searching
- Recording History Management
- Recording File Upload / Download
- Play Recording Media File
- Schedule Backup
- Event History

# Smart DVR Media Manager : Main Layout

*Searching and Download/Upload Function about selected Window
: Camera Search, Update, File Searching, Download/Upload, Delete, Replay, etc



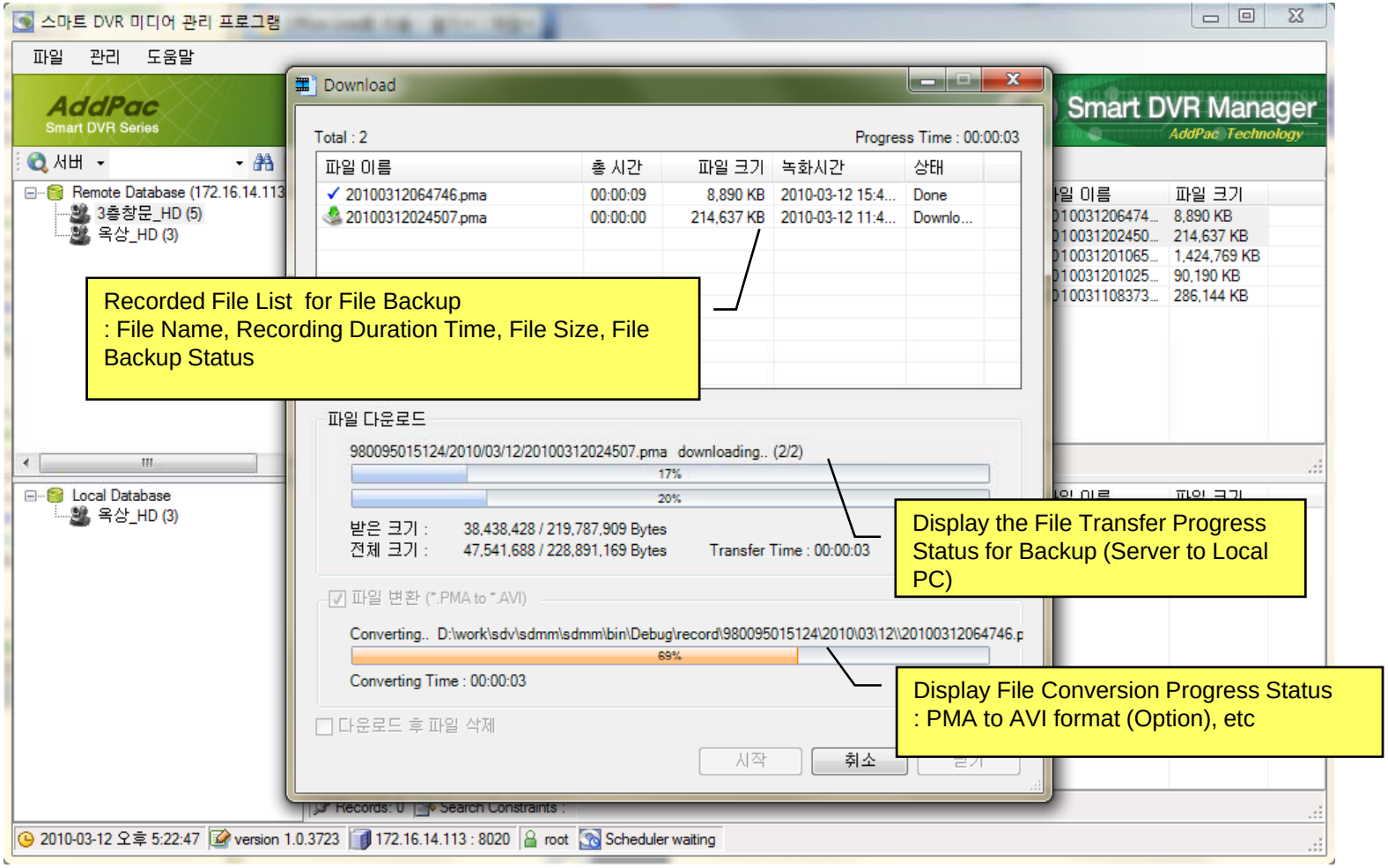

Recorded File Searching at Server using Group and Camera Tree

Recorded File Display at Server

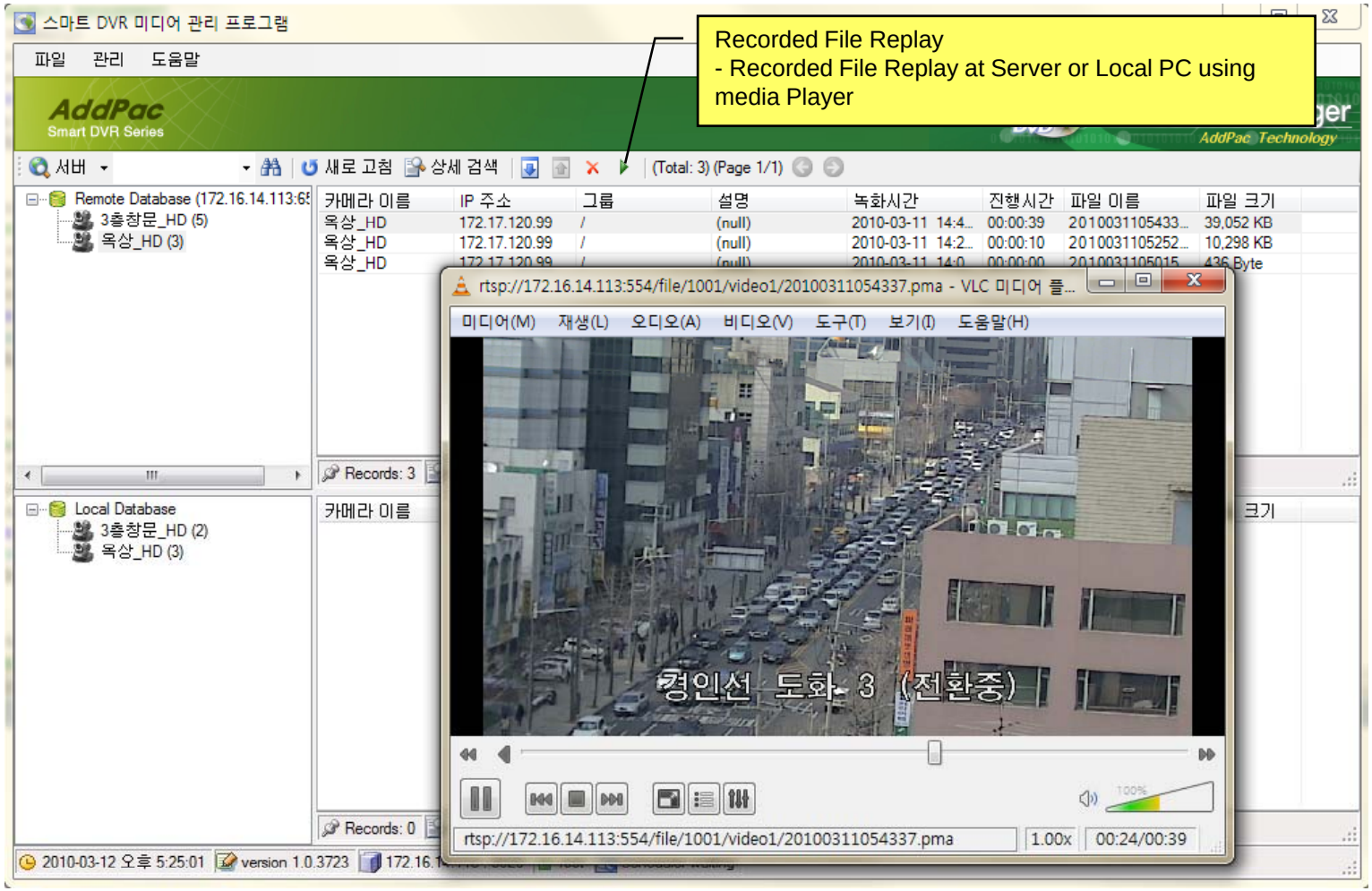
Recorded File Searching at Local PC using Group and Camera Tree

Recorded File Display at Local PC

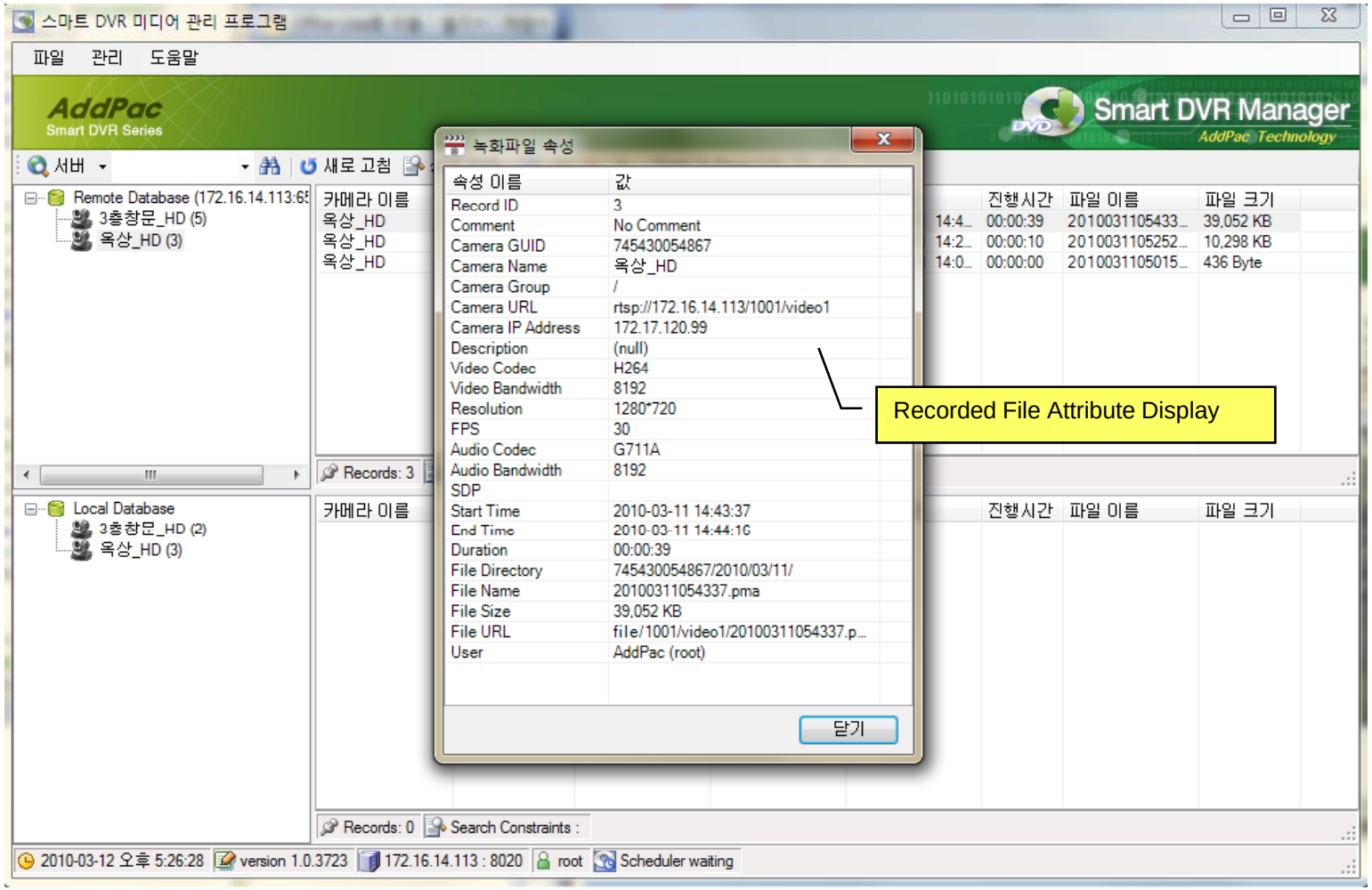
# Smart DVR Media Manager : Recorded File Upload / Download



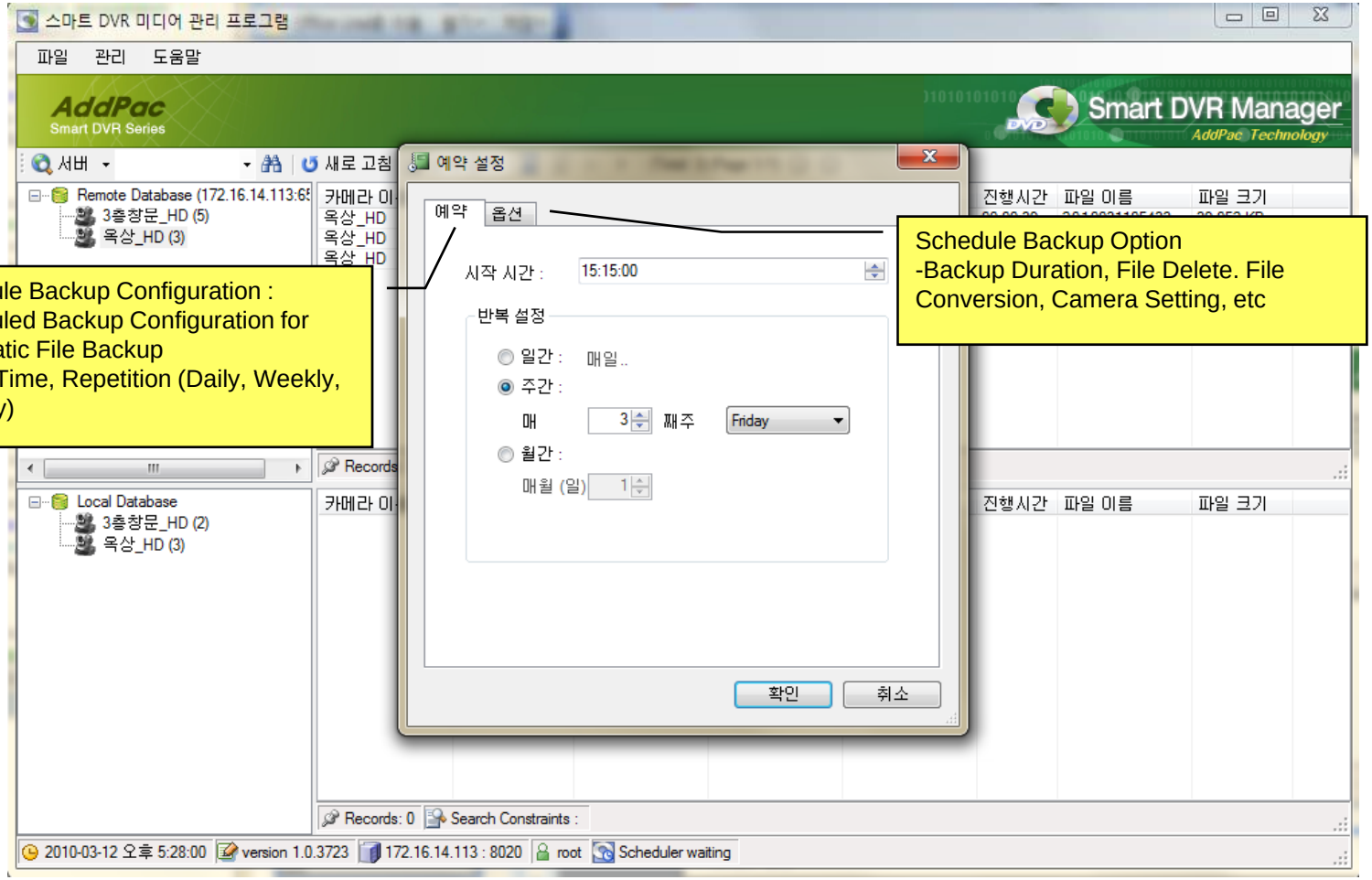
# Smart DVR Media Manager : Media Replay



# Smart DVR Media Manager : Media File Attribute



# Smart DVR Media Manager : Schedule



# Full HD Video Transmission Codec Module Hardware Platform

# Hardware Platform for Full HD Video Codec Module

## Full HD Video Codec Module

| Model | AP-NC2000 | AP-NC3000 | AP-NC3500 | AP-NC5000 |
|---|---|---|---|---|
| |  |  |  |  |
| Module Slot | 1 Module Slot | 2 Module Slot | 4 Module Slots | 10 Module Slots |
| Power Supply | Internal Power Module(AC) | Internal Power Module (AC) | Internal Power Module (AC) | Internal Power Module (AC) |
| Power Type | Built-In | Built-In | Built-In | Module Type |

# Hardware Platform for AV3500 (Example)

## Full HD Video Codec Module

AP-NC2000 Front View



AV3500 Full HD Video Module





AC Power Input

Power On/Off Switch

# 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