

# VoIP Gateway Series

## FXO Service Features



**AddPac**

AddPac Technology

Sales and Marketing

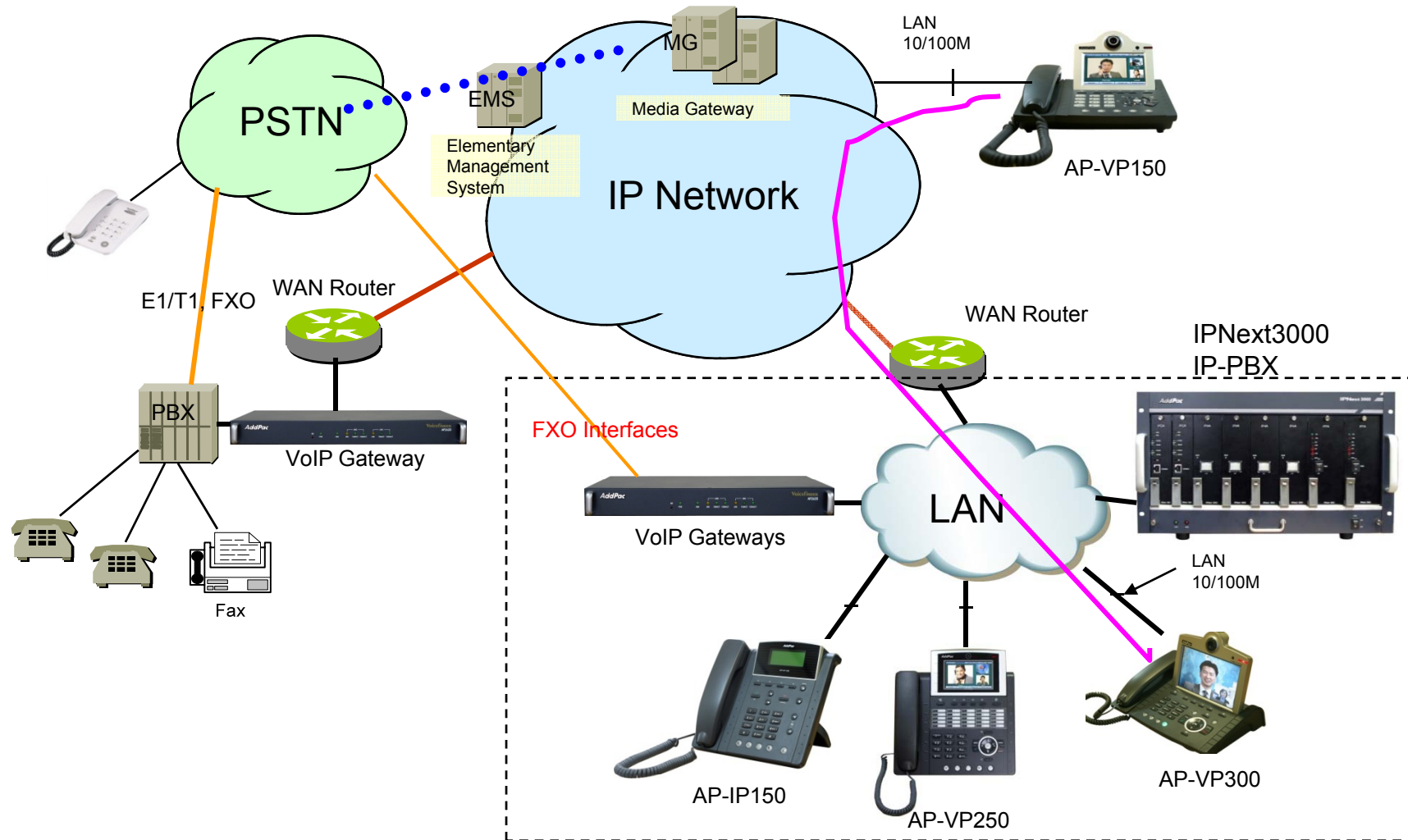
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  - Voice-confirmed connect function
  - Clear down tone reg. and detect function
  - Hook flash timing
  - Ring number and detect timing



# Network Diagram for FXO Call




# FXO Service Feature List

|                      |  |
|----------------------|--|
| FXO Service Features | Polarity inverse detection function                                  |
|                      | Caller-ID detection function   |
|                      | PSTN backup or busy-out function with hook off in case of power down |
|                      | Clear down tone registration and detect function                     |
|                      | Hook flash timing setting function                                   |
|                      | Ring detect timeout setting function                                 |
|                      | Ring number setting function   |
|                      | Voice-confirmed connect function                                     |




# FXO VoIP Gateways for SMB (4~8 Port)

| Product     | AP1002  | AP1005  | AP1100  |                 |
|-------------|---|---|---|-----------------|
|             |  |  |  |                 |
| Model       |   |   | Type  | VoIP            |
|             |   |   | A   | 4 FXS,<br>4 FXO |
|             |   |   | B   | 8 FXS           |
|             |   |   | C   | 8 FXO           |
| VoIP Ports  | 2-Port FXS &<br>2-Port FXO  | 4-Port FXO  | Up to 8-Port  |                 |
| Signaling   | SIP,H.323   | SIP, H.323  | SIP, H.323  |                 |
| Module Slot | N/A   | N/A   | N/A   |                 |
| LAN Port    | 2   | 2   | 2   |                 |
| Console     | Support   | Support   | Support   |                 |
| Power       | External<br>Adaptor   | External<br>Adaptor   | External<br>Adaptor   |                 |




# FXO VoIP Gateways (~24Port)

| Product           | AP1700  | AP1800  | AP2610  | AP2620  | AP2120N   | AP2330  |
|-------------------|---|---|---|---|---|---|
|                   |  |  |  |  |  |  |
| Available Modules | AP-FXS4<br>AP-FXO4<br>AP-FXS2O2<br>AP-E&M4<br>AP-E1                               | AP-N1-FXS8<br>AP-N1-FXO8<br>AP-N1-FXS4O4<br>AP-N1-E1                              | AP-FXS4<br>AP-FXO4<br>AP-FXS2O2<br>AP-E&M4  | AP-FXS4<br>AP-FXO4<br>AP-FXS2O2<br>AP-E&M4<br>AP-E1                                 | AP-N1-FXS8<br>AP-N1-FXO8<br>AP-N1-FXS4O4  | AP-N1-FXS8<br>AP-N1-FXO8<br>AP-N1-FXS4O4  |
| Analog Ports      | Up to 8   | Up to 16  | Up to 4   | Up to 8   | Up to 16  | Up to 24  |
| Signaling         | SIP, H.323  | SIP, H.323  | SIP, H.323  | SIP, H.323  | SIP, H.323  | SIP, H.323  |
| Digital E1/T1     | Up to 2E1   | Up to 2E1   | N/A   | Up to 2E1   | N/A   | N/A   |
| E&M               | Support   | N/A*  | Support   | Support   | Support   | N/A*  |
| Module Slot       | Two(2)  | Two(2)  | One(1)  | Two(2)  | Two(2)  | Three(3)  |
| LAN Port          | 2   | 2   | 2   | 2   | 2   | 2   |
| Console           | 1   | 1   | 1   | 1   | 1   | 1   |
| Power             | Single PSU  | Single PSU  | Single PSU  | Single PSU  | Single PSU  | Single PSU  |

# FXO VoIP Gateways (~32Port)

| Product           | AP2340  | AP2640  | AP2650  |
|-------------------|---|---|---|
|                   |  |  |  |
| Available Modules | AP-N1-FXS8<br>AP-N1-FXO8<br>AP-N1-FXS404  | AP-FXS8<br>AP-FXO8<br>AP-FXS404<br>AP-E&M8<br>AP-E1                                 | AP-FXS8<br>AP-FXO8<br>AP-FXS404<br>AP-E&M8<br>AP-E1                                 |
| Analog Ports      | Up to 32  | Up to 32  | Up to 32  |
| Signaling         | SIP, H.323  | SIP, H.323  | SIP, H.323  |
| Digital E1/T1     | N/A   | Up to 2E1   | Up to 2E1   |
| E&M               | N/A*  | Support   | Support   |
| Module Slot       | Four(4)   | Four(4)   | Four(4)   |
| LAN Port          | 2   | 2   | 2   |
| Console           | 1   | 1   | 1   |
| Power             | Single PSU  | Single PSU  | Dual PSU  |






# FXO Large Capacity VoIP Gateways

| Product                     | AP3100P   | AP6500  | AP6800  |
|-----------------------------|---|---|---|
|                             |  |  |  |
| Available VoIP Modules      | AP-FXS4, AP-FXO4<br>AP-FXS2O2, AP-E&M4  | AP-N1-FXS32<br>AP-N1-FXO32  | AP-N1-FXS32<br>AP-N1-FXO32  |
| Analog Ports                | Up to 60<br>(4Port Module x 15)   | Up to 128<br>(32 Port Module x 4)   | Up to 256<br>(32 Port Module x 8)   |
| Signaling                   | SIP, H.323  | SIP, H.323  | SIP, H.323  |
| CPU Redundancy (Dual CPU)   | N/A   | Support (Option)  | Support (Option)  |
| E&M                         | Support   | N/A   | N/A   |
| Module Slot for VoIP Module | 15 Slots  | 4 Slots   | 8 Slots   |
| LAN Port                    | 2   | 2   | 2   |
| Console                     | 1   | 1   | 1   |
| Dual Power Supply (Option)  | Support   | Support   | Support   |






# FXO VoIP Modules

DSP

| Target                          | VoIP Modules     | Module Features              | Module Picture  |
|---------------------------------|------------------|------------------------------|---|
| AP1700,AP2610<br>AP2620,AP3100P | <b>AP-FXO4</b>   | 4-Port FXO Module            |    |
| AP1700,AP2610<br>AP2620,AP3100P | <b>AP-FXS2O2</b> | 2-Port FXS&2-Port FXO Module |    |
| AP1700,AP2610<br>AP2620,AP3100P | <b>AP-FXS3O1</b> | 3-Port FXS&1-Port FXO Module |   |
| AP2120N<br>AP2640<br>AP2650     | <b>AP-FXO8</b>   | 8-Port FXO Module            |  |
| AP2120N<br>AP2640<br>AP2650     | <b>AP-FXS4O4</b> | 4-Port FXS&4-Port FXO Module |  |

# FXO VoIP Modules

DSP

| Target                     | VoIP Modules        | Module Features              | Module Picture   |
|----------------------------|---------------------|------------------------------|--|
| AP1800<br>AP2330<br>AP2340 | <b>AP-N1-FXO8</b>   | 8-Port FXO Module            |   |
| AP1800<br>AP2330<br>AP2340 | <b>AP-N1-FXS4O4</b> | 4-Port FXS&4-Port FXO Module |   |
| AP6500<br>AP6800           | <b>AP-N1-FXO32</b>  | 32-Port FXO Module           |  |

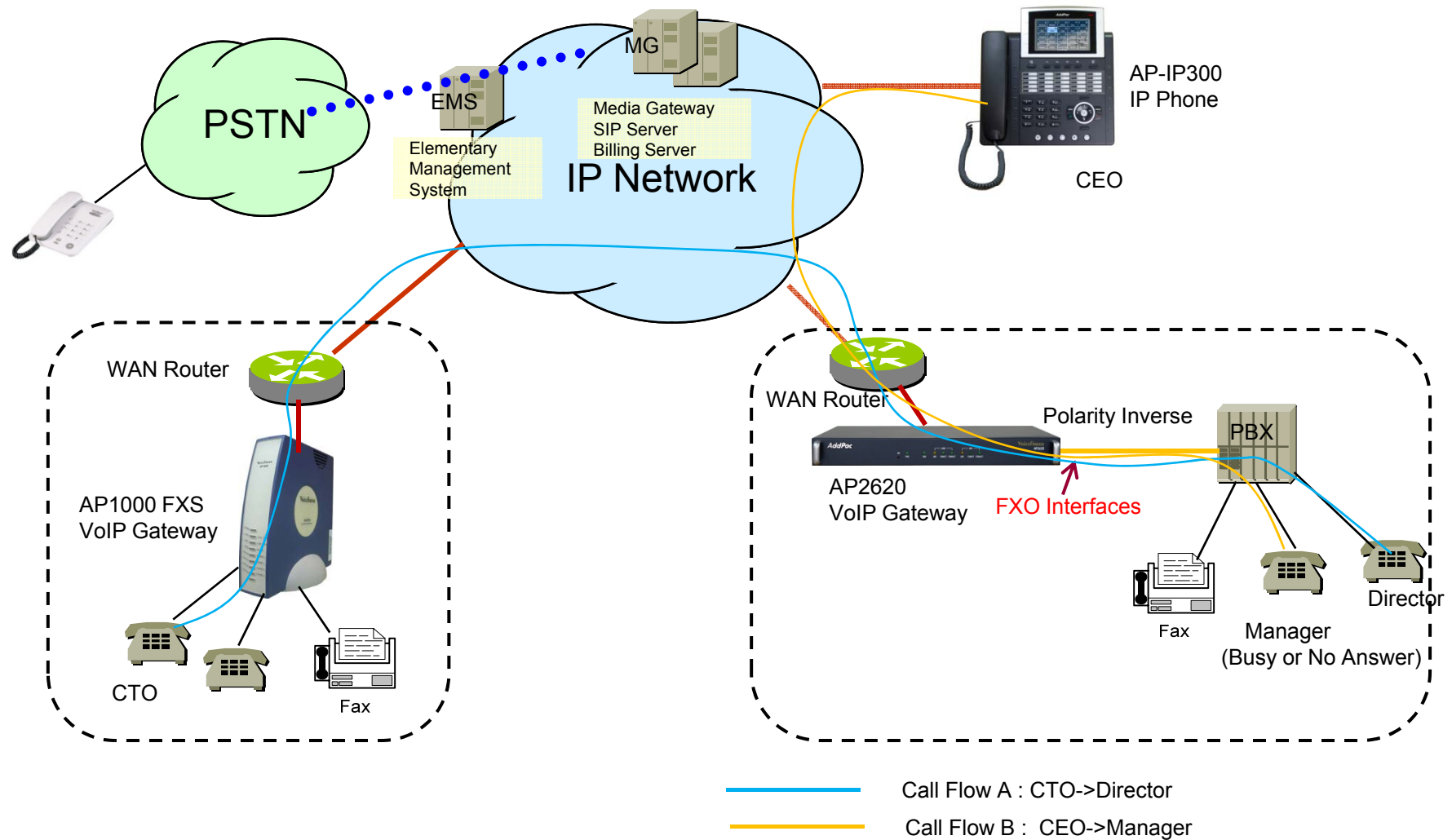
# Polarity Inverse Detection Function

- Polarity inverse detection function
  - The FXO port detects the polarity inverse signal coming from Legacy PBX
  - When there is an incoming VoIP call via the FXO port to Legacy PBX, the gateway sends call connect message to Softswitch after detecting the polarity inverse signal on the FXO port.
  - Using Polarity Inverse Signal, a accurate billing service is available.

## When polarity inverse function is enabled

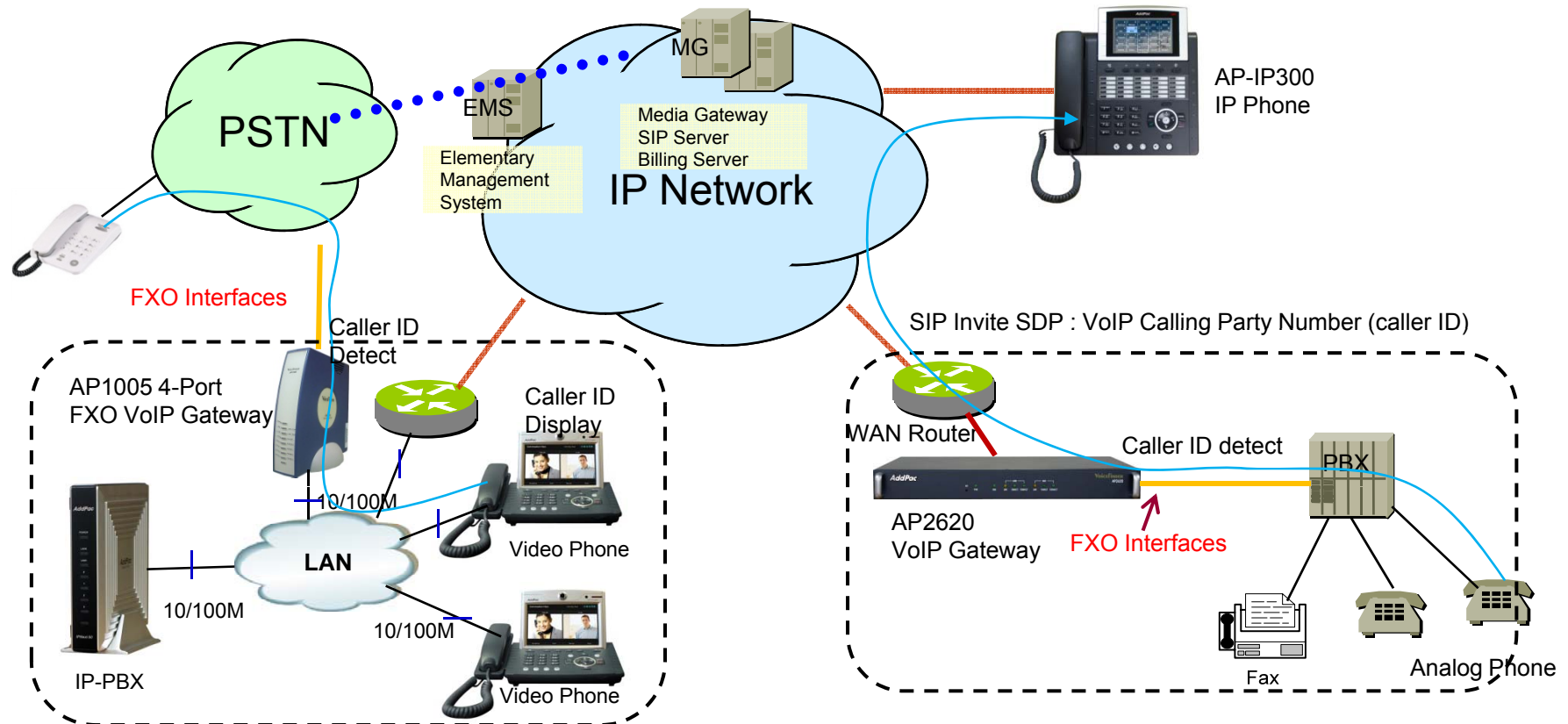
- In case of A flow, Billing is start when the director hooks off.
- In case of B flow, Billing is not start because manager port is busy or no answer

# Polarity Inverse Detection Function



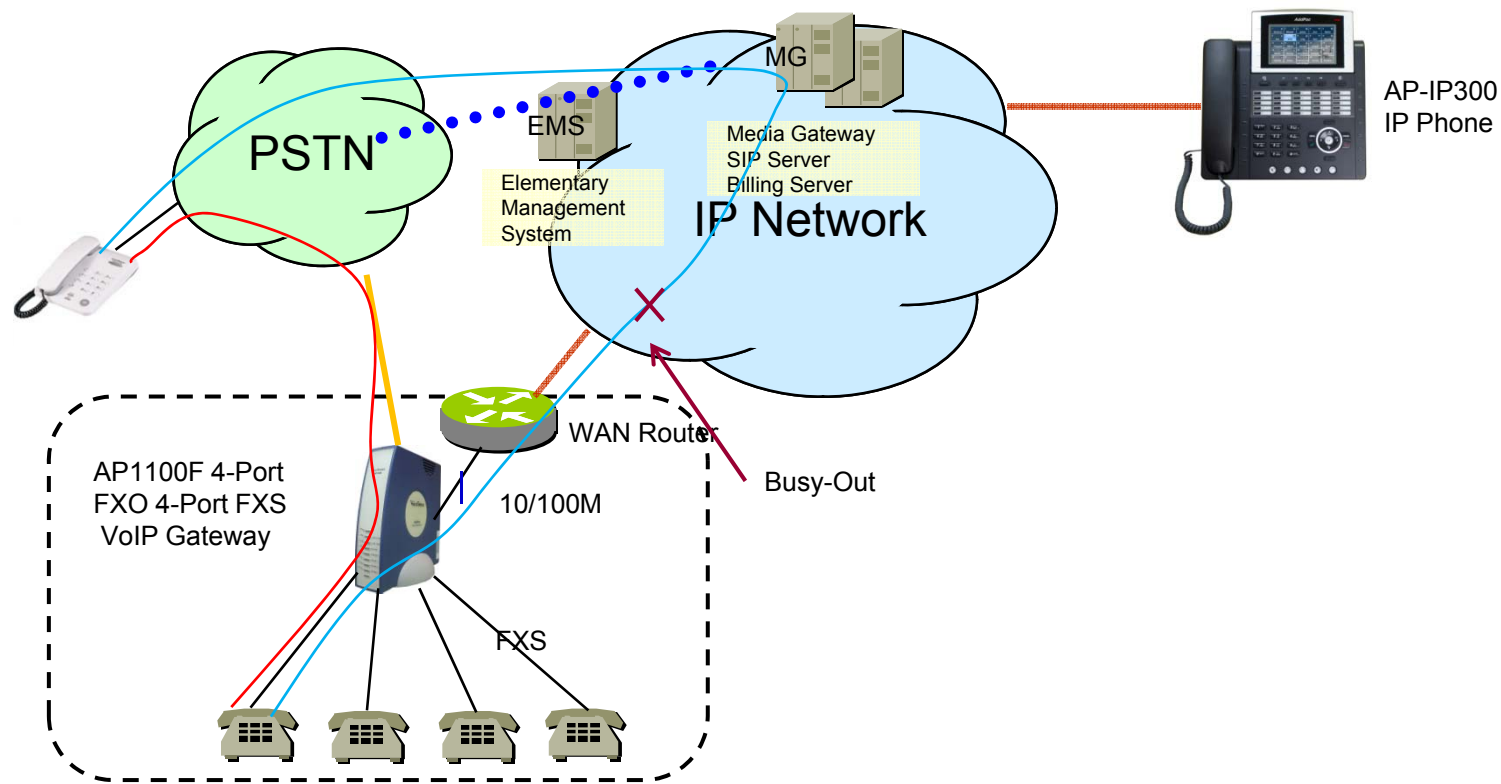
# Caller ID Detect Function

- Caller-ID detection function
  - The FXO port is connected to PSTN or PBX, and is able to detect Caller-ID.
  - When a VoIP call is originated from the FXO port, the FXO port detects the caller-ID and uses the number as the VoIP calling party number.



# PSTN backup or busy-out function

- PSTN backup or busy-out function
  - VoIP call can not be made when the gateway is in busy out state. User can be communicated continually using PSTN backup function.
  - Busy Out State : LAN interface is down, Softswitch is down, etc



# FXO Service Description

| Features   | Description  |
|--|--|
| Voice-confirmed connect function                 | When FXO port is connected to PBX extension and the subscriber does take the call, connect message is not sent to sender side and billing is not included.   |
| Ring number setting function                     | Use this command to set the maximum number of rings to be detected before answering a call over an FXO voice port. In that case, the FXO interface would answer if the equipment online did not answer the incoming call in the configured number of rings.  |
| Clear down tone registration and detect function | Clear-down-tone detects call termination of FXO port connected to and generated from PSTN or PBX. The value of clear-down-tone (busy tone, fast busy tone) is different for each PSTN and PBX. So use voice class clear-down-tone for registration process in global configuration mode.   |
| Hook flash timing setting function               | Different from call-transfer, you need to press hook-flash button twice for conference call. Basically, it takes 500 ms (0.5 sec) to recognize hook-flash button from the AddPac gateway. If you think 500ms (0.5 sec) is too short, you can change hook-flash detect timeout value when hook-flash duration time of PBX is more than 500ms. |



# 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](mailto:sales@addpac.com)