# Huawei IAD Products and Solutions

HUAWEI TECHNOLOGIES CO., LTD.

HUAWEI

# Huawei IAD Products and Solutions

- **High quality**
- **High benefits**
- **Low costs**

With a high quality, high benefits and low costs, Huawei IAD makes rapid response to customer requirements and helps the carriers provide the best integrated access solutions to enterprise, family and SOHO customers to achieve all-win.

The IAD is an important component of the Next Generation Network (NGN) and IP Multimedia Subsystem (IMS) solutions of Huawei. It is used to provide Voice over IP (VoIP) / Fax over IP (FoIP) and data access solutions to enterprise, family and SOHO users.
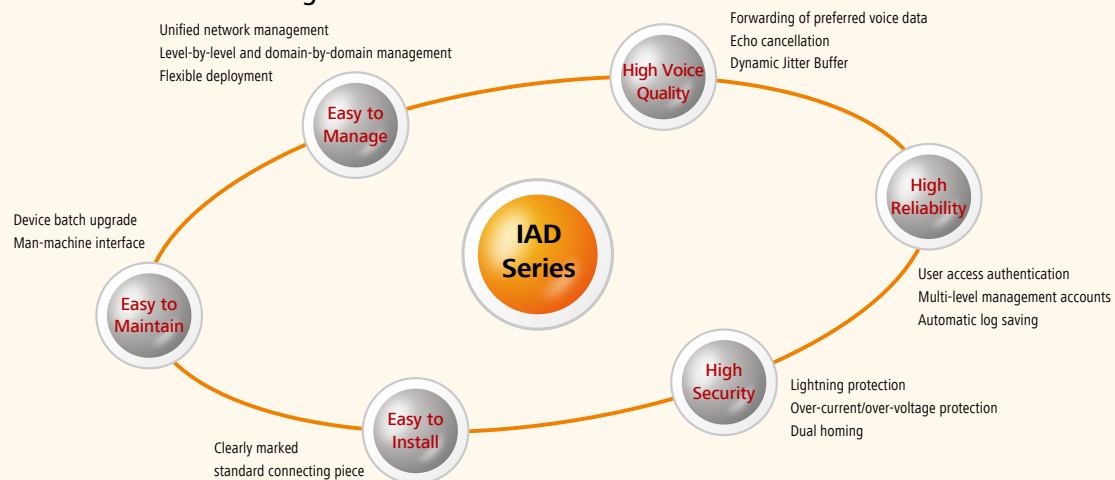
As a VoIP/FoIP gateway, the IAD is applied at the user access layer of NGN/IMS to provide integrated access of voice, data and fax services. It is closely integrated with the existing broadband network and meets the integrated access requirements of modern telecom services by bearing multiple services through one cable. Its flexible networking configuration and QoS policy can provide effective quality assurance to delay-sensitive voice service and packet loss-sensitive fax service and enable end users to enjoy high-bandwidth data service and high-quality voice services.

Huawei IAD uses VoIP technology, converts analog data into IP packets for transmission, and can provide abundant data and voice services:

- Basic PSTN services: Voice, Fax
- Supplementary services: Caller ID Display, Call Forwarding, Three-Party service, Call Waiting, Distinctive Ringing, IP Centrex, etc.
- Intelligent services: Color Ring Back Tone (CRBT), Two Numbers on One Phone

### Huawei IAD also has the following six features.

Unified network management
Level-by-level and domain-by-domain management
Flexible deployment

Forwarding of preferred voice data
Echo cancellation
Dynamic Jitter Buffer

Easy to Manage

High Voice Quality

High Reliability

IAD Series

Device batch upgrade
Man-machine interface

User access authentication
Multi-level management accounts
Automatic log saving

Easy to Maintain

High Security

Easy to Install

Lightning protection
Over-current/over-voltage protection
Dual homing

Clearly marked
standard connecting piece

## High Voice Quality

The high voice quality of the IAD ensures:
- Voice Activity Detection (VAD)
- Comfortable Noise Generation (CNG)
- Jitter Buffer (JB) Dynamic Adjustment
- Echo Cancellation (EC)
- Packet Loss Compensation

## High Reliability

With high reliability, the IAD:
- Monitors power supply failures and device temperature, provides complete fault detection and alarm, and reduces fault recovery duration.
- Adopts the watch dog timer (WDT) technology so that the IAD can be recovered automatically when a software exception or fault occurs.
- Provides over-current protection and over-voltage protection for the power supply and interfaces.

## High Security

With high security, the IAD ensures:
- Registration Authentication: Use information such as device identification code and authentication key is used to register with the NGN/IMS to complete service certification and authentication.
- Session Authentication: Supports call authentication during a call.
- User Authentication: The management system performs authorization and authentication on users to prevent unauthorized users from logging in to and operating the device.
- The IAD provides multiple types of log information such as operation and alarm to record device operation and maintenance status. The operation log records the login information and operation process of users. The alarm log records the major events during system operation.

## Easy to Install

The IAD adopts a box structure and is generally installed on the desktop, in the corridor or equipment room. The IAD provides a standard external interface that is clearly marked to help installation and cable connection. The IAD adopts a standard connecting piece and does not require special installation tools. Generally, to make a call, only three commands need to be configured.

## Easy to Maintain

The IAD provides strong and user-friendly maintenance function:
- Make device configuration and status detection more rapid and simple by maintaining the serial port/TELNET.
- Provide FTP/TFTP for loading through network port.
- Provide good device maintenance, fault detection and alarm functions.

## Customer Value

# Easy to Manage

The IAD provides multiple management methods and performs management based on the local serial port console of the command line and remote Telnet management.

- Support Web-based management.



- UCEMS centralized network management

The Unified Communications Element Management System (UCEMS) can manage multiple IADs at the same time, and support the northbound interface capability of CORBA, SNMP and SOAP. The UCEMS are classified into two parts: server and client. The latter can be deployed flexibly at different locations.
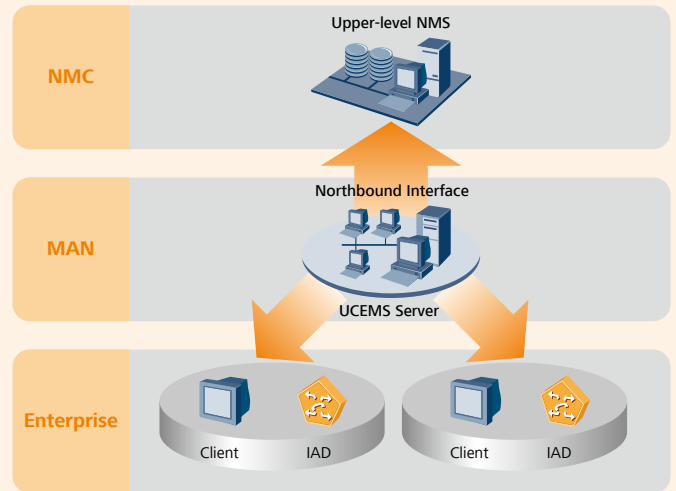


The UCEMS provides diversified management functions.

| Management Function | Description |
| --- | --- |
| System management | Provides area management, equipment supplier management, and system equipment management. |
| Fault management | Provides fault browsing, alarm event shielding and analysis, alarm color customization, and alarm box support. |
| Configuration management | Provides parameter management, protocol management, port management, and data backup. |
| Security management | Browses network management user logs and monitors network management user operation function. |
| Log management | Provides protocol management function, and realizes the configuration and management of protocol parameters adopted in the communication of IADs and softswitch devices. |
| Maintenance management | Configures file servers, terminal versions, and upgrade wizards, monitors upgrade process, queries upgrade records, device version information, and CPU usage of the devices, and performs ping test on IADs. |
| Northbound interfaces | Supports SNMP northbound interface and CORBA northbound interface. |

# Product Specifications

## Product Specifications

The IAD provides access products and customizes the best access solutions for enterprise, family and SOHO users.

| Type | Desktop | | | | Rack | |
|---|---|---|---|---|---|---|
| Model | IAD101H | IAD102H | IAD104H | IAD208E(M) | IAD132E(T)-16S/32S/8O8S/16O16S/8O24S | IAD1280-160/280 |
| Appearance | | | | | | |

| Parameter | IAD101H/102H/104H | IAD208E(M) | IAD132E(T) | IAD1280 |
|---|---|---|---|---|
| Maximum user capacity | IAD101H, 1-line analog phone and 1-line analog trunk, 1-line data user<br>IAD102H, 2-line analog phone and 1-line analog trunk, 1-line data user<br>IAD104H, 4-line analog phone, 1-line data user | 8-line analog phone, 8-line data user | IAD132E(T)-16S, 16-line analog phone<br>IAD132E(T)-32S, 32-line analog phone<br>IAD132E(T)-8O8S, 8-line analog phone and 8-line analog trunk<br>IAD132E(T)-16O16S, 16-line analog phone and 16-line analog trunk<br>IAD132E(T)-8O24S, 24-line analog phone and 8-line analog trunk | IAD1280-160, 160-line analog phone<br>IAD1280-280, 280-line analog phone |
| Power supply | AC input: 100–240 V, 50 Hz/60 Hz; | AC input: 100–240 V, 50 Hz/60 Hz; Supports POE remote power supply. | AC input: 100–240 V, 50 Hz/60 Hz | |
| Maximum power consumption | <8W | 36W | IAD132E(T)-16S: 66W<br>IAD132E(T)-32S: 86W<br>IAD132E(T)-8O8S: 61W<br>IAD132E(T)-16O16S: 76W<br>IAD132E(T)-8O24S: 81W | IAD1280-160: 400W<br>IAD1280-280: 550W |
| Box size | IAD101H/102H: 146 (long) x 190 (wide) x 36 (high) mm<br>IAD104H: 234 (long) x 170 (wide) x 36 (high) mm | 283 (long) x 206 (wide) x 57 (high) mm | 436 (long) x 365 (wide) x 42 (high) mm | 436 (long) x 420 (wide) x 264 (high) mm |
| Protocol | MGCP, SIP | | | SIP |
| Network function | PPPoE, DHCP, NAT, etc. | PPPoE, DHCP, etc. | | |
| Featured function | Convergence Ratio: 1:1 | Convergence Ratio: 1:1<br>Hybrid access through one cable | Convergence Ratio: 1:1<br>Cascading | The convergence ratio of IAD1280-160 is about 1:1.<br>The convergence ratio of IAD1280-280 is about 1:2. |
| QoS | • Support QoS assurance based on 802.1p, 802.1q, ToS, DSCP and IP Precedence.<br>• Support JITTER BUFFER, VAD, CNG, EC and packet loss compensation.<br>• Embed Ethernet switch, support forwarding of preferred voice data.<br>• Support RFC2833.<br>• Control the flow. | | • Support QoS assurance based on 802.1p, 802.1q, ToS, DSCP and IP Precedence.<br>• Support VAD, CNG, EC, packet loss compensation and JITTER BUFFER.<br>• Embed Ethernet switch, support forwarding of preferred voice data.<br>• Support RFC 2833. | • Support QoS assurance based on 802.1p, 802.1q, ToS, DSCP and IP Precedence.<br>• Support the forwarding of preferred voice data.<br>• Support VAD, CNG, EC, packet loss compensation and JITTER BUFFER.<br>• Support RFC2833 and RFC2198. |
| Maintenance and management | • Support the unified network management function.<br>• Support remote or local upgrade, configuration and maintenance over HTTP/FTP.<br>• Support the recovery and backup of configuration files and parameters.<br>• Support system log recording.<br>• Support unified alarm report. | | • Support the unified network management function.<br>• Support remote or local upgrade, configuration and maintenance over HTTP/FTP.<br>• Support the recovery and backup of configuration files and parameters.<br>• Support system log recording.<br>• Support unified alarm report.<br>• Support Web-based management. | • Support the unified network management function.<br>• Support remote or local upgrade, configuration and maintenance over HTTP/FTP.<br>• Support the recovery and backup of data files.<br>• Support system log recording.<br>• Support unified alarm report. |

# Application Scenarios

# Voice Access Solution for Medium and Small Enterprises — PON+IAD

**Networking Description:**

The ONU enables the connection of broadband with enterprise cabinet while the IAD provides integrated access for enterprises.

**Solution Features:**

- The auxiliary IAD of the PON is mainly used to provide voice services over single-point or distributed access for medium and small enterprises. Only a small number of data services are provided. It is suitable for various non-IT enterprises or enterprises focusing on voice services.
- Service specifications are flexible:

  a) Applicable to enterprises with many requirements for voice services.

  b) Applicable to small Internet enterprises. Internet access over phone is available at both the single line and seat, and auxiliary lines are not required.

  c) Applicable to mini and SOHO enterprises and small branches. The IAD is installed on the desktop.
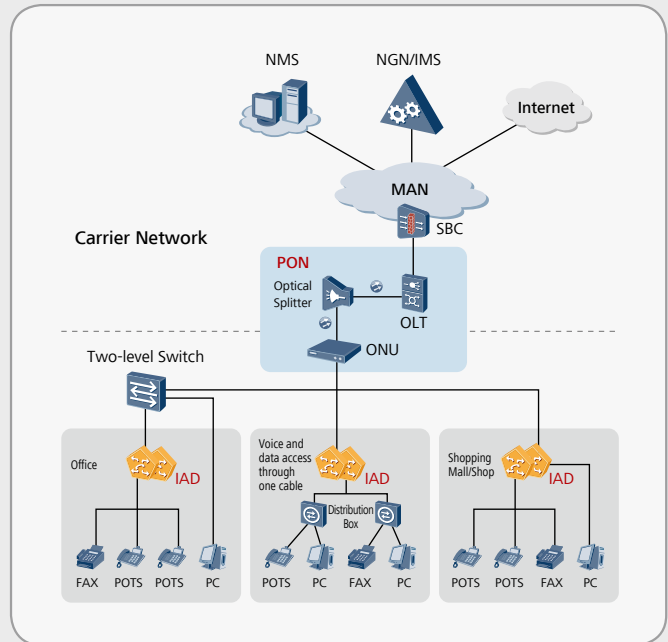
# Voice Access Solution for Medium and Small Enterprises — Existing MAN + IAD

**Networking Description:**

The existing MAN provides data services to enterprises and shopping malls and provides voice services through IAD access.

**Solution Features:**

- Use the existing MAN and provide voice services by deploying the IAD.
- Service specifications are flexible:

  a) Applicable to enterprises with many requirements for voice services.

  b) Applicable to small Internet enterprises. Internet access over phone is available at both the single line and seat, and auxiliary lines are not required.

  c) Applicable to mini and SOHO enterprises and small branches. The IAD is installed on the desktop.
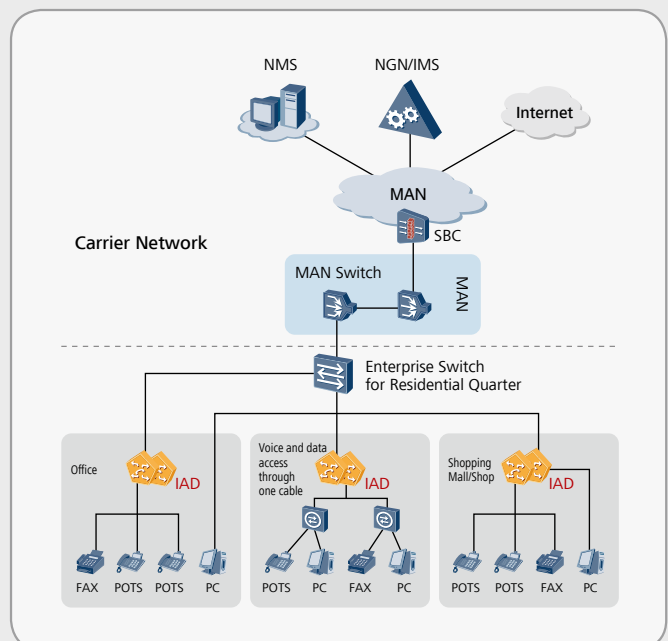
# Integrated Office Solution for Shopping Malls ⠿

**Networking Description:**

The ONU enables the connection of broadband with the equipment rooms of shopping malls while the IAD provides integrated access for shopping malls.

**Solution Features:**

- Hybrid access to shops through one cable and simple deployment: Each shop is accessed through network cables, and voice, fax and broadband Internet access are provided to meet the business office requirements.
- Service specifications are flexible: Provide four (A, B, C and D) different configuration specifications to meet the distribution requirements of various data, voice and fax applications.
- Support IP-Centrex: Short numbers are used in the internal calls of the shopping mall to improve the working efficiency.
- Support portable numbers to protect the interests of the shop owners (phone and fax number resources) and number transfer application is not required.
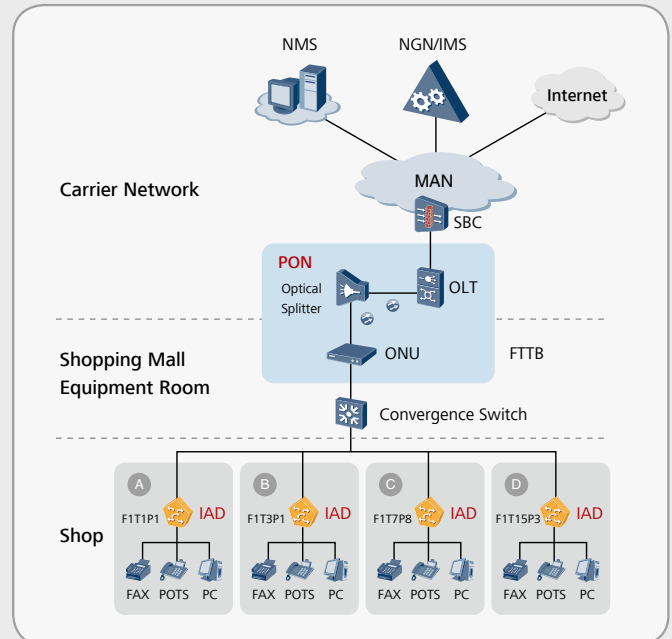


# Phone Bar Solution ⠿

**Networking Description:**

The IAD is accessed over ADSL or EPON.

**Solution Features:**

- Rapid deployment: Phone bars enable access through broadband cables, which are flexible and rapid.
- Diversified capacity specifications: They are suitable for various types of phone bars and can be selected based on business requirements. IAD products with specifications ranging from 4 ports to 32 ports are available and linear expansion is allowed.
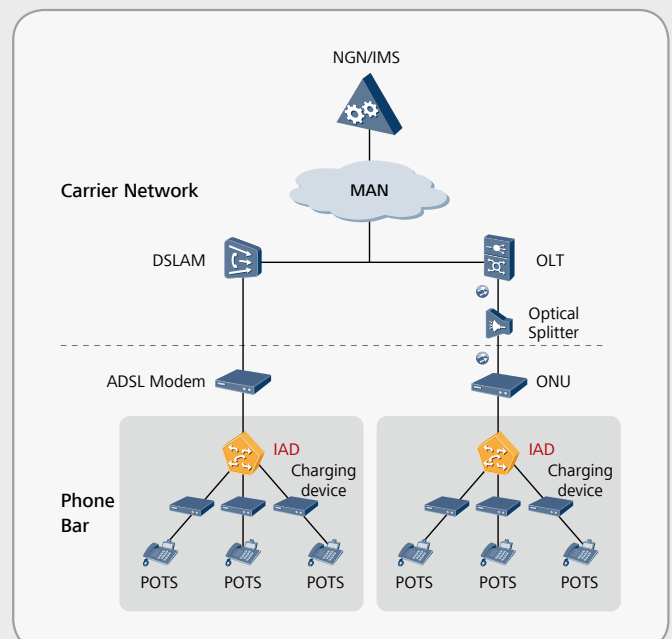
# Fiber To the Building (FTTB) + IAD Home Gateway Solution ⁝⁝
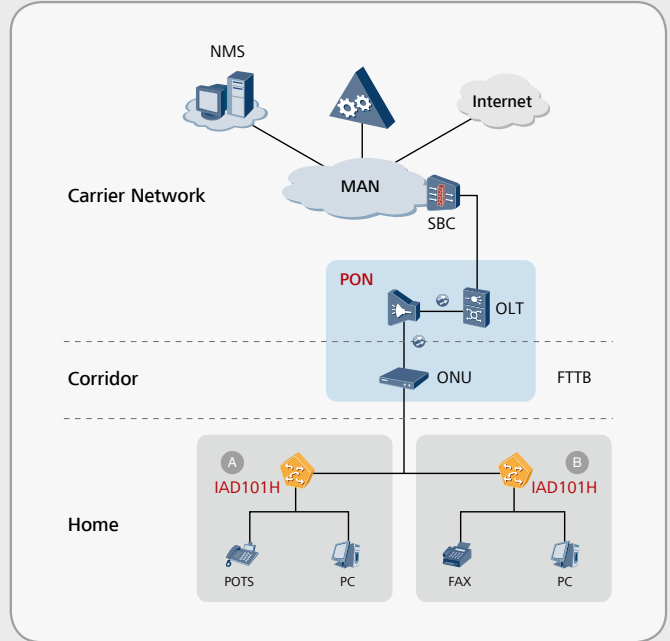
## Networking Description:
The ONU is deployed in the corridor, and the IAD101H is deployed at home as a home gateway.

## Application Scope:
Newly-built residential quarters and fiber-to-the-curb (FTTC) solutions.

## Solution Features:
- Hybrid access through one cable and simple deployment: The ONU provides 8, 16, or 24 ports to enable corridor switching and implements the hybrid access through one cable with the IAD, thus reducing the deployment cost and improving the satisfaction of family users.
- Automatic dialing of PPPoE: The IAD gateway has a built-in PPPoE to enable the automatic Internet access when the PC is powered on, thus simplifying the dialing operation.
- Flexible service combination: The family gateway solutions A and B are provided for different families.
- Meet the requirements of common phones and Internet access service.
- Add the fax service, which is suitable for the deployment of SOHO services.



# Fiber To the Curb (FTTC) + IAD Home Gateway Solution ⁝⁝
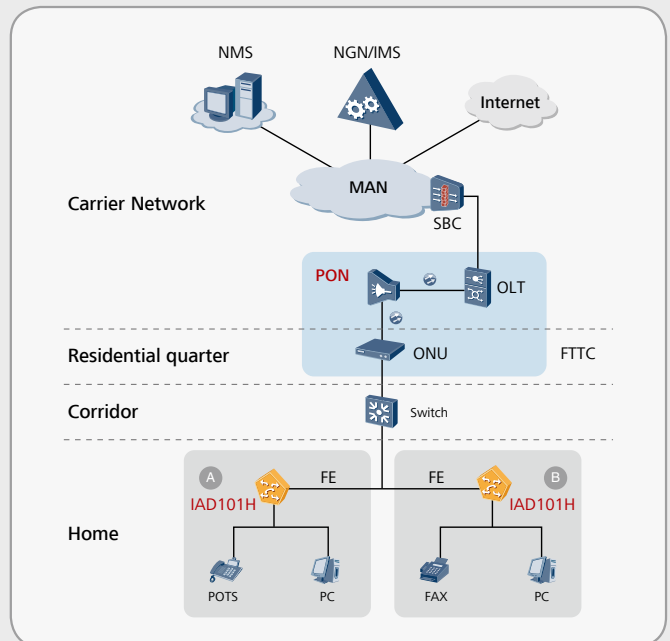
## Networking Description:
The ONU is deployed in residential quarters, and accesses a home through the original LAN switch in the corridor. The IAD101H is deployed at home as a home gateway.

## Application Scope:
The network of the residential quarter has been reconstructed and broadband devices have been deployed in the corridor.

## Solution Features:
- The ONU provides 8, 16, or 24 ports to enable corridor switch and implements the hybrid access through one cable with the IAD, thus preventing overlapped cabling, reducing the deployment cost, and improving the satisfaction of family users.
- Automatic dialing of PPPoE: The IAD gateway has a built-in PPPoE to enable the automatic Internet access when the PC is powered on, thus simplifying the dialing operation.
- Flexible service combination: The family gateway solutions A and B are provided for different families.
- Meet the requirements of common phones and Internet access service.
- Add the fax service, which is suitable for the deployment of SOHO services.

# FTTB/FTTC+IAD Integrated Access Solution for Residential Quarters ⊹
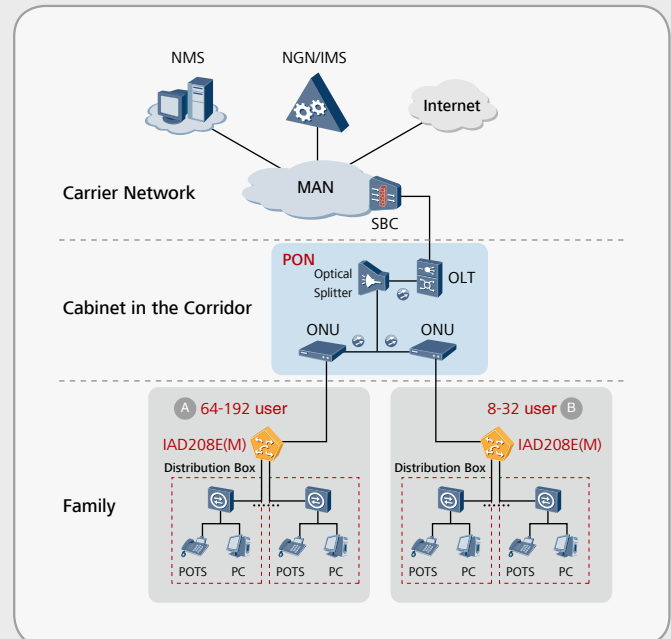
## Networking Description:

The IAD208E (M) is deployed in the cabinet in the corridor and the ONU is deployed in the equipment room of the corridor or residential quarters.

## Application Scope:

Newly-built residential quarters, building's network, or FTTC reconstruction.

## Solution Features:

- Hybrid access through one cable and simple deployment: The IAD bears both voice and data services in the downlink, implements the hybrid access through one cable without the distribution frame. The deployment is very fast, and only passive distribution box needs to be deployed in the houses of users.
- Convenient maintenance: Complicated configuration is not required in the houses of users. Moreover, as the IAD is deployed in the corridor, maintenance is not performed in the houses of users.



# Auxiliary SoftCo – Meeting Multiple Access Requirements of Medium and Small Branches ⊹

## Networking Description:

The IAD132E (T) and the IAD1280 are deployed in small and medium branches respectively.

## Solution Features:

- Flexible access, and convenient deployment
- The IAD132E(T) allows outgoing calls from local PSTN, and uninterrupted communication is available by using the local PSTN in the case of network failure.
- The IAD1280 is highly integrated. Its 160/280-line large capacity access fully meets the internal dialing requirements of an organization.
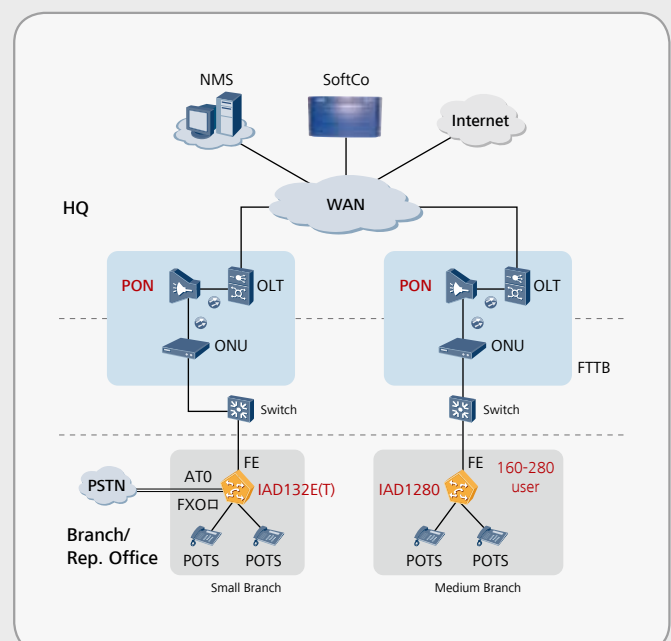
# Application Cases

After being tested on the market for about a decade, IAD products and solutions have won a good reputation. They have been deployed on a large scale by over 100 carriers in over 60 countries and regions worldwide. The total shipment exceeds 10 million lines, and the market share in domestic carriers exceeds 70%. Huawei IAD has become the top brand in the industry.

Huawei IAD not only has a strong access capability and good compatibility, but also involves complete product lines. It can meet the requirements of various application scenarios.

- Strong access capability: Support hybrid access of voice, fax and data.
- Good compatibility: Besides being completely compatible with Huawei NGN/IMS, Huawei IAD is also fully compatible with other mainstream NGNs/IMSs.
- Complete product lines: Provide terminals with 1/2/4/8/16/32/160/280 ports.

Main partners include China Mobile, China Telecom, China Unicom, Embratel in Brazil, Chilsat in Chile, QSC in Germany, China Motion in Hong Kong, Convergia in Canada, Intelecom in USA, Far East Telecom in Russia, Telmex in Columbia, ICE in Costarica, BSNL in India, Telefónica in Spain, Colombia Móvil in Columbia, and SingTel in Singapore.

# China Telecom Heilongjiang Branch – Complete Access Solution for Residential Quarter with Hybrid Access Through One Cable ⚫
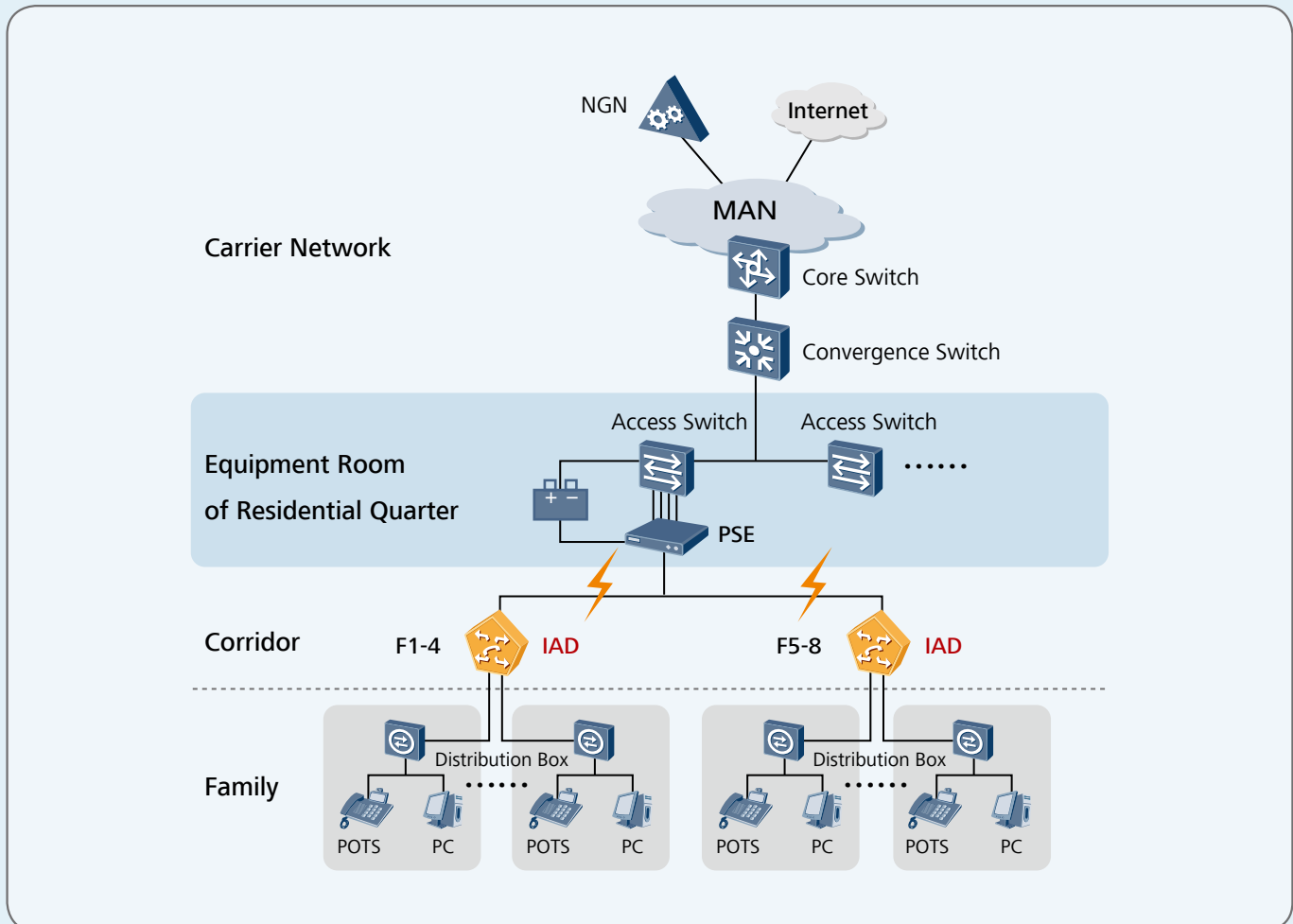
## Challenges Ahead

- China Telecom Heilongjiang Branch develops broadband and fixed-line services at the residential areas. The access devices are deployed in the corridor, and extra power supply equipment and switches are required, which involves a high investment cost and complicated installation. Moreover, services will become unavailable in case of power failure.
- How to implement FTTC smoothly should be considered.

## Huawei's Solution

- The IAD provides the hybrid access through one cable solution, and supports data and voice confluence. With Power over Ethernet (PoE), the IAD can be deployed in the corridor, which saves a lot of switches, and perfectly resolves the difficulties of "hybrid access through one cable" and "remote power distribution".
- The solution features natural heat radiation and no noise, and is suitable to be deployed in the corridor or on the desktop.
- Access over FE and interconnection with xPON are supported, which realizes the FTTC smoothly.

## Customer Value

- Hybrid access through one cable, simple installation, and low investment cost
- Service continuity in case of power failure, high reliability, low maintenance cost, high customer satisfaction
- Large-scale deployment in large cities in the province, remarkably increase of market share

# China Mobile Jiangsu Branch – Ideal Enterprise Voice Access Solution by Integration with the PON ⁘

## Challenges Ahead

- Enterprises realize optical access with broadband EPON equipment terminal, and thus realize voice access at a low cost.
- Different voice access solutions ranging from 1 to 200 lines are required based on enterprise size.

## Huawei's Solution

- By integrating with the PON, the IAD provides low-cost enterprise voice access solutions, supports the access to carrier networks over FE in the uplink and provides analog phone interface in the downlink.
- The IAD can be deployed in different floors or in different buildings, and enables direct voice access through network cables.
- Different products are available to support 1-32 port capacity and cascading of multiple products, thus saving Ethernet switches.
- The IAD provides centralized network management to manage scattered devices in a unified manner.

## Customer Value

- Convenient and rapid deployment, simple and operable application model, and improved efficiency and benefits.
- Supporting portable numbers, which protects the enterprise number resources, enhances customer loyalty, and avoids customer churn.
- Widely used in medium and small enterprises, finance industry, retail industry, hotels, schools and governments.
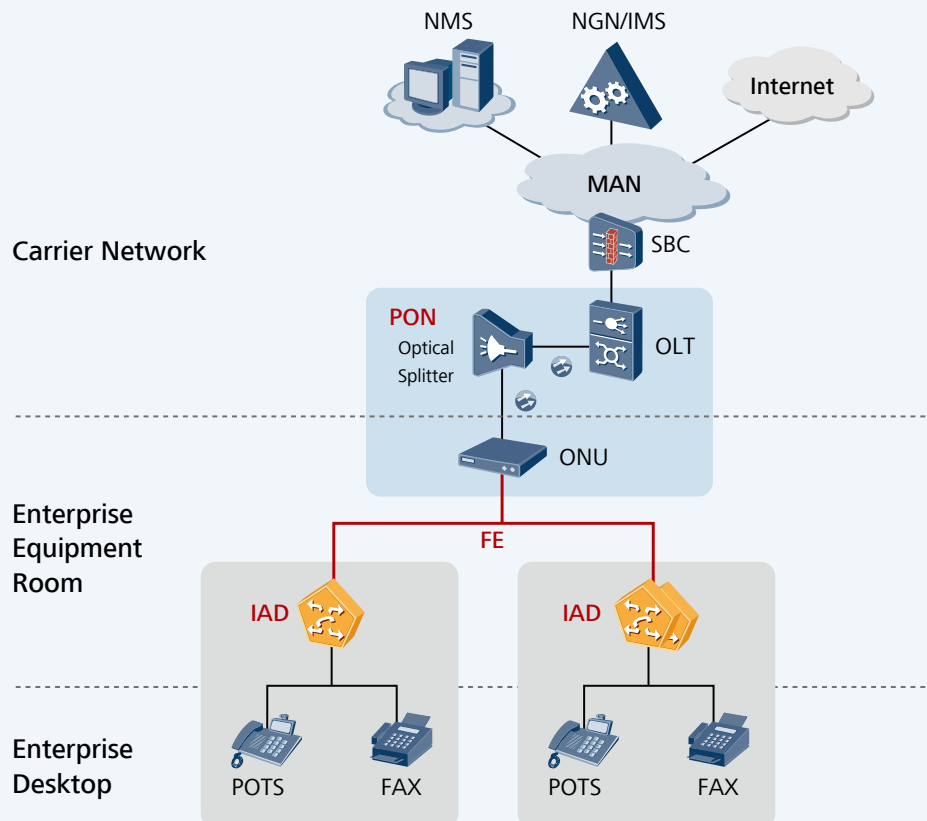
**Trademark Notice**

, HUAWEI, and are trademarks or registered trademarks of Huawei Technologies Co., Ltd.

Other trademarks, product, service and company names mentioned are the property of their respective owners.

**NO WARRANTY**

THE CONTENTS OF THIS MANUAL ARE PROVIDED "AS IS". EXCEPT AS REQUIRED BY APPLICABLE LAWS, NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE MADE IN RELATION TO THE ACCURACY, RELIABILITY OR CONTENTS OF THIS MANUAL.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO CASE SHALL HUAWEI TECHNOLOGIES CO., LTD BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, OR LOST PROFITS, BUSINESS, REVENUE, DATA, GOODWILL OR ANTICIPATED SAVINGS ARISING OUT OF OR IN CONNECTION WITH THE USE OF THIS MANUAL.