IPNext

[System Installation Guide]

Version 1.2

AddPac Technology Co., Ltd.
www.addpac.com

IPNext

Note.

Product information can be changed at any time without notice. The information in this guide is provided as it is. It does not assure any kind of guarantee implicitly and explicitly under all circumstances. Regard of this solution guide, AddPac Technology and AddPac Technology solution supplier never guarantees the marketability and suitability of particular use, not invasive including; trade, usage, implicitly and explicitly. Yet, the feature on technological standard, and the information for the product guarantee and supply needs further consultation.

[Contents]

[Picture]

[Table]

Please contact to AddPac Technology for device trouble, after sales service or further questions.

AddPac Technology
2F, Kyeong-An Bldg., 769-12 Yeoksam-dong, Kangnam-gu, Seoul
Phone (02) 568-3848
Fax (02) 568-3847
E-mail : sales@addpac.com
http://www.addpac.com

Revision information is as below.

Version	Date	Modification	Written By
Version 1.00	2008, 8, 25	Initial Released	AddPac Technology
Version 1.10	2008, 12, 8		AddPac Technology
Version 1.20	2008, 12, 24		AddPac Technology

Chapter 1. IPNext Introduction

Outline

IPNext is a next-generation SOHO IP-PBX system for interworking with PSTN interface and various IP terminals of AddPac (AP-VP300 IP video telephone, AP-IP300 IP Phone, etc) to provide multimedia IP telephony services as well as traditional IP telephony. This product is built based on high performance embedded RISC and suitable for the small and medium size companies. IPNext interworks well with the various VoIP/video products to provide IP application services

Function

1) Next Generation SOHO IP-PBX System

The front system panel of AddPac IPNext NGN (Next Generation Network) SOHO IP-PBX is built with device status LED displays. It has two 10/100 Mbps fast Ethernet ports, the RS-232C console port for Command Line Interface (CLI). Also, it supports 2-ports FXO analog interface. FXO VoIP interface performs media gateway function as a way of PSTN interfacing. The call features supported by IPNext including; SIP-based basic calls, ring tone, music on hold, blind transfer, call pickup, group call pickup, consult transfer, consult call, call waiting, call waiting notification, call park, call pickup remote, and hunt group. In addition, it is designed to support SIP, H.323 concurrently. A high capacity Flash Memory is installed to increase the stability while providing many application services such as Voice Mail.

2) RTP Proxy Feature

Enterprise network environment (made up of both SIP server and IP phone) requires several IP addresses so that either IP version6 or private IP address in the NAT environment requires for enterprise networks due to the public IP address depletion. The RTP proxy feature is required for reliable multimedia communications between End-to-End terminals in private address IP address. The RTP proxy server feature is used for communication between a private IP terminal and a public IP terminal in between edge terminals such as IP phones, communication between a private IP terminal and a public IP terminal in the NAT environment, communication between private IP terminals, provide audio/video broadcasting in private and public IP environments, and enable audio/video conference calls in private and public IP environments. The RTP proxy feature can be operated regardless of VoIP signaling protocols such as H.323, SIP, MGCP and supports both IP Version4/IP Version6 dual address systems.

3) User Presence Feature for Unified Communication

As User Presence feature provides user presence indication information in Smart Messenger Program (MS Window based PC platform environment) or in IP terminal (next generation IP telephony solution). User presence feature operates based on IP-PBX system and AddPac protocol SSCP (Smart Service Control Protocol) in between IP terminal (or in Smart Messenger). User presence function displays user on line status, user away and user busy and performs broadcasting regard of user information to all terminals (terminal with presence capability) from the collected information in each End-Point terminals.

4) Intelligent IVR

One of the most important features of SOHO IP-PBX solution is; ARS and IVR. IVR requires different IVR features for each different field including public office, company and Call Center. To accommodate the needs of user, AddPac IP-PBX solution provides the IVR scenario Editor; thus, user can map out in accordance with call scenario and provides IVR support feature tools to manage IP Key Phone System.

5) Unified Messaging Service

AddPac IPNext IP PBX system supports the network based media service. It is a total solution for interworking with VoIP gateway, IP video phone, IP phone to perform an announcement, ring tone, music on hold. You may change the ring back tone and music on hold file in accordance with the schedule. Video codec supports the MPEG-4, multimedia ring back tone and multimedia CID (MCID).

6) Unified Messaging Service for Voice Mail

IPNext SOHO IP-PBX system network messaging feature supports voicemail by interworking with VoIP gateway, IP video phone and IP phone in next generation multimedia telephony solution. It supports the SIP VoIP signaling, voice mail, multimedia message, IVR scenario for retrieving. User may setup the IVR voicemail environment by using VXML based IVR scenario editor program. It supports the memory quota setup function for storing voicemail and supports voicemail notification through email. You may play the voicemail through PSTN, VoIP, email and AddPac messenger program.

7) Firmware Upgradeable Structure

IPNext's high performance RISC CPU is a programmable structure so that it is capable of improving functions, altering, and adding new features constantly. When additional features or alterations are needed, just directly download from the homepage or setting an auto upgrade option. You may use the latest features without much effort. Also, firmware and version upgrade such as video phone, IP phone, smart messenger program for AddPac IP keyphone system solution can be independently downloaded from the homepage and may be upgraded by downloading from the keyphone. For example, PC software Smart Messenger Program (act as terminal) is designed to upgrade by checking version. When IP Keyphone system administrator manages the terminal software version to upgrade, you may be able to upgrade by bringing new firmware into IP Keyphone system through version check while booting or when the IP Phone power is on. IP Keyphone systems and terminals are designed to manage software version management system in top-down structure for the efficient software version management..

8) Reliable IP-PBX Solution

IPNext is an integrated network device that supports routing services, NAT/PAT, DHCP Server/Relay, and Quality of Service (QoS). In order to adapt into the variety of network environments such as xDSL, cable network, FTTH, Metro Ethernet, Metro ATM, dedicated lines, flexible IP environment, an advanced QoS (Quality of Service), security feature should be supported along with abundant network services. In this sense, IPNext supports two 10/100 Mbps Fast Ethernet interfaces. Based on this, IPNext supports advanced LAN-to-LAN routing and bridge services as well as various network and security services such as NAT/PAT. AddPac IPNext IP-PBX is a reliable solution built by using excellent technologies.

9) Audio/Video Privacy Protection

IPNext IP-PBX provides the network security of 'Standard & Extended IP Access List' for equipment access control and service security as well. It supports the security features enhanced by VPN, Secure RTP function as well as the data security and voice/video secure call functions for privacy protection.

10) AddPac IP PBX Total Solution

AddPac technology is not just a vendor of SOHO IP-PBX BOX for the customer satisfaction, but it provides various products for appropriate network environment for VoIP, Media Gateway, audio/video terminals, audio/video MCU, IP audio/video broadcast, VoD solutions, network DVR solution, audio/video recording solutions, and traffic controller QoS device solutions. In all IP based multimedia telephony environment, various audio/video resources should be shared on an IP Network; thus, the integration of solutions for each area and entire solutions are very important. AddPac IP telephony solution is designed to consider the integrated multimedia solution so that it can satisfy the various needs of customer.

AddPac’s various VoIP Gateway series and multimedia network devices have been fully recognized in terms of its performance and stability throughout the world. IPNext will provide full satisfactions for customers who seek for a next generation IP telephony system with our accumulated experience in the enterprise market and service provider market.

Main Characteristics

High Performance RISC Microprocessor Structure
Two(2) FXO VoIP Interface for PSTN interconnection(Option)
Network Interface: 10/100Mbps Fast Ethernet InterfaceX2
User Interface: 1Port RS-232C Serial Console Interface
User Terminals : AP-VP500, AP-VP300, AP-VP250, AP-VP150, AP-VP120, AP-IP300, AP-IP150, AP-IP100, Smart Messenger

AP-VP500 AP-VP500 Video Phone
High Performance & Powerful
Communication Method

AP-VP300 AP-VP300 Video Phone
High Performance & Powerful
Communication Method

AP-VP250 AP-VP250 Video Phone
High Performance & Powerful
Communication Method

AP-VP150 AP-VP150 Video Phone
High Performance & Powerful
Communication Method

AP-VP120

AP-VP120 Video Phone
High Performance & Powerful
Communication Method

AP-IP300

AP-IP300 IP Phone
High Performance & Powerful
Communication Solution

AP-IP150

AP-IP150 IP Phone
High Performance & Powerful
Communication Solution

AP-IP100

AP-IP100 IP Phone
High Performance & Powerful
Communication Solution

Call Manager Feature: Call Scenario, Coloring Service, Music on Hold
SIP, H.323 Signaling Support
Support Scenario Editor/Supporting Tool for IVR Service
Voice Mail, UMS (Unified Messaging Service), Announcement, RingBack Tone, Music on Hold.

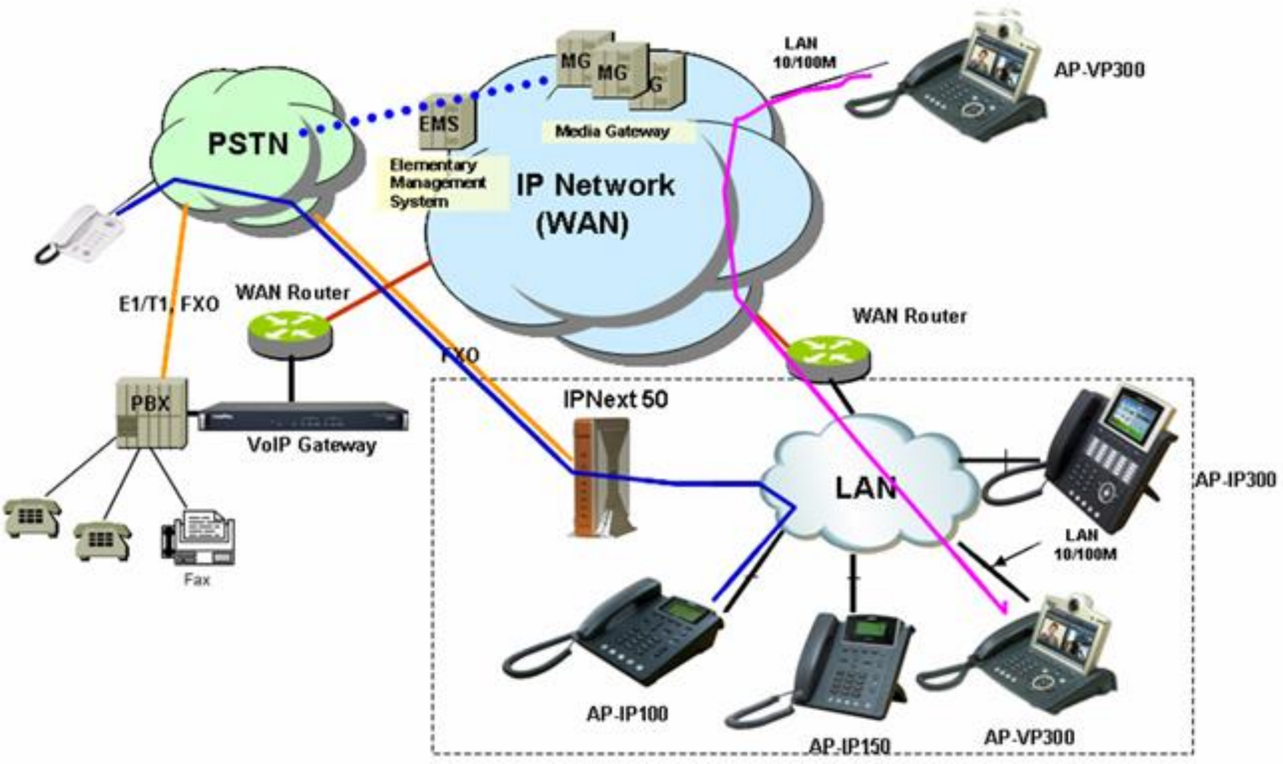
Media Gateway function for PSTN interface (PSTN)
Fault tolerant and Scalability

Table 1-1 IPNext

Service	Detail	Required Devices for Connection
IP Keyphone	Call Scenario, Call Transfer, Call Forwarding, Coloring Service., Music on Hold. Three Way Conference. Voice Mail, IVR	· AddPac AP-VP300 Video Phone · AddPac AP-VP150 Video Phone · AddPac AP-IP300 High-End IP Phone · AddPac AP-IP150 IP Phone · AddPac AP-IP100 IP Phone

		· AddPac Smart Messenger
PSTN Interface (Option)	FXO VoIP Gateway Function For PSTN	·Embedded 2-Port FXO PSTN Interface (Option)

Configuration



Picture 1-1 IPNext Network Configuration

Hardware Specification

Table 1-2 IPNext Hardware Specification

Category	Specification	
Microprocessor	CPU	High Performance RISC Integrated Host Processor
Memory	Main Memory	128Mbyte SDRAM
	Flash Memory	512Mbyte
	Boot Memory	512Kbyte Flash Memory
Fixed Network Interface	LAN0 Port	One(1) 10/100Mbps Fast Ethernet
	LAN1 Port	One(1) 10/100Mbps Fast Ethernet
	Console Port	One(1) RS-232C Interface for CLI
	USB Port	USB 1.1 Host Mode Interface
PSTN Interface	FXO Port	None (Model A)
		2-Port FXO Voice Interface (2 x RJ11) (Model B)
USB Module	USB Port	USB 1.1 Host Mode Interface
Power Requirement	Power VAC 110~220 VAC, 50/60Hz, 5V 3A	
Operating Temperature	0°C ~ 50°C (32° ~ 122°F)	
Storage Temperatures	-40°C ~ +85°C (-40° ~ +185°F)	
Relative Humidity	5% ~ 95%	
Dimensions	38 x 182 x 182 (mm , H x W x D)	
Weight	0.46Kg	

Software Function

Table 1-3 IPNext Software Function

Category	Specification
Number & Call Routing	Trunk Hunting by Preference or Sequential
	Calling Hunting by Preference, Simultaneous, Random
	Calling 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 Swapping
	Call Hold
Advanced Features with AddPac IP phone, Video Phone, etc	Multiple Call Handling with Call Status and Calling Line Number and Name
	Plug and Play with Auto Discovery Function
	Softkey Map Download and Control
Telephony and Service & Features	Voice Mail List View
	Parked Call List View
	Call Forwarding Setting
	Recent Call List View
	Calling Number and Name Identification
	Individual Call Park within a Group or Other Group 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 Swapping by Softkey	
	Conference Control	
IP-PBX Signaling Protocols	SIP Application Server, Proxy, Registrar and Location Server(RFC3261)	
	Multiple ITSP Trunk with SIP & H.323 Account 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 (Interactive Voice Response) & Auto Attendant	Default Auto Attendant Support	
	IVR Function	Provides with GUI-based Smart IVR Scenario Editor
		Upload/Download Scenario by Smart IVR Scenario Editor
		Supports Multiple Concurrent Scenarios
		Support Recordable IVR Prompts
Voice Mail	Support Voice Mail with IVR	
	Access from Remote Site via Trunk Support	
	Voice Mail Notification Support	
Conference	G.711 u-law, G.711 a-law, G.726 Internal 3-Party Audio Conference Support	
	Ad-Hoc Conference	
	Dial-Out Conference	
	Meet-me Conference	
	Multiple External MCU Support (Video, Audio, etc) : AP-MC1000	
	Conference Chair and Participants Management	
Music & Announcement	Music on Hold	
	Replaceable Announcements	
	Dialing Music/Tone Service	
IP-PBX User & Device Management	LDAP(Lightweight Directory Access Protocol) Support - Support Hierarchical Organization	
	Auto Discovery of IP Phones & IP Video Phones	
	Monitoring Status of Phones	
IP-PBX Miscellaneous Function	Distinctive Ring by Calling User	
	Auto Config & Upgrade	
	Intercom	
	Personal Directory	

<table>
<tr><td></td><td colspan="2">Downloadable Ring</td></tr>
<tr><td rowspan="4">Basic Routing</td><td colspan="2">IPv4/IPv6 Dual Stack</td></tr>
<tr><td rowspan="3">Management Routing</td><td>Telnet, FTP, TFTP, SSH, SNMP, Syslog support</td></tr>
<tr><td>Packet filtering (Access-list)</td></tr>
<tr><td>Static</td></tr>
<tr><td rowspan="4">Network Management</td><td colspan="2">Standard SNMP Agent (MIB v2) Support</td></tr>
<tr><td colspan="2">Traffic Queuing</td></tr>
<tr><td colspan="2">Remote Management using Console, Rlogin, Telnet</td></tr>
<tr><td colspan="2">Web based Managements using HTTP Server Interface</td></tr>
<tr><td rowspan="6">Security Functions</td><td colspan="2">Standard & Extended IP Access List</td></tr>
<tr><td colspan="2">Access Control and Data Protections</td></tr>
<tr><td colspan="2">Enable/Disable for Specific Protocols</td></tr>
<tr><td colspan="2">Multi-Level User Account Management</td></tr>
<tr><td colspan="2">Auto-disconnect for Telnet/Console Sessions</td></tr>
<tr><td colspan="2">PPP User Authentication Supports
→ Password Authentication Protocol(PAP)
→ Challenge Handshake Authentication Protocol (CHAP)</td></tr>
<tr><td rowspan="6">Operation & Management</td><td colspan="2">System Performance Analysis for Process, CPU, Connection I/F</td></tr>
<tr><td colspan="2">Configuration Backup & Restore for APOS Managements</td></tr>
<tr><td colspan="2">Debugging, System Auditing, and Diagnostics Support</td></tr>
<tr><td colspan="2">System Booting and Auto-rebooting with Watchdog Feature</td></tr>
<tr><td colspan="2">System Managements with Data Logging</td></tr>
<tr><td colspan="2">IP Traffic Statistics with Accounting</td></tr>
<tr><td rowspan="6">Other Scalability Features</td><td colspan="2">DHCP Server & Relay Functions</td></tr>
<tr><td colspan="2">Network Address Translation (NAT) Function</td></tr>
<tr><td colspan="2">Port Address Translation (PAT) Function</td></tr>
<tr><td colspan="2">Transparent Bridging (IEEE Standard) Function
→ Spanning Tree Bridging Protocol Support
→ Remote Bridging Support
→ Concurrent Routing and Bridging Support</td></tr>
<tr><td colspan="2">Cisco Style Command Line Interface(CLI)</td></tr>
<tr><td colspan="2">Network time Protocol(NTP) Support</td></tr>
</table>

Input/Output Configuration

Front

Picture 1-2 IPNext Front

Table 1-4 IPNext Front

No.	Table	Explanation
(1)	POWER	Display if the power is provided properly through Power LED.(Red)
(2)	LAN 0	LED display LAN 0 Link status (Green)
(3)	LAN 1	LED display LAN 1 Link status (Green)
(4)	FXO 0	LED display for FXO voice port status (Blue)
(5)	FXS 1	LED display for FX0 voice port status (Blue)

Rear

Picture 1-3 IPNext Rear

Table 1-5 IPNext Rear

No.	Table	Explanation
(1)	ON 5V3A	A switch to supply/shut off the system (DC 5V 3A power adapter connecting terminal and system power.
(2)	LAN 0	10/100Mbps fast Ethernet interface for WAN connection (RJ45)
(3)	LAN 1	10/100Mbps fast Ethernet interface (RJ45) for LAN connection
(4)	CONSOLE	Console interface for network management (RJ45).
(5)	USB	USB terminal that comply with standard 1.1. Maximum transmission rate is 12Mbps and user may connect USB memory.
(6)	PSTN(FXO) 0 (Option)	1 port PSTN (FXO) voice interface input/output section. (Option)
(7)	PSTN(FXO) 1 (Option)	1 port PSTN (FXO) voice interface input/output section. (Option)

Chapter 2. IPNext Installation

Installation Requirement

Requirement

Following details are recommendations for product safety.

- After IPNext installation, use it in clean environment.
- When opening IPNext cover, work in safe place..
- Do not wear a loose shirt. Don’t let your tie or scarf slip down. Roll up your sleeves.

Electric Safety Recommendation

IPNext may face with two electrical issues. One is safety concern in power supply and the other is device damage from electrostatic.

- **Electrical Safety**
  - ✓ Make sure to work in a location where you can shut off the system immediately when accidents occur.
  - ✓ Shut off the power while installing device or taking off the cover.
  - ✓ Do not work alone in dangerous environment.
  - ✓ Do not assume that the power is off. Be sure to check the power.
  - ✓ Be cautious when working in humid area or without ground connection

- **Prevent Electrostatic**
  - ✓ IPNext Chip-Set is very sophisticated components. If you mishandle it, it would cause some damages.
  - ✓ Be sure to wear electrostatic prevention waist strap if you have one.
  - ✓ If you do not have waist tap, be sure to hold the device metal sash. It will prevent electrostatic.

General Installation Requirement

IPNext is usable anywhere. For the maximum performance, we recommend places as below.

- **Maintain level and adequately ventilated.**
- **Please attach the product in a safe place.**
- **Do not put other objects on the device.**
- **Avoid direct sun light and install in cool location.**
- **Keep a safe distance from fire, flammable liquid, and magnetic material**

Preparation before Device Installation

When installing IPNext, user must consider EMI (EIA standard) and distance restriction. Following explains Ethernet cable, console cable and preparation.

Necessary equipments and cables are not included in the box unless you order them separately. To install IPNext, please prepare the following devices and equipments.

Standard Screw Driver Set

- Cable to connect LAN and console port
- RJ-45 to RJ-45 cable for LAN port
- RS-232C console cable that has RJ-45 connector (included in the box)
- **Ethernet Port**
  IPNext has two RJ45 type Ethernet ports at the back and LED display for port status. Use standard cable and connector when accessing in LAN network. Please refer to appendix cable specification for Ethernet cable PIN specification.
- **Console Port**

At the back of IPNext, it has RJ-45 type RS-232C Female DCE connector interface. Use may initialize the setup, monitoring, and debugging through this port. Make sure to use cable and connector. Please refer to appendix cable specification for RS-232C console cable PIN specification.

After Sales Service

Please contact via 02)568-3848 or FAX 02)568-3847 for technical problems.
Normal business hours: 9AM ~6PM
For company location and further information, visit our website http://www.addpac.com

Remove Product Packaging and Contents Check

Make sure to check the package damage before unpacking.
Please check the following contents.

Table 2-1 IPNext Product Package

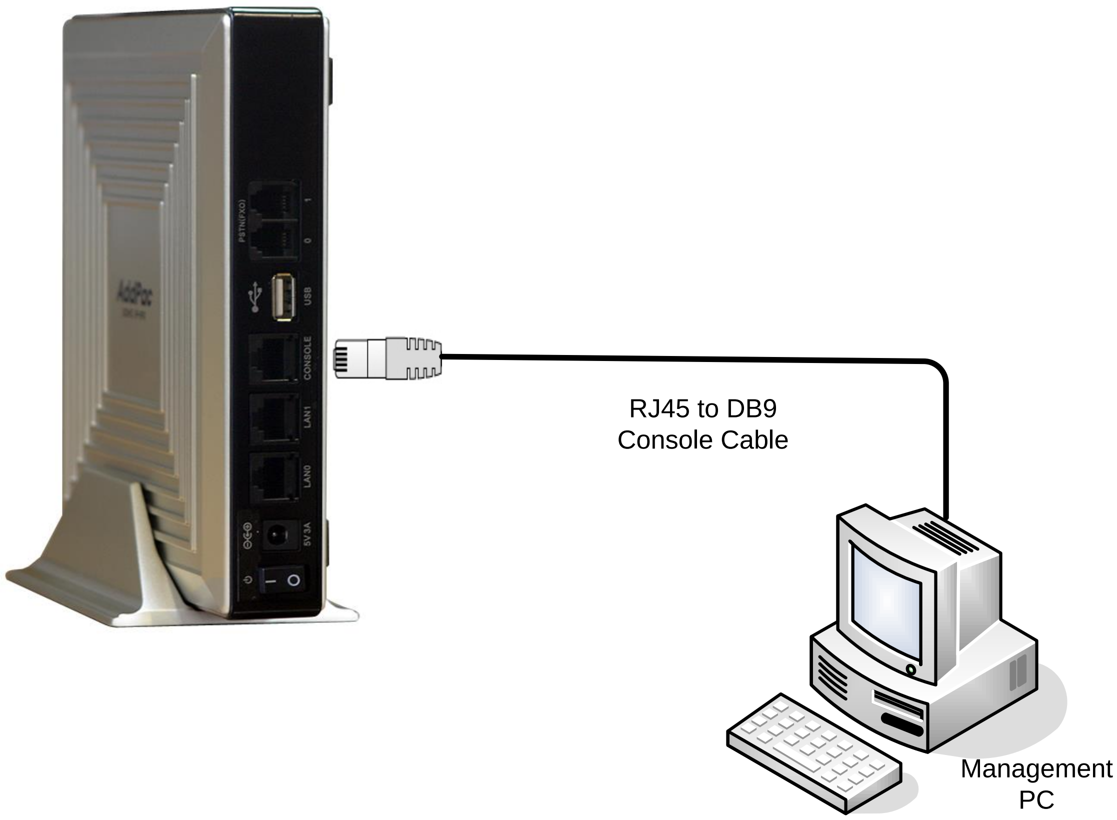
No	Name	Contents	Qt.
1	**IPNext**		1
2	**LAN Cable (RJ45 to RJ45 Option)**		1
2	**Console Cable (RJ45 to DB9 Option)**		1
4	**Power Cable and Adapter**		1

Please contact AddPac Technology if you find any damaged items. (Tel: (02)568-3848)

Installation

Async Serial Interface Connection

Connect RJ-45 connector of RS-232C serial console cable to console port. The opposite serial connector connects to serial port such as IPNext control PC.

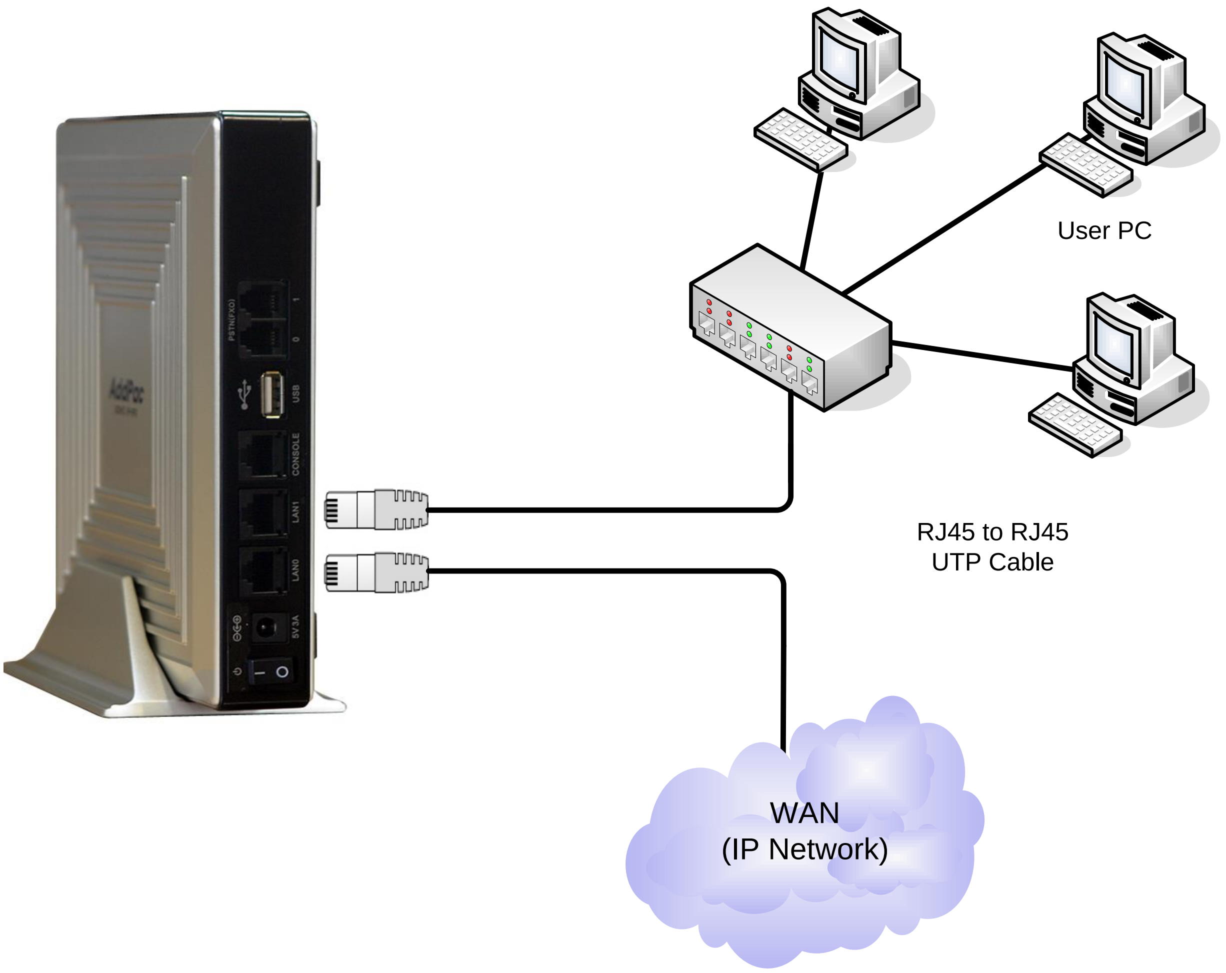


Picture 2-1 IPNext Async Serial Interface Connection

Ethernet Interface Connection

For internet connection WAN interface, connect with WAN device (router or ADSL/cable modem) LAN interface and RJ45 standard UTP cable. Cross-Over may be used when connecting to the router or modem directly. Use direct-through cable when connecting to HUB.

Connect LAN0/LAN1 fast Ethernet interface by using RJ-45 connector.

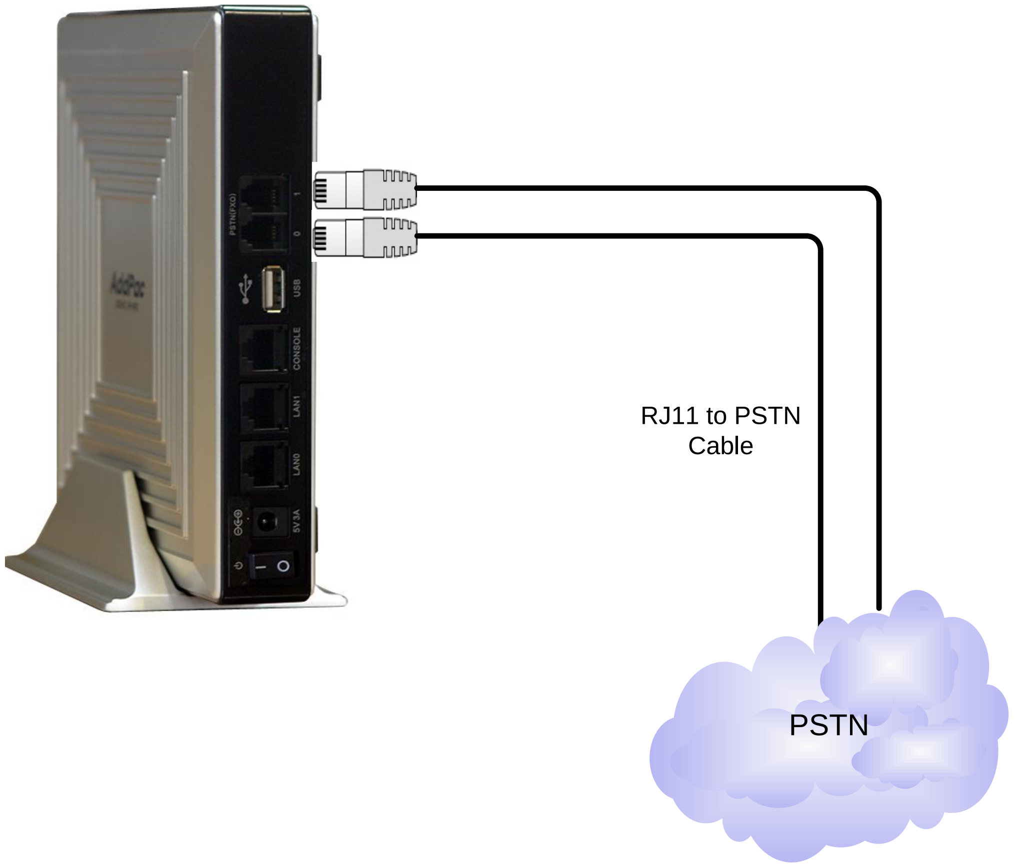


Picture 2-2 IPNext LAN0/LAN1 Interface Connection

PSTN (FXO) Interface Connection (Option)

Connect PSTN (FXO) port with external PSTN and RJ11 standard cable.

PSTN (FXO) port is interface which provides RJ-11 connector to interwork with telephone network and standard PBX.



Picture 2-3 IPNext PSTN Interface Connection

Booting Process and Working Status

It is booting process of IPNext.

- IPNext checks the CPU, memory, and interface.
- Boot Loader will be executed and find appropriate IPNext s/w image file. IPNext is designed to upload s/w in default configuration.
- If s/w image file cannot be found in flash memory, boot loader will wait in boot mode until it downloads the proper IPNext s/w. (Use TFTP or FTP protocol to download proper Next50 s/w)
- After IPNext loading, IPNext will be operated in accordance with saved information. IPNext will run with initial value if there is no saved setup information. For normal network operation, administrator must setup pertinent details.

After IPNext installation and interface connection, power must be supplied. Make sure to connect power cable with IPNext. Do not connect IPNext after providing power cable. Also, use 110V power cable if the power supply is 110V. IPNext automatically recognizes both 110V and 220V so using proper power cable and additional operation is not necessary.

After normal booting, following message will be shown.

```
System Bootstrap, Version 1.2
Decompressing the image:
############################[OK]
?
System Boot Loader, Version 5.1.3
Copyright (c) by AddPac Technology Co., Ltd. Since 1999.

[DUAL-BOOT] Start application (0xbc000000)...
```

```
System Bootstrap, Version 1.2
Decompressing the image:
####################################################################################################
####################################################################################################
####################################################################################################
####################################################################################################
###########################################[OK]
.
AddPac IP-PBX Series (IPNEXT_G2)
32BIT RISC Processor With 125MHz Clock
128 Mbytes System Memory.
512 Kbytes System Boot Flash Memory
32 Mbytes System Flash Memory

1 RS232 Serial Console Interface

IPNEXT_G2 System software Revision 8.47.024
Released at Thu Nov  6 19:26:52 2008
Program is 5057752 bytes, checksum is 0x28ce9ed4

UTC Time is Mon Dec  1 12:00:10 2008
Copyright (c) by AddPac Technology Co., Ltd. Since 1999.

Allocating system mbuffer counter: 2560
Loading file system(ver2.2), flash-base: 0xffff0000 ram-base: 0x9912836c
Ethernet port initialization complete
Ethernet port initialization complete
System utilization reference (51/20/20/22)
USB OHCI Host Controller Driver v5.3
[USB] HUB 2 ports detected
Initializing USB Mass Storage driver...
USB Mass Storage support registered.
v0.0.1 (2005/09/09):USB HID Mouse driver
v0.0.1 (2005/09/09):USB HID Keyboard driver
Loading module: rt2570usb - v2.0.7 (2006/3/7)
[USB] Start ROOT HUB timer
Start Target Debug Server
```

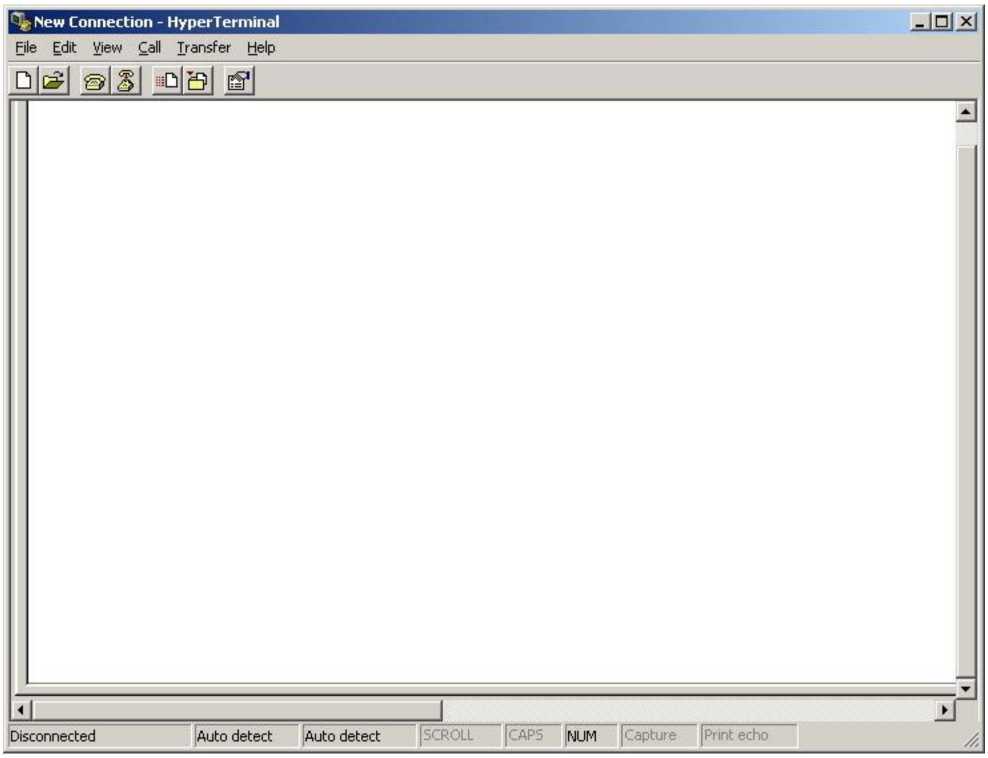
```
Attach FastEthernet Interface at Slot 0, Port 0-1, <0-0>/<0-1>
[USB] Start HUB event processing
FastEthernet0/0: link is up 100 Mbps (full duplex)
FastEthernet0/1: link is up 100 Mbps (full duplex)
Interface FastEthernet0/0, changed state to UP
Interface FastEthernet0/1, changed state to UP
Hardware Type ID = 0
Hardware Revision ID = 0x0
Slot (0) Module type : FXO

Start SendMail Server
can't open configuration file [flash:/flash/apos.cfg]
Start File Transfer Protocol Server (listen tcp/21)
HTTP: document_root : /hd/smartclient
Start RtpCallScanTimer for group default

Press RETURN to get started.

RTA Module Ready
CPU internal DSP SRAM .... OK
Audio DSP S/W download ... OK
AudioConference Module Ready

Add default voipPeer(1000) ......

VoipGateway::Init1    - No IP address on the VoIP Interface
CM CREATE DOMAIN
CM CREATE DOMAIN

Welcome, APOS(tm) Kernel Version 8.47.024.
Copyright (c) 1999-2008 AddPac Technology Co., Ltd.

Login:
```

Chapter 3. IPNext Console Command

Outline

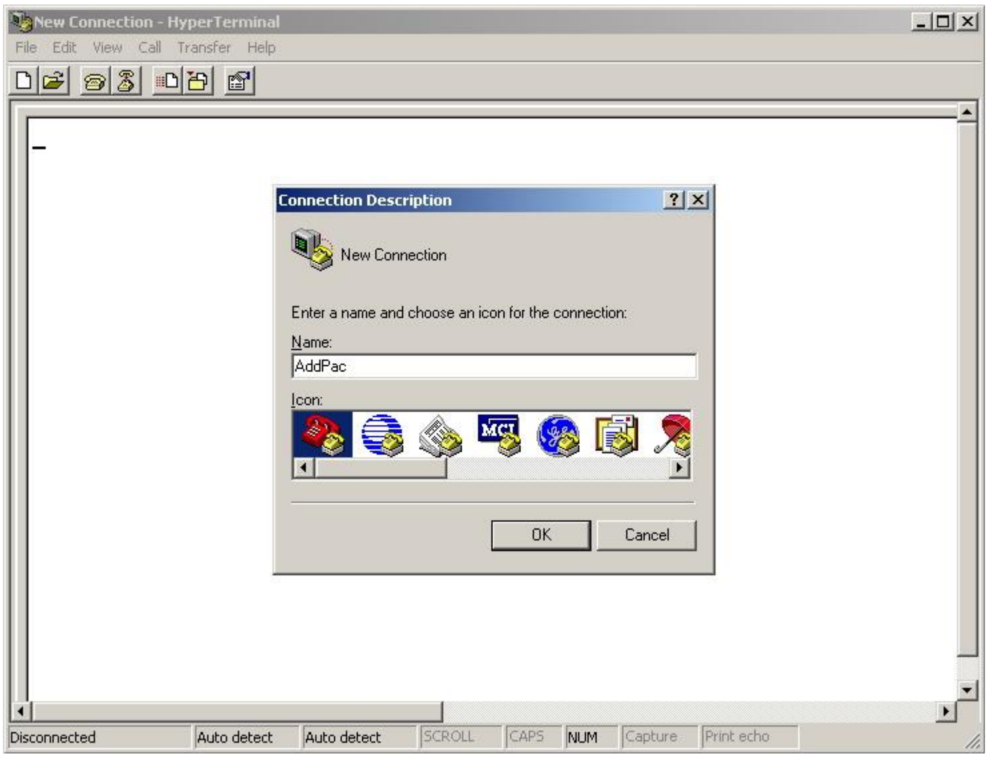
Use Console Terminal by Using HyperTerminal

Terminal Emulator Application must be setup when using PC as console terminal. Use hyper terminal application when using MS-Windows type.



Picture 3-1 MS-Windows Terminal Emulator HyperTerminal

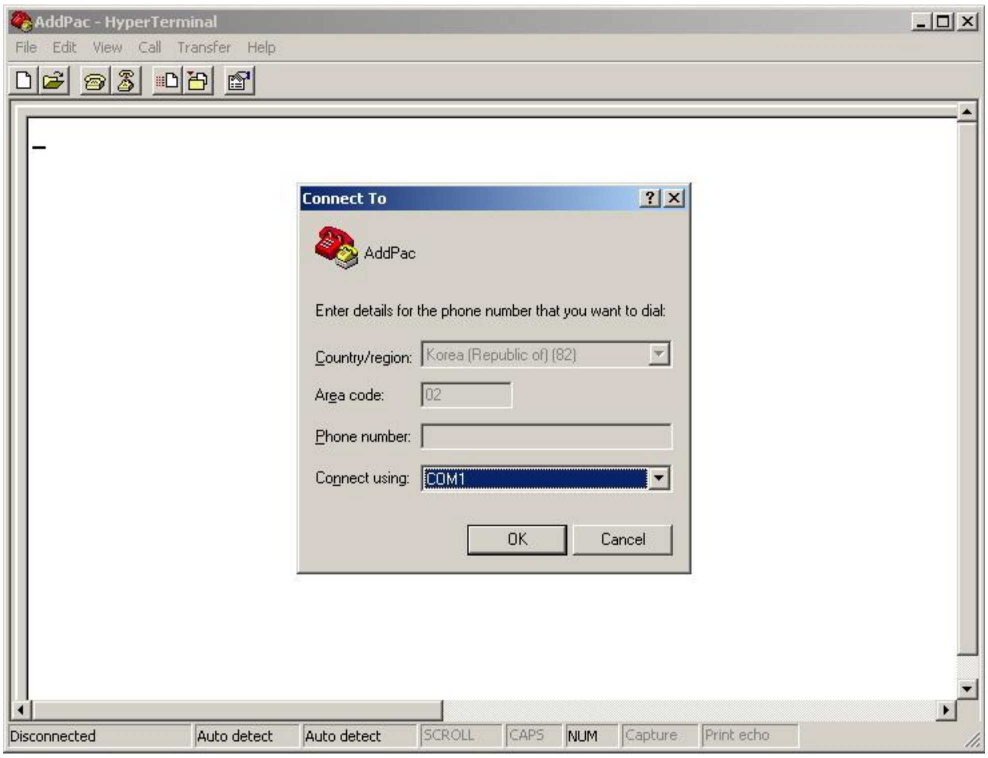
Execute hyper terminal and decide connection name. User may choose connection name freely. We setup as AddPac.



Picture 3-2 Enter HyperTerminal Connection Name

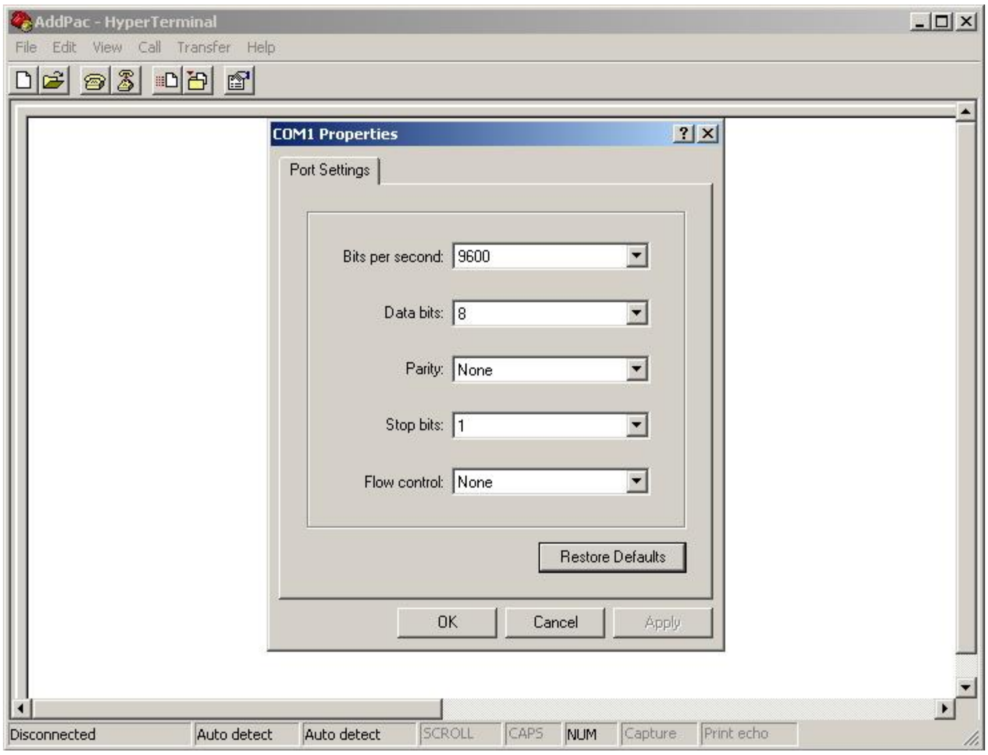
Setup interface that is connected with console cable.

Console cable usually connects with RS-232C 9Pin Serial Port. Choose proper port in accordance with user environment. We have connected COM1.



Picture 3-3 Setup Value When Connecting Console Cable to Serial Port

Decide each setup value in interface register information as below. We have used COM1 as a standard.



Picture 3-4 COM1 Port Setup Example

After setup, press enter to see booting message on hyper terminal screen

APOS Command Usage

NOTE	**All AddPac technology devices are embedded with APOS (AddPac Operating System). Thus CLI (Command Line Interface) environment are all identical.**

All command in IPNext can connect to console or telnet terminal (VT-100 terminal).

Command provides to view system restriction items, user mode to provide access function, look at the system status. Administrator mode to use system debuggin function and change the setup environment or setup a new environment.

Following characteristics are IPNext related command input.

- It automatically recognizes without typing all command. For example, to run “show” command, type “sh” or “sho”. It will automatically recognizes as “show”

- It provides on-line help function. When typing system command incorrectly, it shows possible items for command and command usage screen.

- More function provides to display unable information on screen.

- It provides Help and “?” function to display all possible command and explanation.

- It provides “History” function. User may use Prompt number without retyping command.

- System command structures are divided into 3 modes. Each mode has different command. Command for each mode is as below.

General User Mode Command

General user mode command is a function for all logged-in users.

General user prompt is displayed as “**IP-PBX>**”.

Table 3-1 General User Mode Command

Command	Explanation
enable	Change to administrator mode
exit	Move from current prompt to lower prompt
help	APOS Help output
quit	Same as exit
show	Command for system working status and setup status
terminal	Decide number of lines to print out from terminal at a time.
who	Display access users through vty (command)
whoami	Display how user accesses (command)

Administrator Mode Command

Administrator mode command is command that logged in administrator can use. To access in system setup mode, it must be under logged in status. It shows more information according to options even if it is same as command such as “show”.

In administrator mode, user may use all command that is used in regular user mode.

Administrator mode prompt is displayed as “**IP-PBX#**”.

Table 3-2 Administrator Mode Command

Command	Explanation
clear	Command to initialize Interface Counter, Statistic
clock	Setup current year, date, time
configure	Enter as setup mode
copy	Copy running config as startup config
debug	Debug command for system
disable	Enter as user mode
disconnect	Command to close VTY() Connection

dnsquery	Command that is used in DNS query test
dnsrv	Command that is used in DNS SRV record
end	Enter as administrator mode
erase	Delete config file
exit	Move to previous mode
fsh	Enter as file shell
ftp	Connect ftp client
help	Display APOS help
no	Command to delete current setup
nsupdate	Command to transmit upgrade information to name server
ntpdate	Command to receive time from ntp server
ping	Network connectivity confirmation tool
ping6	Network connectivity confirmation tool (IPV6)
quit	Same as exit
reboot	System rebooting command
show	System working status/setup status command
telnet	telnet access command
terminal	Setup number of lines from terminal
tftp	Command to transmit the file to tftp server
traceroute	IPv4 routing route check command
traceroute6	IPv6 routing route check command
undebug	Command to deactivate the debugging function
who	Command to display all logged in users by vty
whoami	Command to display how it is accessed currently
write	Command to save operating configuration

System Setup

Log-in Account

IPNext let users to make several user accounts. Each account has access restriction as well as APOS command setup in accordance with setup level. User account access restrictions are as below. (Include "root").

- User account **"root"** delete is impossible
- Only "root" is able to check in an entire account information
- If the user level is same as admin. User who is not a **"root"** can only read their own account information.

NOTE	IP-PBX products root account default password is setup as "router".

Table 3-3 Log-In by Root Account

Step	Command	Explanation

1	`Welcome, APOS(tm) Kernel Version 8.47.024.`
	`Copyright (c) 1999-2008 AddPac Technology Co., Ltd.`
	`Login:`
	`Login:` **`root`**
		Log-in by root account.

2	`Password:` ***<password>*** `IP-PBX>` **`enable`** `IP-PBX#`	Enter default password "router". Enter enable in IP-PBX>mode to enter APOS command setup mode.

Table 3-4 User Account Information Check

Step	Command	Explanation

1	IP-PBX# **show username**
	username root password router ;
	   password is clean text type administrator access
	username abc password abc ;
	   password is clean text type administrator access
	username abcd password abcd ;
	   password is clean text type operator access
	username abcde password abcde ;
	   password is clean text type user access
		Check user account information by using APOS command (do not display upper account which is higher than accessed account)

Table 3-5 New User Account Registration

Step	Command	Explanation
1	IP-PBX# IP-PBX# **configure terminal** IP-PBX(config)#	Enter as APOS command input mode
2	IP-PBX(config)# **username ?** WORD User name IP-PBX(config)# **username addpac ?** nopassword No password is required for the user to log in password Specify the password for the user	Setup whether to authenticate the password when Logging in nopassword : noncertified mode password: certified mode
3	IP-PBX(config)# **username ?** WORD User name IP-PBX(config)#**username addpac password ?** 0 Specifies an UNENCRYPTED password will follow 7 Specifies a HIDDEN password will follow WORD The UNENCRYPTED (cleartext) user password	Setup whether to print out password 0: Enter password for encrypted password (password display) 7: Enter unencrypted password (password not displayed) WORD: Enter unencrypted password (password display)

4	IP-PBX(config)# **username ?** WORD User name IP-PBX(config)#**username addpac password router ?** administrator System administrator operator System operator and monitor user System end-user	Setup administrator level Administrator: administrator level Operator: operator level User: user level
5	IP-PBX(config)# **username addpac password router operator ?** <cr> IP-PBX(config)# **username addpac password router operator** IP-PBX(config)#	User ID is addpac, password is router, create level as administrator level.

Table 3-6 Log-in Under Regular User Account

Step	Command	Explanation
1	IP-PBX# **exit** IP-PBX> **exit** Welcome, APOS(tm) Kernel Version 8.41.008. Copyright (c) 1999-2006 AddPac Technology Co., Ltd. Login:	Register as new registered user account from the existing setup.
2	Login: Login: **addpac** Password: ***<password>*** IP-PBX> **enable** IP-PBX#	Open up a new user account by entering registered password “addpac”.
3	IP-PBX# **show username** username addpac password router ; password is clean text type operator access username abcde password abcde ; password is clean text type user access	When reading user account information, it doesn’t show the upper level account information than the accessed account information.

Table 3-7 User Delete

Step	Command	Explanation
1	IP-PBX# **configure terminal** IP-PBX(config)# **no username *<user-name>***	User Delete Command

Password setup

User only has an authority to do the "show command" after accessing to console. To have powerful authority, user must enter as enable mode. If the regular user enters as "enable mode", they have all the rights to change the system setup. Thus, be sure to setup the password only for the administrator.

Table 3-8 password Setup

Step	Command	Explanation

1	`IP-PBX#`
	`IP-PBX#` **`configure terminal`**
	`IP-PBX(config)#`
		Enter as APOS command input mode.

2	`IP-PBX(config)#` **`enable password {password}`**	Password setup

Host Name Setup

Host Name shows prompt name in CLI environment. It informs to user what types of devices are being accessed through telnet and console. It is convenient when using device location or model name.

Following shows an example to setup device host name as IPNext.

Table 3-9 hostname Setup

Step	Command	Explanation

1	`IP-PBX#`
	`IP-PBX#` **`configure terminal`**
	`IP-PBX(config)#`
		Enter as APOS command input mode

2	`IP-PBX(config)#` **`hostname IPNext`**	Setup host name as IPNext

Clock Setup

Clock setup shows the time of system. System time can be checked as “show clock” command in CLI environment as well as check running time up to now. Be sure to set your clock same as current time.

Following shows how to setup current time

Table 3-10 Clock Setup

Step	Command	Explanation

when	`IP-PBX#`
	`IP-PBX#` **`configure terminal`**
	`IP-PBX(config)#`
		Enter as APOS command input mode.

2	`IP-PBX(config)#` **`clock time 2008 12 01 14 30 00`**	Setup present time as “2008, 12. 01 14hr 30min 00sec”

Interface Setup

IP Address must be setup to communicate with other network devices. Interface speed and duplex is automatically adjusted with other devices (optimum value). However, it occurs when duplex does not fit. In this case, manual setup is required for speed and duplex.

Following example shows how to setup IP address ‘‘172.20.101.100’’ in interface fast Ethernet 0/0 and setup link speed 100M and full duplex manually.

Table 3-11 Fast Ethernet Interface Setup

Step	Command	Explanation

1	`IP-PBX#`
	`IP-PBX#` **`configure terminal`**
	`IP-PBX(config)#`
		Enter as APOS command input mode.

2	`IP-PBX(config)#` **`interface fastethernet 0/0`**	Enter as interface setup mode.
3	`IP-PBX (config-if)#` **`ip address 172.20.101.100 255.255.0.0`**	Setup IP address “172.20.101.100”, MASK ‘255.255.0.0”
4	`IP-PBX (config-if)#` **`no speed auto`**	Setup 100/full duplex manually if

5	IP-PBX (config-if)# **speed 100**	auto negotiation is not working properly. (Default: auto)
6	IP-PBX (config-if)# **duplex full**	

Default Router Setup

Setup where to send if it was accessed by unspecified network. Be sure to setup with device IP.

Following shows how to setup default router as “172.20.1.1”

Table 3-12 Default route Setup

Step	Command	Explanation
1	IP-PBX# IP-PBX# **configure terminal** IP-PBX(config)#	Enter as APOS command input mode.
2	IP-PBX(config)# **ip route 0 0 172.20.1.1**	Setup Default router as “172.20.1.1”

System Service Setup

HTTP Server Setup

HTTP Server is activated. Make sure to setup when it is not activated. It is setup for PBX HTTP CLI execution, call manger status check in SMM, and to use auto upgrade server.

Table 3-13 HTTP Setup

Step	Command	Explanation

1	`IP-PBX#`
	`IP-PBX#` **`configure terminal`**
	`IP-PBX(config)#`
		Enter as APOS command input mode

2	`IP-PBX(config)#` **`http server`**	HTTP server activation. (default)
3	`IP-PBX(config)#` **`no http authentication`**	(Optional) Setup to access in server without HTTP access authentication. We recommend using http authentication.
4	`IP-PBX(config)#` **`http document-root /hd`**	Setup default directory for accessing web based SMM. (IPNext v8.47.024. after version default: /hd)

Telnet Server Setup

Use telnet to manage the device which is located far. Telnet is already activated in system. So user does not require using command unless it is activated separately. Use TCP23 through telnet port. It is possible to modify in accordance with environment.

Table 3-14 Telnet Setup

Step	Command	Explanation
1	IP-PBX# IP-PBX# **configure terminal** IP-PBX(config)#	Enter as APOS command input mode.
2	IP-PBX(config)# **telnet server**	telnet service activation
3	IP-PBX(config)# **telnet port 23**	(optional) setup when modifying default telnet port 23

FTP Server Setup

FTP is activated and if it is deactivated, make sure to setup. If user wishes compose ftp server, do ftp allow anonymous command.

Following example shows how to activate ftp server and allow anonymous account access.

Table 3-15 FTP Setup

Step	Command	Explanation
1	IP-PBX# IP-PBX# **configure terminal** IP-PBX(config)#	Enter as APOS command input mode.
2	IP-PBX(config)# **ftp server**	FTP server activation
3	IP-PBX(config)# **username root password router**	FTP user account “root/router” creation
4	IP-PBX(config)# **ftp port 21**	(optional) setup when modifying default ftp port 21
5	IP-PBX(config)# **ftp allow anonymous**	(optional) permit anonymous account.

SNMP Setup

Use SNMP to monitor the remote device. Activate snmp server and assign snmp community value.

Following shows how to setup SNMP community value as “public”.

Table 3-16 SNMP Setup

Step	Command	Explanation
1	IP-PBX# IP-PBX# **configure terminal** IP-PBX(config)#	Enter as APOS command input mode.
2	IP-PBX(config)# **ip snmp server**	logging activation
3	IP-PBX(config)# **snmp community public ro 0.0.0.0**	logging user command

Network Setup Check

Setup Status Check

Following information shows IPNext default-config status.

Table 3-17 show running-config Command

```
Welcome, APOS(tm) Kernel Version 8.47.024.
Copyright (c) 1999-2008 AddPac Technology Co., Ltd.
IP-PBX# show run
Building configuration...
Current configuration:
!
version 8.47.024
!
hostname IP-PBX
!
username root password router administrator
!
interface Loopback0
  ip address 127.0.0.1 255.0.0.0
!
interface FastEthernet0/0
  no ip address
  speed auto
  no qos-control
!
interface FastEthernet0/1
  no ip address
  speed auto
  no qos-control
!
!
ftp server
http server
http document-root /hd
```

```
!
!
! VoIP configuration.
!
! Voice service voip configuration.
!
voice service voip
 fax protocol t38 redundancy 0
 fax rate 9600
 h323 call start fast
 h323 call tunnel enable
!
! Voice port configuration.
!
! FXO
voice-port 0/0
 no caller-id enable
!
! FXO
voice-port 0/1
 no caller-id enable
!
!
! Pots peer configuration.
!
! Voip peer configuration.
!
dial-peer voice 1000 voip
 destination-pattern T
 session target sip-server
 session protocol sip
 no vad
 dtmf-relay dual-mode
 huntstop
!
! Gateway configuration.
!
gateway
```

```
 h323-id
 signalling-port 1721
 no ignore-msg-from-other-gk
SIP UA configuration.
!
sip-ua
 signaling-port 5070
 rport enable
!
! MGCP configuration.
!
mgcp
 codec   g711ulaw
 vad
!
Tones
!
call-manager sip
 reg-expire-value-fixed enable
!
call-manager sscp store-event-time 3
call-manager sscp store-event-count 10
!
call-manager logger disable
call-manager logger level info
!
call-manager h323
 signalling-port 1720
!
! Network Domain interface configuration.
!
call-manager interface ip FastEthernet0/0 domain public
call-manager interface ip FastEthernet0/1 domain private
!
rtp-proxy
!
line console
!
```

```
line vty
!
character-set encoding usa ascii
mount mem 8192 /apcm
! mount mem 1024 /tmp
!
ldap
 data-dir /hd/ldap
 suffix "dc=addpac,dc=com"
 rootdn "cn=Manager,dc=addpac,dc=com"
 rootpw secret
 include /hd/ldap/schema/core.schema
 include /hd/ldap/schema/cosine.schema
 include /hd/ldap/schema/inetorgperson.schema
 include /hd/ldap/schema/addpac.schema
 include /hd/ldap/schema/apcm.schema
 include /hd/ldap/schema/apglobal.schema
 include /hd/ldap/schema/apmessage.schema
 include /hd/ldap/schema/apms.schema
 include /hd/ldap/schema/apmd.schema
 include /hd/ldap/schema/apums.schema
!
!   presence server configuration.
!
presence
 service disable
 sscp store-event-time 1
 sscp store-event-count 1
 logger disable
 logger level info
!
! media server configuration.
!
media
 rbt disable
!
ldapclient
 ldap disable
```

```
!
end
IP-PBX#
```

IP, Default Route Setup Confirmation

Following example shows network status for communication. It checks whether the network is properly connected by IPNext ping test.

Table 3-18 IP, Default Route Setup

```
IP-PBX# configure terminal
IP-PBX(config)# interface Fastethernet 0/0
IP-PBX(config-if)# ip address 172.17.201.115 255.255.0.0
IP-PBX(config-if)# exit
IP-PBX(config)# ip route 0.0.0.0 0.0.0.0 172.17.1.1
IP-PBX(config)# end
IP-PBX#
IP-PBX#
IP-PBX# write
Proceed with write? [confirm]
Building configuration...
[OK] Configuration saved to flash:/apos.cfg
IP-PBX#
IP-PBX# ping 172.17.1.1
PING 172.17.1.1 (172.17.1.1): 56 data bytes
64 bytes from 172.17.1.1: icmp_seq=0 ttl=255 time=0 ms
64 bytes from 172.17.1.1: icmp_seq=1 ttl=255 time=0 ms
64 bytes from 172.17.1.1: icmp_seq=2 ttl=255 time=0 ms
64 bytes from 172.17.1.1: icmp_seq=3 ttl=255 time=0 ms
64 bytes from 172.17.1.1: icmp_seq=4 ttl=255 time=0 ms

--- 172.17.1.1 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss'
round-trip min/avg/max = 0/0/0 ms
IP-PBX#
```

LDAP Setup

Ldap (Lightweight Directory Access Protocol) is software protocol to find file or device such as organization, individual, internet, and intranet. It is a part of directory service standard X.500 in network.

IPNext uses LDAP to setup/save the necessary IP-PBX operation data. Following example shows LDAP setup.

Table 3-19 LDAP Setup

Step	Command	Explanation

1	`IP-PBX#`
	`IP-PBX#` **`configure terminal`**
	`IP-PBX(config)#`
		Enter as APOS command input mode.

2	`IP-PBX(config)#` **`ldap`**	Enter as ldap setup mode
3	`IP-PBX(config-ldap)#` **`slapd`**	ldap activation

Table 3-20 LDAP Notification Server Setup

Step	Command	Explanation

1	`IP-PBX#`
	`IP-PBX#` **`configure terminal`**
	`IP-PBX(config)#`
		Enter as APOS command input mode.

2	`IP-PBX(config)#` **`ldap`**	Enter as ldap setup mode
3	`Router(config-ldap)#` **`notification 5389`**	ldap notification server setup and port setup (Default TCP Listen Port 5389)

Table 3-21 LDAP Client Setup

Step	Command	Explanation

1	`IP-PBX#`
	`IP-PBX#` **`configure terminal`**
	`IP-PBX(config)#`
		Enter as APOS command input mode.

2	`IP-PBX(config)#` **`ldapclient`**	Enter as ldapclient setup mode
3	`IP-PBX(config-ldapclient)#`**`name`**	Setup device nameto register in Ldap

	IPNext_test	
4	IP-PBX(config-ldapclient)# **host 127.0.0.1 389**	Ldap server IP and Port setup. Default IP 127.0.0.1 Default Port 389
5	IP-PBX(config-ldapclient)# **ldap enable**	Ldap Client service activation

LDAP Setup Confirmation

Table 3-22 LDAP Execution and Confirmation

*** Check LDAP setup status by show run**

IP-PBX#
IP-PBX# **show run**
Building configuration...
Current configuration:
!
hostname IP-PBX
!
username root password router administrator
!
interface Loopback0
 ip address 127.0.0.1 255.0.0.0
!
interface FastEthernet0/0
 ip address 172.17.201.79 255.255.0.0
 speed auto
!
interface FastEthernet0/1
 speed auto
!
--------------------------------omit-------------------------------
!
! APOS File System
!
mount hdd 0 /hd

```
mount mem 8192 /apcm
! mount mem 512 /tmp
!
share global
  workgroup WORKGROUP
  encrypt-passwords
  !
character-set encoding usa ascii
mount mem 8192 /apcm
! mount mem 1024 /tmp
!
ldap
  data-dir /hd/ldap
  suffix "dc=addpac,dc=com"
  rootdn "cn=Manager,dc=addpac,dc=com"
  rootpw secret
  include /hd/ldap/schema/core.schema
  include /hd/ldap/schema/cosine.schema
  include /hd/ldap/schema/inetorgperson.schema
  include /hd/ldap/schema/addpac.schema
  include /hd/ldap/schema/apcm.schema
  include /hd/ldap/schema/apglobal.schema
  include /hd/ldap/schema/apmessage.schema
  include /hd/ldap/schema/apms.schema
  include /hd/ldap/schema/apmd.schema
  include /hd/ldap/schema/apums.schema
```

=> When "slapd" and "notification" configuration does not exist
Execute slapd and notification server

```
!
End
```

*** LDAP Activation and LDAP Notification Server Execution**

IP-PBX #
IP-PBX # **con t**
IP-PBX (config)#
IP-PBX (config)# **ldap**
IP-PBX (config-ldap)#
IP-PBX (config-ldap)# **slapd**
LDAP daemon is now active. => LDAP active Status Check
IP-PBX(config-ldap)# **notification 5389**
IP-PBX(config-ldap)#
Start Ldap Notification Server (listen tcp/5389) => LDAP Notification Server Status Check
IP-PBX #
IP-PBX #
IP-PBX # **show run**

---------------------- skip ----------------------
! !
ldap
  data-dir /hd/ldap
  suffix "dc=addpac,dc=com"
  rootdn "cn=Manager,dc=addpac,dc=com"
  rootpw secret
  include /hd/ldap/schema/core.schema
  include /hd/ldap/schema/cosine.schema
  include /hd/ldap/schema/inetorgperson.schema
  include /hd/ldap/schema/addpac.schema
  include /hd/ldap/schema/apcm.schema
  include /hd/ldap/schema/apglobal.schema
  include /hd/ldap/schema/apmessage.schema
  include /hd/ldap/schema/apms.schema
  include /hd/ldap/schema/apmd.schema
  include /hd/ldap/schema/apums.schema
  slapd => LDAP Working Status Check
  notification 5389 => LDAP Notification Server Status Check
IP-PBX #
IP-PBX #

*** Items to be confirmed when LDAP is not properly working**

IP-PBX #
IP-PBX # **fsh**
fsh:/>
fsh:/> **ll**
total(bytes) 33552
drwxrwxrwx 1 root apos 752 Sep 13 9:10 apcm/
d--------- 1 root apos 0 Sep 13 9:09 flash/

drwxrwxrwx 1 root apos 32768 Sep 13 9:09 hd/
drwxrwxrwx 1 root apos 32 Sep 13 11:36 tmp/
fsh:/>
fsh:/> **cd hd**

=> **Check the existence of ldap data in hd. (It's normal if below lists are all included and Execute Ldap Recovery process if one is missing) Ldap Recovery is Smart Multimedia Manager Manual Prefer)**

fsh:/hd>
fsh:/hd> **ll**
d--------- 1 root apos 2048 Jan 01 12:04 addpac/
d--------- 1 root apos 2048 Jan 01 12:05 cdr/
d--------- 1 root apos 2048 Jan 01 12:05 en/
d--------- 1 root apos 2048 Jan 01 12:06 ko/
d--------- 1 root apos 2048 Jan 01 12:08 ldap/
drw-rw-rw- 1 root apos 2048 Aug 21 09:01 lost+found/
d--------- 1 root apos 2048 Jan 01 12:08 mbox/
d--------- 1 root apos 2048 Jan 01 12:08 music/
d--------- 1 root apos 2048 Jan 01 12:08 scenario/
d--------- 1 root apos 2048 Jan 01 12:08 smartclient/
d--------- 1 root apos 2048 Jan 01 12:09 storage/
d--------- 1 root apos 2048 Jan 01 12:12 tone/
d--------- 1 root apos 2048 Jan 01 12:12 voice/
fsh:/hd> **exit**

IP-PBX #
IP-PBX #

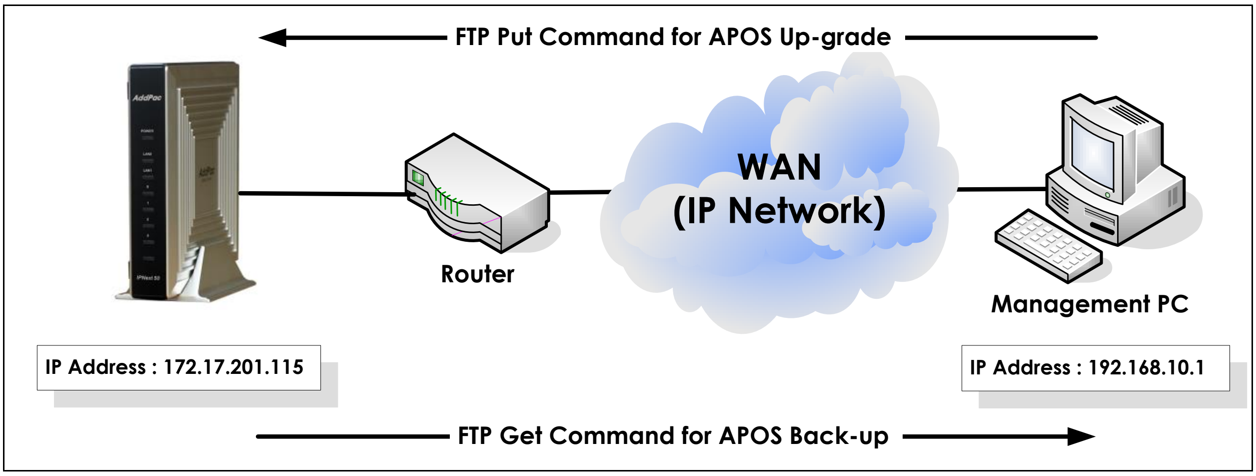
*** LDAP Client Setup and Execution**

IP-PBX# **conf t**
IP-PBX(config)# **ldapclient**
IP-PBX(config-ldapclient)# **name IPNext_ldap**
IP-PBX(config-ldapclient)# **host 127.0.0.1 389**
IP-PBX(config-ldapclient)# **ldap enable**
IP-PBX(config-ldapclient)#
[LDAP_CLIENT] Auto-Registration Complete.device id(56) => LDAP Client Working Status Check

APOS Upgrade

AddPac Technology IPNext permits to access for APOS image file transmitting by using FTP. Also, relevant protocol let user to do service on/off independently.

Upload/download network Configuration is as below.



Picture 3-5 APOS Image File Upgrade by Using FTP

FTP Service Activation

To upload/download the APOS, please activate FTP service in IPNext.

Table 3-23 FTP Server Execution

IP-PBX# **configure terminal**
IP-PBX(config)#
IP-PBX(config)# **ftp server**
IP-PBX(config)# Start File Transfer Protocol Server (listen tcp/21)
IP-PBX(config)#

APOS Upload

Use ftp in DOS screen to upload APOS of IPNext. Press window start button and type "cmd" on "run screen" to open DOS screen. Move to image file folder and access to server.

Table 3-24 APOS Upgrade (DOS Screen)

D:\ >dir

2008-08-14 15:21p <DIR> .

2006-08-14 15:21p <DIR> ..

2008-08-14 15:21p 5,057,752 IPNext_g2_v8_47_024.bin

D:\>

D:\> **ftp 172.17.113.50 => access to server**

Connected to 172.17.113.50.

220 IP-PBX FTP server (Version 8.47.010) ready.

User (172.17.113.50:(none)): root

331 Password required for root.

Password:

230 User root logged in.

ftp> **binary =>Change to binary mode**

200 Type set to I.

ftp> **hash =>Setup Hash mark input**

Hash mark printing On ftp: (2048 bytes/hash mark) .

ftp> **put IPNext_g2_v8_47_024.bin => IPNext_g2_v8_47_024.bin file uploading**

200 PORT command successful.

150 Opening BINARY mode data connection for 'IPNext_g2_v8_47_024.bin'.

###

------------ 중략 -----------

###

226 Transfer complete.

ftp: 5057752 bytes sent in 1.92Seconds 2720.69Kbytes/sec.

ftp> quit

221 Goodbye. => Even if goodbye message shows up, do not reboot IP-PBX until the "system software" is updated message shows up in console.

D:\>

Table 3-25 APOS Upgrade (Console Screen)

IP-PBX#

```
5057752(0x4fca68) bytes are received and version is "8.47.024"      => upgrade processing
IP-PBX#
IP-PBX#
The "system software" is updated.    => upgrade complete
```

Chapter 4. IPNext Initialization

To initialize (call management file, database schema and basic file) when HDD/flash memory data is damaged due to unexpected errors. Following example shows how to initialize the IPNext data.

* Following procedure uses when Smart Directory Server is damaged or to upgrade. User needs to take extra cautious.

System Setup

Interface Setup

Following example shows how to setup IP address "172.17.111.20" in interface fast Ethernet 0/0.

Table 4-1 Interface Setup

Step	Command	Explanation

1	`IP-PBX#`
	`IP-PBX# ` **`configure terminal`**
	`IP-PBX(config)#`
		Enter as APOS command input mode

2	`IP-PBX(config)# ` **`interface fastethernet 0/0`**	Enter as interface setup mode
3	`IP-PBX(config)# ` **`ip address 172.17.111.20 255.255.0.0`**	Setup IP address "172.17.111.20" in interface

Default Route Setup

This is an example of setup default router as “172.17.1.1”.

Table 4-2 Default Route Setup

Step	Command	Explanation
1	IP-PBX# IP-PBX# **configure terminal** IP-PBX(config)#	Enter as APOS command input mode.
2	IP-PBX(config)# **ip route 0.0.0.0 0.0.0.0 172.17.1.1**	Setup default route as “172.17.1.1”

System Service Setup

HTTP Server Setup

This is an example of setup HTTP Sever activation and Http document-root Directory. (Default: http server, http document-root /hd)

Table 4-3 HTTP Server Setup

Step	Command	Explanation
1	IP-PBX# IP-PBX# **configure terminal** IP-PBX(config)#	Enter as APOS command input mode
2	IP-PBX(config)# **http server**	HTTP server activation. (default)
3	IP-PBX(config)# **no http authentication**	(optional) Setup to access in server without HTTP access authentication. We recommend to use http authentication
4	IP-PBX(config)# **http document-root /hd**	Default directory setup for Web Based SMM access. (IPNext v8.47.024. after version default: /hd)

FTP Server Setup

This is an example of FTP server activation.
(Default: ftp server, ftp port 21)

Table 4-4 FTP Server Setup

Step	Command	Explanation

1	`IP-PBX#`
	`IP-PBX#` **`configure terminal`**
	`IP-PBX(config)#`
		Enter as APOS command input mode.

2	`IP-PBX(config)#` **`ftp server`**	FTP server activation. (default)

File System Initialization (Optional)

File System Initialization (Optional)

This is a setup example to initialize the file system in IPNext. Following setup will initialize saved data/file system in IPNext. User must backup the data/file by using SMM/SMT. (Please refer to Smart Multimedia Manager and IPNext System Maintenance Tool manual for backup method by using SMM and SMT)

Table 4-5 File System Initialization Setup

Step	Command	Explanation

1	`IP-PBX#`
	`IP-PBX#` **`configure terminal`**
	`IP-PBX(config)#`
		Enter as APOS command input mode.

2	`IP-PBX(config)#` **`hdd nand format`**	Initialize all file system in IPNext. It may take a while to initialize the file system.

Call-Manager Initialization

System Maintenance Tool Execution and Initialization Process

It performs system maintenance tool process and initializes process. (Please refer to IPNext System Maintenance Tool manual Chapter. 2 System Recovery (system initialize part). System Maintenance Tool installation and initialize process method.

LdapClient Setup

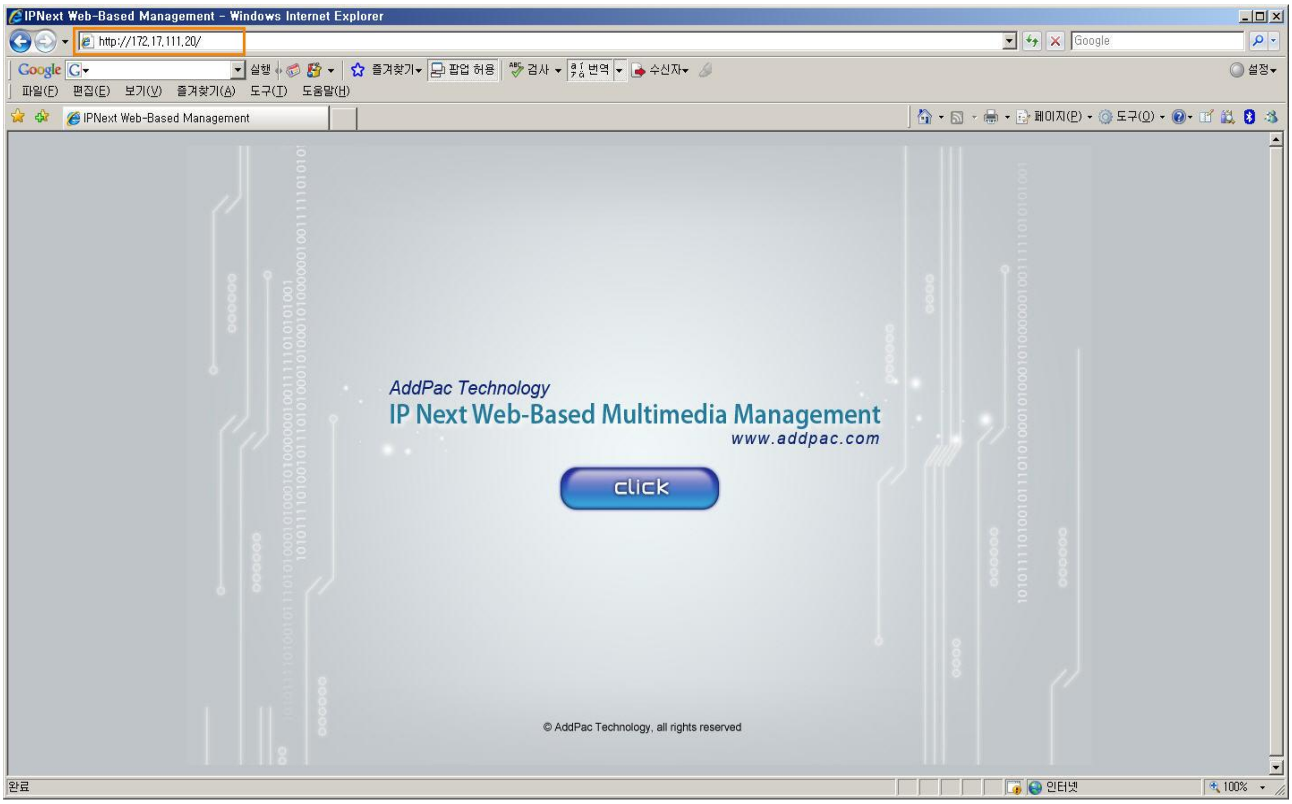
After call manager initialize process and device rebooting is completed through system maintenance tool, setup Ldapclient for call manager service.

Table 4-6 Ldap Client Setup

Step	Command	Explanation
1	IP-PBX# IP-PBX# **configure terminal** IP-PBX(config)#	Enter as APOS command input mode.
2	IP-PBX(config)# **ldapclient**	Enter as ldapclient setup mode
3	IP-PBX(config-ldapclient)# **name IPNext_test**	Device name setup to register in Ldap
4	IP-PBX(config-ldapclient)# **host 127.0.0.1 389**	Ldap server IP and Port setup. Default IP (127.0.0.1) Default Port (389)
5	IP-PBX(config-ldapclient)# **ldap enable**	Ldap Client service activation

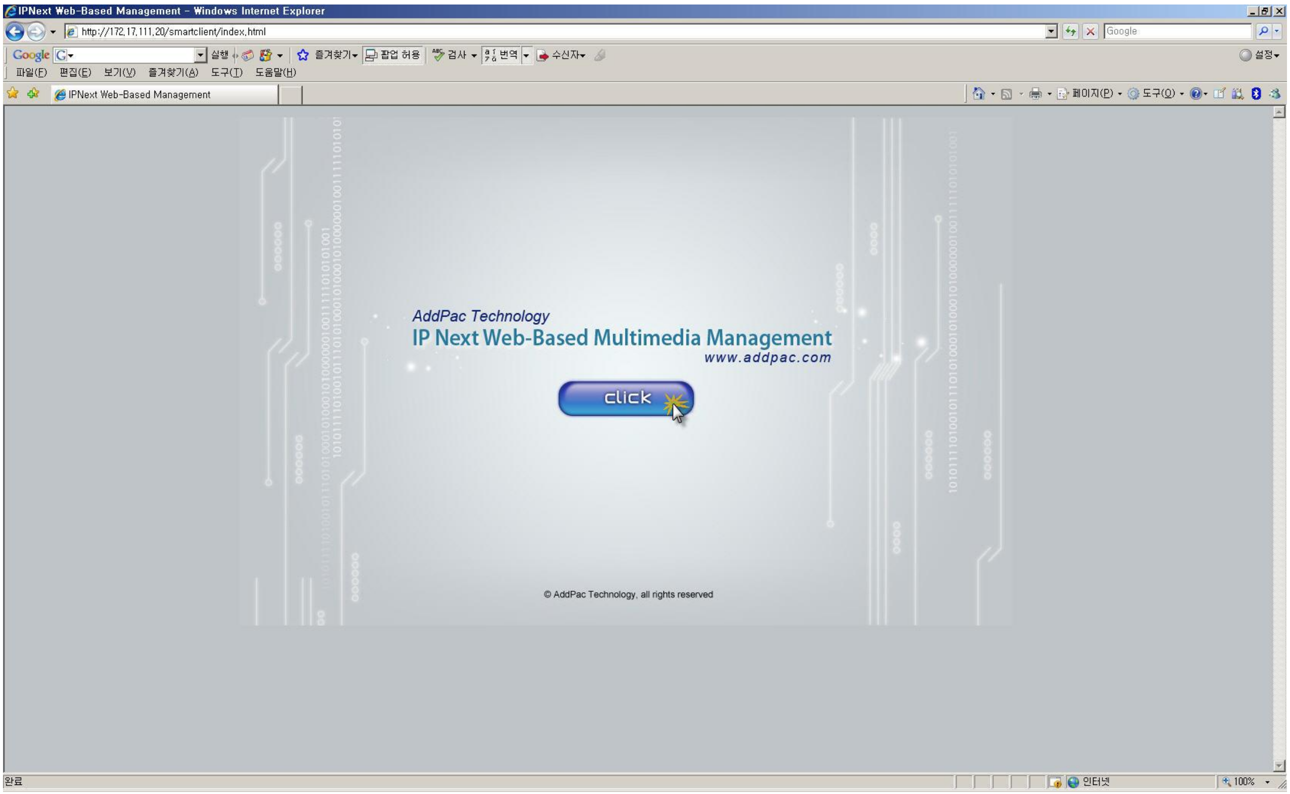
Web Based SMM Access

1) Run internet explorer screen. Enter IPNext IP address then press enter.



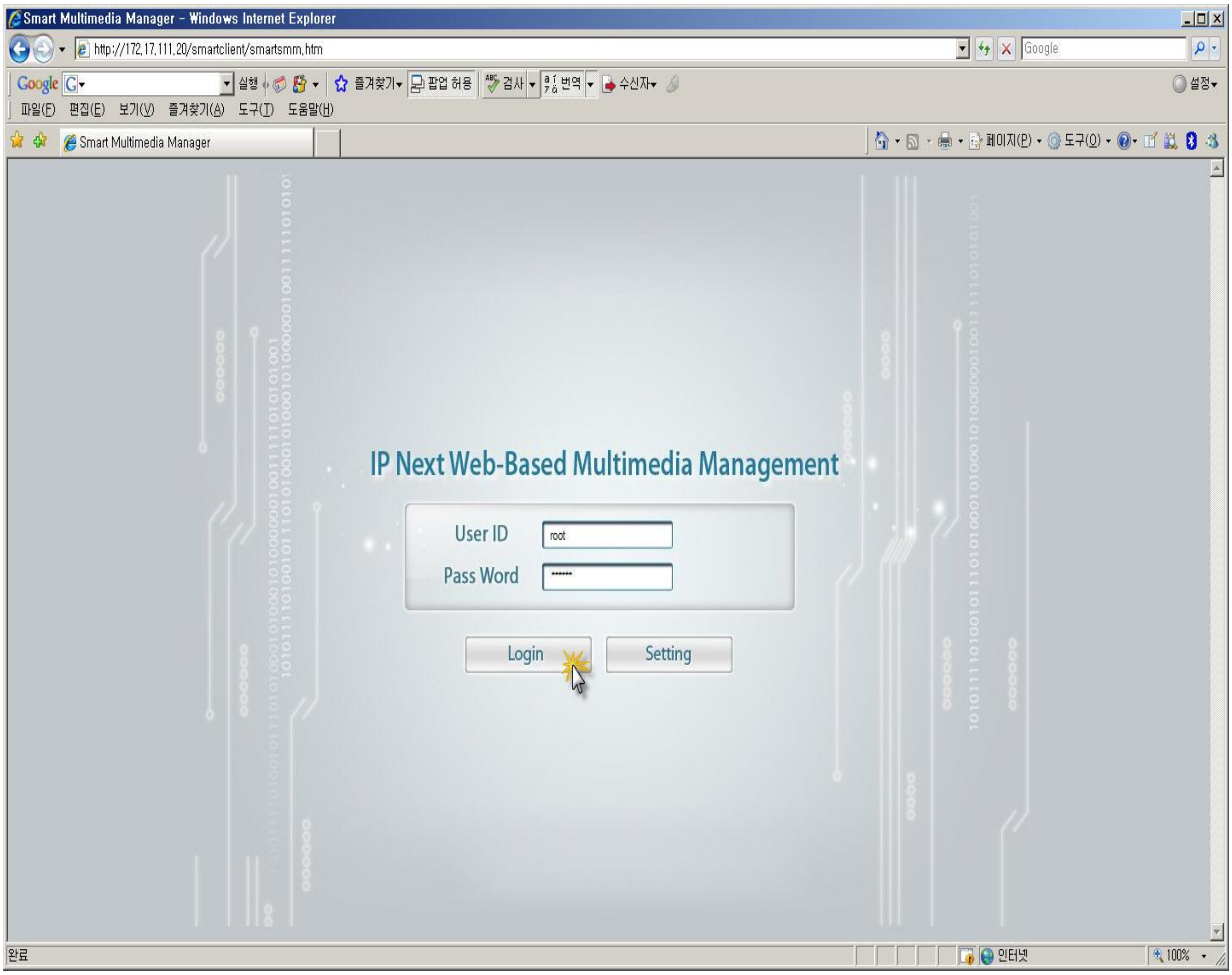
Picture 4-1 Web Based SMM Access Picture1

2) Move to LDAP input setup screen by clicking click icon.



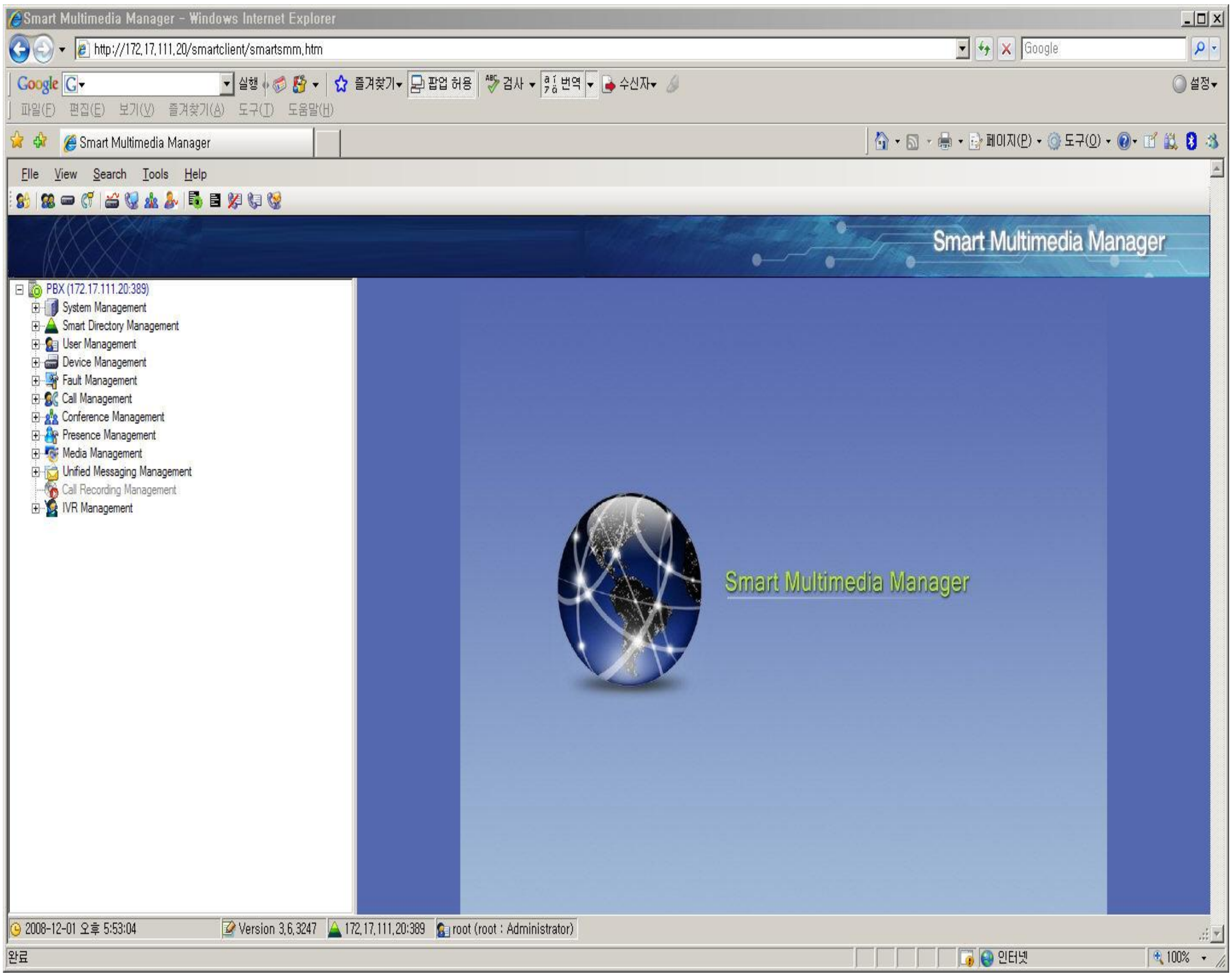
Picture 4-2 Web Based SMM Access Screen 2

3) Enter LDAP access ID, Password, Port information in IPNext. Click on Login icon. Default ID: root, Default Password: router, Default Port: 389)



Picture 4-3 Web Based SMM Access Screen 3

4) Initial main screen will be displayed after access is completed.



Picture 4-4 Web Based SMM Access Screen 4

Chapter 5. Appendix

Console Port Signal and Pin Out

Following appendix explains the specification of cable pins in IPNext.

- Console port signal and pin out (RJ-45 to DB9)
- Pin out of UTP cable (RJ-45 to RJ-45)

Console Port Signal and Pin Out

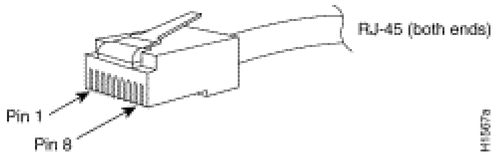
To connect router console port and terminal emulator software PC, user must use built-in RJ-45 to DB9 (Female DTE connector) cable.

Table 5-1 Console Port Pin Out

Console Port (DTE)	**RJ-45**	**DB-9**	**Console Device (PC)**
Signal	RJ-45 Pin	DB-9 Pin	Signal
RTS	1	8	CTS
DTR	2	6	DSR
TxD	3	2	RxD
GND	4	5	GND
GND	5	5	GND
RxD	6	3	TxD
DSR	7	4	DTR
CTS	8	7	RTS

UTP Cable (RJ-45 to RJ-45) Pin Out

Use RJ-45 to RJ-45 Ethernet cable to connect router and other devices (HUB). RJ-45 connector pin order is shown in Picture 4-1.



Picture 5-1 100Base-TX RJ-45 Connector

Table 5-2 Series Ethernet Cable Signal and Pin out

RJ-45	Signal	Direction	RJ-45 Pin
1	**Tx +**	→	1
2	**Tx -**	→	2
3	**Rx +**	←	3
4	**-**	**-**	4
5	**-**	**-**	5
6	**Rx -**	←	6
7	**-**	**-**	7
8	**-**	**-**	8

1. This specification is cable specification for series cable in between router and hub.
2. Use cross cable to directly connect router to PC or router to router.

Abbreviation and Terminology

Abbreviation/Term	Definition and Explanation
ADSL	Stands for Asymmetric Digital Subscriber Line. If you use ADSL, the central office will be connected to each home directly in a 1:1 method. In a down-link where data is transferred downward from the central office to the users, high-speed data communication of at least 1.5 Mb can be made. On the contrary, in an up-link from the users to the central office, communications are made very slowly. Thus, this service is called an asymmetrical service not a symmetrical service.
API	Stands for Application Programming Interface. API is a function call legend standard that defines service interfaces.
APOS	Stands for AddPac Internetworking Operation System. This is an operating system that supports the network products developed by AddPac Technology.
Authentication	Operation of verifying the identification of a person or a process. This is a security feature.
BNC Connector	IEEE 802.3 10Base-2 coaxial cable is standard connector to connect MAU(Media Access Unit)
Boot Loader	This is a chip installed into a printed circuit board used to send executable boot commands to a network device.
Bps	Stands Bits per second. Typically called bps. Refer to bit rate.
Cable Modem	This device converts analog signals to digital signals in order to enable the Internet through a cable network. Since telephone networks are made of copper wires and cable networks are made of coaxial and optical cables, the bandwidth of cable networks are much wider than that of telephone networks. However, the modulation/demodulation technology, which converts digital to analog and vice versa, is required for cable networks when data is transferred.
Call Center	Call Center is a central place where calls from customers and other people are processed systematically. Computer automation is implemented in Call Center to some degree. Typically, Call Center processes many calls simultaneously, categorizes calls, connects the calls to personnel, and records calling logs automatically. Call Center is typically used for mail order catalog firms, telemarketing firms, customer centers for PC products, and large enterprises that sell products or provide services.
Caller ID	Caller ID is phone service which sends caller’s phone number to call receiver. However, digital reader must be attached to the phone.
Category 5 cabling	One of the five-level UTP cable connection methods specified by the EIA/TIA-586 standard. Category 5 cabling enables data to be transferred at a rate of up to

	100Mbps.
Checksum	This is a method for checking the integrity of transferred data. Checksum is an integer calculated from the octet sequence obtained by a series of operations. This value is calculated by the recipient again for verification.
Coaxial cable	This coaxial cable is made of an external cylinder-type conductor that wraps an internal wire conductor. Examples of the coaxial cables used for LAN include 50Ω cables used for digital signal processing and 75Ω cables used for high-speed digital signal processing.
CODEC	Abbreviation of Coder-Decoder 1. Convert analog signal to digital bit stream by using purse code modulation, and convert digital signal to analog signal again. 2. DSP software algorithm to compress/decompress voice signal or audio signal such as Voice over IP, Voice over Frame Relay, Voice over ATM.
Console	DTE interface (It is a path to enter host)
CoS	Stands for Class of Service. CoS refers to the standard method that enables a higher-level protocol to make a lower-level protocol process messages. For the SNA lower-level area routing, CoS is used to determine the optional path for lower level area nodes to set a given session. CoS consists of a virtual path number and a transmission priority field. Also called ToS
Decryption	Decryption means restoring data to the original non-encrypted state by applying the encryption algorithm to the encrypted data in reverse.
DHCP	Stands for Dynamic Host Configuration Protocol. DHCP has a mechanism that reassigns an IP address dynamically in order for the host to recycle unnecessary IP addresses.
DNS	Stands for Domain Name Server. This is a server system used for the Internet to convert the name of a network node name to an address.
DS-3	Stands for Digital Signal level 3. This is a frame processing standard used to transmit digital signals at a rate of T3 (44.736Mbps).
DSP	Stands for Digital Signal Processor. This is a dedicated processor that processes only digital signals. DSP is used as a sub-processor for voice processing in NEXT.
DTMF	Stands for Dual Tone MultiFrequency. Two voice-band tones are simultaneously used for dialing (just like touch tones).
E&M	Stands for either recEive and transmit or Ear and Mouth. Typically, this is a trunking device used for switch-to-switch or switch-to-network two-way communications. The analog E&M interface of Cisco is a RJ-48 connector for PBX trunk lines. E&M is available for E1/T1 digital interfaces.
E1	This is a wide area digital transmission technique used mainly in Europe. E1 enables data transfer at a rate of 2,048Mbps. E1 can be lent by regular service providers for a private use.
Encryption	To apply specific algorithm for those who do not have right to access into data.
Fast Ethernet	Baseband LAN standard initiated by Xerox Corporation and co-developed by

	Xerox, Intel, and DEC. CSMA/CD is used for Ethernet networks, which operate through a variety of cables at a rate of 10Mbps. Ethernet is similar to the IEEE 802.3 standards. Refer to 10Base-2, 10Base5, 10Base-F, 10Base-T, 10Broad-36, Fast Ethernet and IEEE 802.3.
FAX	Abbreviation of Facsimile. FAX refers to the transmission of scanned texts or images to a printer or an output device connected to another phone number by using a telephone line. Once the original document is read by a facsimile, the facsimile treats the document as a fixed graphic image, and converts it to bitmap. In this digital form, data is transferred in the form of an electrical signal through a phone system. The receiving facsimile restores the data to a encoded image, and prints it on a sheet of paper.
FTP	Stands for File Transfer Protocol. FTP, which is an application protocol, is part of the TCP/IP protocol stack used for file transfer between network nodes. FTP is defined in RFC 959.
FXO	Stands for Foreign Exchange Office. The FXO interface is connected to the switching center of Public Switched Telephone Network (PSTN), and is provided by a regular phone. The FXO interface of Cisco is a station interface of the switching center or PBX on PSTN, and is a RJ-11 connector for analog connection devices.
FXS	Stands for Foreign Exchange Station. The FXS interface is directly connected to a standard phone, and provides a ring-back tone, voltage, and a dial tone. The FXS interface of Cisco is a RJ-11 connector for basic telephone service devices, keyset, and PBX.
G.711	This specifies the PCM voice coding technique of 64Kbps. Voice is encoded under G.711 in an appropriate format that enables digital voice transmission over either PSTN or PBX. G.711 is specified under the ITU-T standard of G-series recommendation.
G.723.1	This is one of the H.324 standards, and specifies a compression technique that enables voice or audio signal elements to be compressed at a very low bit transmission rate. This CODEC is related to the bit transmission rates of 5.3Kpbs and 6.3Kpbs. The high bit transmission rate is based on the MLMLQ technology, and provides high quality sounds. The low bit transmission rate is based on CELP, and ensures high flexibility for system designers. This standard is specified under the G-series ITU-T standard.
G.726	This standard specifies ADPCM coding performed at a rate of 40Kbps, 32Kbps, 24Kbps, or 16Kbps. If the PBX network is configured to support ADPCM, you can exchange ADPCM encoding voice with packet voice networks, PSTN, or PBX networks. This standard is specified under the ITU-T standard of G-series recommendation.

G.728	This standard specifies variations that ensure low delay of CELP voice compression performed at 16Kbps. The CELP voice coding should be converted to a public telephony format for transmission over either PSTN or PSTN. This standard is specified under the ITU-T standard of G-series recommendation, and defines the CELP compression that encodes G.729 voice to a stream of 8Kbps. G.728 has two variations (G.729 and G.729 Annex A), and the variations are different in terms of calculation complexity. The two variations have voice quality similar to ADPCM of 32Kbps. G.728 is specified under the ITU-T standard of G series recommendation.
Gatekeeper	This is the component of the H.323 video conference system that analyzes a caller ID, controls access authorization, and manages the subnet bandwidth. A gatekeeper is H.323 entity that provides the features that enable address conversion and LAN access control to the H.323 terminal and gateway on LAN. Gatekeepers can provide other services such as bandwidth control and search for a gateway to the H.323 terminal and gateway. This device manages a device registry on a multimedia network. The devices are registered with the gatekeeper,
H.225	ITU standard for H.225.0 session setup and packet process application. H.225.0 actually regulated various protocols such as RAS, Q.931 usage, RTP usage.
H.245	ITU standard for H.245 endpoint control.
H.323	This standard is an extension of the ITU-T standard H.320 that enables voice conferences over LAN or another packet switching network as well as video transmission over the Internet.
HBD3	A type of line code that is used in E1 line.
HDLC	Stands for High-Level Data Link Control. HDLC is a transmission protocol used in the data link layer, which is the second layer of the 7-layer OSI model. HDLC is used in the X.25 packet switching network. Data consists of frames in HDLC, and frames are transmitted through a network. The destination verifies if the frames have been successfully transmitted. The HDLC protocol includes data for controlling data flow and troubleshooting errors in a data frame.
Hookflash	This is short on-hook duration of a device such as phones during a call. Hookflash means that a phone attempts to make a dial tone recall through PBX. This is usually used to perform call transfer.
HTTP	An abbreviation of Hypertext Transfer Protocol. It is a protocol to send text file or graphic file.
IPSec	Stands for Internet Protocol Security protocol. IPSec is a still developing standard for the security of networks or the packet processing layer of network communications. In the previous security techniques, security has been included in the application layers of a communication model. IPSec is particularly useful for the implementation of remote user access through dial-up access to Virtual Private

	Networks (VPN) and regular private networks. The main advantage of IPSec is that security can be ensured without replacing an individual user PC with a new one. Cisco takes the initiative of suggesting IPSec as the standard, and has embedded support to this feature into its network router.
IPv6	IPv6 is the latest IP, and has been embedded into part of IP support into many products including the operating systems of PC. IPv6 is called IP Next Generation (IPng), that is the next-generation IP. IPv6 is the formal IETF standard. IPv6 is designed as an evolutional version of the currently used IP version 4. Network hosts or intermediate nodes that adopt either IPv4 or IPv6 can process any packets formulized by either IPv4 or IPv6; thus, the users and service provides can upgrade their IP to IPv6 individually without collaboration.
ISP	Stands for Internet Service Provider. ISP refers to service providers that provide Internet access services, Web site construction and Web hosting services to individuals or enterprises. ISP has devices and communication lines required for Internet access, and large ISPs have their own high-speed dedicated lines in order to provide services that have better quality and are less dependent on telephone network service providers to their customers. The large nationwide ISPs of the U.S. are AT&T WorldNet, IBM Global Network, MCI, Netcom, UUNet, and PSINet. Those of Korea are INet, Channeli, Netsgo, and Netian. The users access the Internet through online service providers. The main online service providers of the U.S. are America Online and Compuserve, and those of Korea are Chollian, Unitel, and Hitel.
ITU-T	Stands for International Telecommunication Union Telecommunication Standardization Sector. This is an international organization that develops global standards on communication technologies. ITU-T performs the previous tasks of CCITT.
IVR	Stands for Interactive Voice Response. IVR refers to a system that provides data in the form of recorded messages through phone lines as a response to user input in the form of human voice or mainly DTMF signal processing. Examples are banks that allow you to check balance by using a phone or automated stock quotations system.
LAN	Stands for Local Area Network. This is a low-error, high-speed data network that covers relatively small geographical areas of up to several thousand meters. LAN inter-connects workstations, peripherals, terminals, and other devices in a building or a geographically limited area. The LAN standard specifies a cable connection and signal processing method in the physical layer and data link layer of the OSI model. Reference: MAN, WAN.
Link	This is a network communication channel configured with lines or a transmission path between the transmitter and receiver and related devices. A link mainly refers

	to WAN connections, and is sometimes called a line or a transmission link.
Loopback test	This test is performed as follows: Transmit a signal or return it to the transmitter at a location on the communication path. This loopback test is usually performed to test the availability of network interfaces.
MAC Address	Stands for Media Access Control Address. This is a standard data link layer address required for any and all ports and devices connected to LAN. Other devices on a network use this address to locate a specific port within the network and to create or update a routing table and data structure. A MAC address is 6 bytes long, and is managed by IEEE. A MAC address is called as a hardware address, a MAC-layer address, or a physical address. Compare to: Network Address
MAN	Stands for Metropolitan-Area Network. This network covers the entire area of a large city. The operation area of MAN is geographically larger than that of LAN; however, is smaller than that of WAN. Compare to: LAN, WAN.
MGCP	MGCP, which is also known as H.248 or Megaco, is a standard protocol required to operate signals required during a multimedia conference or to manage sessions. This protocol defines a method of communications between the media gateway that converts the data format required for a circuit switching network to the one required for a packet switching network and the media gateway control device. MGCP may be used to set up, manage, and complete calls among multiple endpoints. Megaco and H.248 are the improved version of MGCP.
NAT	Stands for Network Address Translation. NAT is a mechanism for reducing the need for globally unique IP addresses. NAT allows you to access the Internet as an organization whose address is not globally unique converts the address to an address space where the address can be globally routed. NAT is also called Network Address Translator.
NTP	Stands for Network Time Protocol. NTP, which is built based on TCP, sets a local time accurately based on a wireless clock and an atomic clock on the Internet. NTP can synchronize a distributed clock in the unit of milliseconds for a long time.
PABX	Stands for Private Automatic Branch eXchange. PABX is a switch for phones used at enterprises. PABX is used in Europe, while PBX is used in the U.S.
Packet	A packet is a group of logical data that contains user data and a header where control data is contained. A packet mainly refers to the unit of network layer data.
PBX	Stands for Private Branch eXchange. PBX, which is located in a subscriber building, is a digital or analog phone switchboard used to connect private networks to public phone networks.
PING	Stands for Packet INternet Groper. ICMP echo-processes a response between messages. PING is used for an IP network to test the accessibility of network devices.

Point to Point Connection	One of the two basic connection types. In ATM, the point to point connection may be either a one-way connection or a two-way connection between two ATM end systems.
Pont to Multipoint Connection	One of the two basic connection types. In ATM, the point to multipoint connection is a one-way connection method that enables a transmitting end-system (root node) to be connected to multiple receiving end-systems (riff). Compare to: Point to Point Connection
POTS	An abbreviation of Plain Old Telephone Service. Reference Item: PSTN.
PPP	Stands for Point-to-Point Protocol. This protocol is the advanced version of SLIP that enables a router-to-router connection or a host-to-network connection through synchronous or asynchronous lines. SLIP is designed to be used on an IP, while PPP is used along with network layer protocols such as IP, IPX, and ARA. PPP has a bulletin board security mechanism such as CHAP and PAP. PPP has two subprotocols, LCP and NCP. Reference: CHAP, LCP, NCP, PAP, and SLIP
Protocol Stack	This is a collection of communication protocols that inter-work with one another and that process communications in part or all of the seven layers of the OSI reference model. All protocol stacks are not related to each layer of the OSI model, and one protocol of a stack can process multiple layers at one time. TCP/IP is a typical protocol stack.
PSTN	An abbreviation of Public Switched Telephone Network. A general term for various telephony network services. It is also known as POTS.
PVC	Stands for either Permanent Virtual Circuit or Permanent Virtual Connection. PVC is a virtual circuit installed permanently. PVC allows you to reduce a bandwidth for setting up or releasing a circuit when a specific virtual circuit must always exist. As an ATM term, PVC is called Permanent Virtual Connection.
Q.931 Signaling	This is an ITU standard that specifies ISDN signal processing methods. The H.225.0 standard uses a variation of Q.931 to set up or disconnect the session of H.323.
QoS	Stands for Quality of Service. QoS is the criterion of measuring the performance (e.g. transmission quality and service availability) of a transmission system.
RAM	An abbreviation of Random-Access Memory. It is a memory which microprocessor can read or write.
RAS	An abbreviation of Registration, Admission, and Status protocol. This protocol finds gatekeeper and use H.323 for communication.
RISC	An abbreviation of Reduced Instruction Set Computing.
IP-PBX	This is a network layer device that determines the optional route to which network traffic is delivered by using one or more metrics. A router forwards packets from a network to another network based on the network layer information. A router is sometimes called a gateway. (A gateway in this meaning is getting older.)

	Compare to: Gateway; Reference: Relay
RS-232	Physical layer interface. It is known as EIA/TIA-232.
RTCP	An abbreviation of RTP Control Protocol. It monitors QoS (IPv6 RTP connection) and delivers the processing session related information. Reference Item: RTP (Real-Time Transport Protocol)
RTP	1. Stands for Routing Table Protocol. This VINES routing protocol based on RIP distributes network topology data, and helps the VINES server that searches for adjoining clients, servers, and routers. A delay time is used as a routing metric. Reference: SRTP 2. Stands for Rapid Transport Protocol. RTP provides facing and error recovery services to the APPN data when the data passes the APPN network. RTP allows you to check error recovery and flow control synthetically. RTP does not recover but prevents traffic congestion. 3. Stands for Real-Time Transport Protocol. This is one of the IPv6 protocols. RTP is designed to enable the synthetic network transmission feature in the application that transfers real-time data such as audio, video, and simulation data through multicast or unicast network services. RTP enables the real-time application to identify a payload type, specify a sequence number, perform time-stamping, and to monitor a transmission procedure.
SIP	Stands for Session Initiation Protocol. SIP is an application layer control protocol based on very simple texts, and allows more than one user to make, correct, or complete a session. Examples of sessions include remote conferences, phones, meetings, event notifications, and instant messaging on the Internet. SIP is independent to lower-level packet protocols (e.g. TCP, UDP, ATM, and X.25).
SNMP	Stands for Simple Network Management Protocol. This is a network management protocol almost dedicated to TCP/IP networks. SNMP monitors and controls network devices, and manages setup, collection of statistical data, operation performance, and security features. Reference: SGMP and SNMP2
SSCP	An abbreviation of Smart Service Control Protocol. It is a protocol between AddPac exclusive terminal and server. It is used for powerful system and service control by improving SIP
T1	Facility for digital WAN communication business. T1 send DS-1 format data at a speed of 1.5444Mbps through phone switching network Comparison Item: E1. Reference Item: AMI, B8ZS, DS-1.
TCP/IP	An abbreviation of Transmission Control Protocol/Internet Protocol. It is a general name for protocol suit to support worldwide internetwork establishment. TCP and IP are well known protocols. Reference Item: IP, TCAP.
Telco	An abbreviation of Telephone Company. Telco indicates a company that provides phone service to the customers; It usually means independent inner city phone providers such as bell operating company. Sometimes, it means a company that

	provides long distance phone provider.
Telnet	A standard terminal emulation protocol that is included in TCP/IP protocol stack. Telnet is used for remote terminal connection. Telnet is defined in RFC 854.
VDSL	An abbreviation of Very-high-data-rate Digital Subscriber Line. VDSL provides 13Mbps~52Mbps downstream and 1.5Mbps~2.3Mbps through single twisted fair cooper line. A range of VDSL is restricted in between 1,000ft and 4,500ft. Compare Item: ADSL, HDSL, SDSL.
VoIP	An abbreviation of Voice over IP. It is capable of delivering same function, reliability, and voice quality such as POTS. Voice traffic (ex. Call/fax) can be delivered by using Voice over IP function. DSP breaks down the voice signal into frames, and these frames are saved in voice packet.
VPN	An abbreviation of Virtual Private Network. Because of traffic encrypt, TCP/IP network can be moved safely.
WAN	An abbreviation of Wide-Area Network. It is a data communication network to provide service to the users in wide area and use digital transmission service that is provided by communication operator. (EX. Frame relay, SMDS, and X.25 are examples of WAN) Compare Items: LAN, MAN.

Warranty

Name	IPNext (Serial No.:)			
Date	20 . . . ~ 20 . . . (1 Year)			
User	Address			
	Company		TEL	
	Name			
Seller	Address			
	Company		TEL	
	Name			

Product Warranty Regulation

- If the product breakdown under the normal operation, we will repair the product for free of charge.
- Our company provides the repair, exchange without extra charge. Any removed parts will belong to our company.
- This paper never guarantees the breakdown due to natural disaster, catastrophe, transportation, modification and etc.
- An extra service charge will be incurred if the service is not included in this warranty. This warranty only valid in Korea.
- Addpac is not responsible for a claim for damages from the third party.
- A product repair, exchange and refund follow the consumer protection board.

AddPac Technology

2F, Kyeong-An Bldg., 769-12 Yeoksam- Dong.

Kangnam-gu, Seoul. 135-080

Phone (02) 568-3848

Fax (02) 568-3847

Email: sales@addpac.com

Homepage: www.addpac.com