WA653DE
Outdoor **AP**

- 🔵 **Highly reliable wireless access**
- 🔵 **High network security**
- 🔵 **Superb environment adaptability**
- 🔵 **Convenient deployment and configuration**
- 🔵 **Easy device management and maintenance**

Highly reliable wireless access

- Complies with IEEE 802.11a/b/g/n.
- Uses 2.4 GHz or 5 GHz frequency band, with a rate of up to 600 Mbit/s.
- Supports QoS to implement priority-based scheduling for voice, video, and data services.
- Supports wired link integrity check.

High network security

- Supports WEP, WPA/WPA2, and 802.1x authentication and encryption.

Superb environment adaptability

- Supports waterproof grade IP67, improving protection performance.
- Working temperature: –40°C to +60°C
- Uses built-in smart antennas to adapt to the radio environment, preventing radio interference, increasing the signal noise ratio, improving the throughput, and speeding up the access rate.

Convenient deployment and configuration

- Automatically discovers ACs and loads configurations after startup.
- Automatically adjusts channels and frequencies to implement load balancing for user services.
- Supports roaming without interrupting services.
- Functions as a fit access point (AP) or a fat AP.

Easy device management and maintenance

- Managed by an AC as a fit AP and has the plug-and-play function.
- Managed by the NMS in real time, implementing remote configuration and fast fault location.

The WA653DE is an outdoor AP complying with IEEE 802.11a/b/g/n. The WA653DE uses the metallic shell and features durability and powerful safeguard capability. It can work at a low temperature and in the harsh environment. The WA653DE features high reliability, high security, simple network deployment, automatic AC discovery and configuration, and real-time management and maintenance. The WA653DE applies to open

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wireless networks with simple structure, small signal coverage, dense users, and high capacity demands, for example, networks for hotels, airports, schools, and medium- and small-sized enterprises.

The WA653DE on a wireless local area network (WLAN) has the following advantages.

- **Reliable network security**

The WA653DE supports a variety of authentication and encryption modes:

- Wired Equivalent Privacy (WEP) authentication and encryption
- Wi-Fi Protected Access (WPA)/WPA2 authentication and encryption
- 802.1x authentication and encryption

- **Superb environment adaptability**

The WA653DE uses built-in smart antennas to adapt to the radio environment and selects the optimal transmission path for radio signals, preventing radio interference, increasing the signal noise ratio, improving the throughput, and speeding up the access rate.

The WA653DE uses the metallic shell with special materials and provides waterproof grade of IP67. It can work even at a temperature of –40°C, ensuring secure transmission of radio signals in the outdoor environment.

- **Intelligent device management and maintenance**

The WA653DE functioning as a fit AP is managed by an AC. After being powered on, the WA653DE can automatically discover the AC and load configurations from the AC. Authentication, AP management, security protocol configuration, routing, and QoS are performed by the AC and monitored in real time by the NMS. This simplifies AP management and maintenance. In addition, the WA653DE provides the functions of automatic channel and frequency adjustment and in-service fast roaming.

- Support for switchover between the fat AP and fit AP

The following table lists the differences between fat AP and fit AP solutions.

Item	Fat AP	Fit AP
Applicable Scenario	Traditional enterprise networks.	WLAN. This solution provides dynamic AP management and optimizes operation and maintenance.
Security	Low security. This solution uses traditional encryption and authentication.	High security. This solution provides radio environment monitoring and security policies based on user's location.
Network Management	APs must be configured one by one.	APs can be configured in batches on an AC.
User Management	User rights are managed on the AP.	User rights are managed on the AC.
Network Scale	This solution supports Layer 2 roaming and applies to small-sized networks.	This solution supports Layer 2 roaming and applies to large-sized networks.
Value-added Service Capability	This solution only supports data services.	This solution supports voice services in addition to data services.

Typical Networking

● Figure 1 shows the typical networking of the WA653DE functioning as a fat AP.

Figure 1 Fat AP typical networking
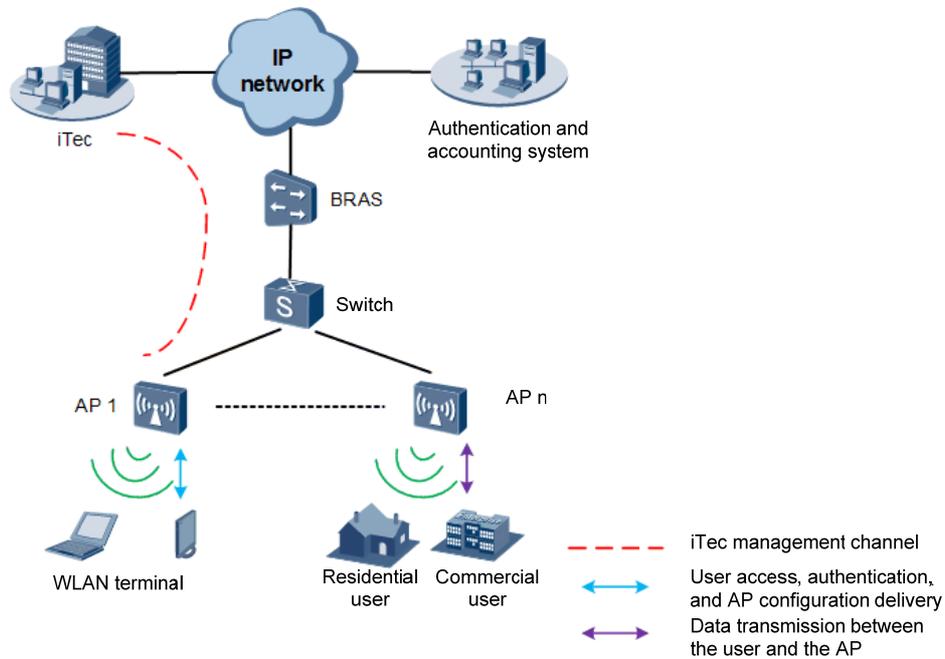
On this network, each WA653DE (a fat AP) provides 802.11 functions and functions as an independent network entity. The AC is responsible for user access, authentication, data forwarding, AP management, security protocol configuration, routing, and QoS.

⚫ Figure 2 shows the typical networking of the WA653DE functioning as a fit AP.

**Figure 2** Fit AP typical networking
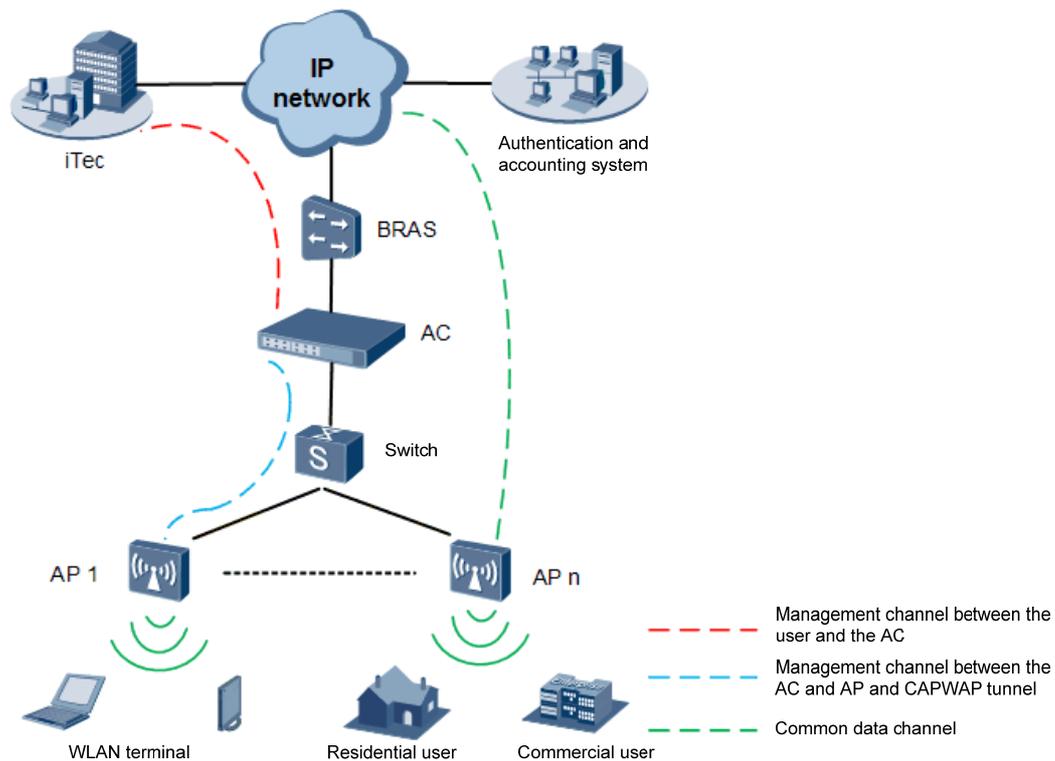
On this network, the WA653DE (a fit AP) functions as a bridge to forwards data. The AC is responsible for user access, authentication, AP management, security protocol configuration, routing, and QoS.

Hardware Specifications

The following device appearance is for illustration only and may be different from the actual device appearance. These differences will not affect device functions.

🟡 **Port/Button**
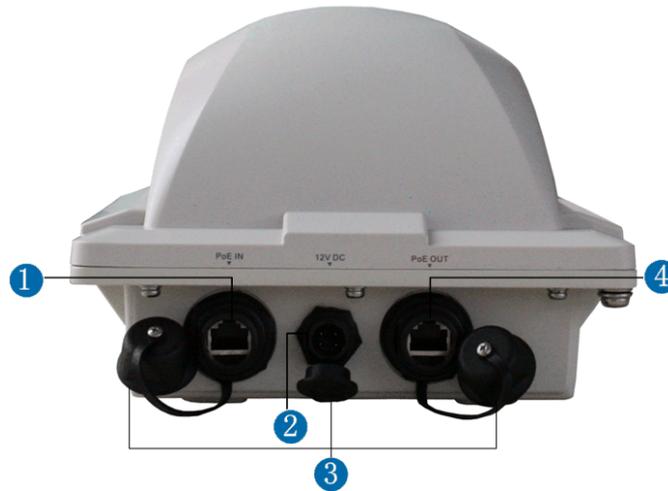
1. PoE IN port: a 10/100/1000M PoE port, which is connected to a PoE switch or PoE power supply to provide power for the WA653DE. When both the PoE power supply and DC power supply are available, the PoE power supply functions as the backup for the DC power supply. This port can also connect to the wired Ethernet network.
2. DC power port: 12V DC.
3. Three dustproof covers: protect the ports that are not in use.
4. PoE OUT port: connects to the built-in PoE module of the WA653DE to provide power for other devices. This power supply mode is not recommended.

🟡 **LDE indicator/Port**

1. Ground screw: connects to a ground cable.
2. WLAN status indicator: STATUS
   - When the indicator is steady green, the WA653DE functions as a fit AP and is connected properly, and the WLAN service has been configured and the AP has been associated with at least one client.
   - When the indicator is steady amber, the WA653DE functions as a fat AP and is connected properly, and that the WLAN service has been configured and the AP has been associated with at least one client.

- When the indicator blinks green twice every second, the WA653DE functions as a fit AP and signals on the uplink port of the WA653DE are transmitted correctly.
- When the indicator blinks green once every 2s, the WA653DE functions as a fit AP and is searching for an AC to establish a connection.
- When the indicator blinks amber, the WA653DE functions as a fat AP and is not associated with any users.
- When the indicator is off, the WLAN service has been interrupted.

3. Power supply indicator: POWER

- When the indicator is steady green, the power supply is working properly.
- When the indicator is steady red, the WA653DE is being powered on.
- When the indicator is off, the WA653DE has been powered off or a power supply failure occurs.

4. 5GHz N-Type radio port

Functions and Features

◉ WLAN features

- Compliance with IEEE 802.11a/b/g/n
- Automatic and manual rate adjustment
  By default, the rate is adjusted automatically.
- Channel rate adjustment

  - 802.11a-compliant rates: 54, 48, 36, 24, 18, 12, 9, or 6 Mbit/s
  - 802.11b-compliant rates: 11, 5.5, 2, or 1 Mbit/s
  - 802.11g-compliant rates: 54, 48, 36, 24, 18, 12, 9, or 6 Mbit/s
  - 802.11b- and 802.11g-compliant rates: 54, 48, 36, 24, 18, 12, 9, 6, 11, 5.5, 2, or 1 Mbit/s
  - Adjustable 802.11n-compliant rates
    20 MHz (HT20): mcs0-15
    40 MHz (HT40): mcs0-15
- WLAN channel management

  - 2.4 GHz frequency band: 13 channels
  - 5 GHz frequency band: 27 channels (the number of supported channels varies according to country code)
- Automatic channel scanning
  The WA653DE (fit AP) scans channels used by other APs, measures the interference, and reports the scanning result to the AC to trigger channel adjustment.
- A fat AP or fit AP supports a maximum of eight VAPs for each radio
- Signal sustain technology (SST)
- Power-saving mode of stations
- Identifying and using the antenna that can discover the strongest signal
- Service set identifier (SSID) hiding
- Control And Provisioning of Wireless Access Points (CAPWAP)
- Automatic AC discovery in fit AP mode

◉ Network features

- VLAN assignment based on SSIDs
- VLAN trunk supported by uplink Ethernet ports
- STA isolation in the same VLAN on a VAP
- Centralized data forwarding and local data forwarding
- 4093 VLAN IDs (1-4093) and 16 VAPs
- IGMP snooping in fat AP mode
- Prompt leave from multicast groups
- Aging of multicast forwarding entries (5 minutes)
- NTP in fat AP mode
- DHCP client in fit AP mode, obtaining IP addresses through DHCP
- IGMP snooping on each VAP in fat AP mode

Integrating the functions of the fit AP and fat AP

- Fat AP functions
- Fit AP functions
- Switching between the fat and fit modes
- Saving the configuration to ensure information completeness during restart

QoS features

- Packet filtering based on MAC addresses in fat AP mode
- Priority mapping based on the WMM profile, implementing priority-based data processing and forwarding
- WMM parameter management for each radio frequency
- WMM power saving
- Priority mapping for upstream and downstream packets
- Queue mapping and scheduling
- Rate limiting for STAs on the VAP

Security features

- Open system authentication
- WEP authentication and encryption
- WPA/WPA2 authentication and encryption
- 802.1x authentication and encryption
- Access control based on MAC addresses
- Link integrity check (the AP stops sending radio signals when the tunnel between the AP and AC is terminated)
- SSL in fat AP mode

Ethernet features

- Compliance with IEEE 802.3u
- Auto-negotiation of the rate and duplex mode

- Automatic switchover between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X)
- 1024 unicast MAC addresses

🟡 Maintenance features

- Web page management in fat AP mode
- AP management and maintenance on an AC
- AP management through the command line interface (CLI)
- AP debugging through Telnet
- Default maintenance IP address: 192.168.1.1/255.255.255.0
- Upgrade using the CLI on the AC or using the U2560
- Factory setting recovery through software
- Real-time configuration monitoring and fast fault location using the NMS
- System status alarm

Technical Specifications

🟡 Power specifications

- Maximum power consumption: 20 W at a low temperature and 13 W at a normal temperature
- Input of the PoE switch or PoE power supply: -48 V DC (it is not delivered with the product and needs to be prepared by the customer)
- PoE function complying with IEEE 802.3at

🟡 Operating environmental specifications

- Operating temperature: -40°C to +60°C
- Storage temperature: -45°C to +70°C
- Humidity: 10% to 95% (non-condensing)
- Waterproof grade: IP67
- Pressure: 70 Kpa to 106 Kpa

🟡 Physical specifications

- Dimensions (H x W x D): 239.5 mm x 195.5 mm x 141 mm
- Weight: 1.900 kg

🟡 Certification

- European CE certificate
- Wi-Fi certification
- RoHS certificate

- Antenna type: built-in high-gain smart antenna array (MIMO is supported)
- Number of built-in smart antennas: 12 (dual-polarized antennas), antenna gain 7 dBi (2.4 GHz and 5 GHz are supported)
- Maximum transmit power:
    - 2.4G: 27dBm(500mw)
    - 5G: 23dBm(200mw)
- Maximum number of concurrent users: 128

  Note: the maximum power depends on the local laws.