

# Huawei AC6508 Wireless Access Controller Datasheet

# **Product Overview**

The AC6508 is a small-capacity fixed wireless access controller (AC) for small and medium enterprises. It can manage up to 256 access points (APs) and integrates the GE Ethernet switch function, achieving integrated access for wired and wireless users. The WLAN AC features high scalability and offers users considerable flexibility in configuring the number of managed APs. When used with Huawei's full series 802.11ax, 802.11ac and 802.11n APs, the AC6508 can be used to construct small and medium campus networks, enterprise office networks, wireless Metropolitan Area Networks (MANs), and hotspot coverage networks.

Huawei AC6508 wireless access controller



# **Product Features**

#### Large-capacity and high-performance design

- The AC6508 can manage up to 256 APs, meeting requirements of small and medium campuses.
- Provides 2 x 10GE optical interfaces and 10 x GE electrical interfaces, supporting up to 6 Gbit/s forwarding performance.

#### SmartRadio for air interface optimization

- Load balancing during smart roaming: The load balancing algorithm can work during smart roaming for load balancing detection among APs on the network after STA roaming to adjust the STA load on each AP, improving network stability.
- Intelligent DFA technology: The dynamic frequency assignment (DFA) algorithm is used to automatically detect adjacent-channel and co-channel interference, and identify any 2.4 GHz redundant radio. Through automatic inter-AP negotiation, the redundant radio is automatically switched to another mode (dual-5G AP models support 2.4G-to-5G switchover) or is disabled to reduce 2.4 GHz co-channel interference and increase the system capacity.
- Intelligent conflict optimization technology: The dynamic enhanced distributed channel access (EDCA) and airtime scheduling algorithms are used to schedule the channel occupation time and service priority of each user. This ensures that each user is assigned relatively equal time for using channel resources and user services are scheduled in an orderly manner, improving service processing efficiency and user experience.

#### Various roles

• The AC6508 has a built-in Portal/AAA server and can provide Portal/802.1X authentication for users, reducing customer investment.

#### Flexible networking

- The WLAN AC can be deployed in inline, bypass, bridge, and Mesh network modes, and supports both centralized and local forwarding.
- The WLAN AC and APs can be connected across a Layer 2 or Layer 3 network. In addition, NAT can be deployed when APs are deployed on the private network and the WLAN AC is deployed on the public network.
- The WLAN AC is compatible with Huawei full-series 802.11n, 802.11ac and 802.11ax APs and supports hybrid networking of 802.11n, 802.11ac and 802.11ax APs for simple scalability.

### Built-in application identification server

- Supports Layer 4 to Layer 7 application identification and can identify over 6000 applications, including common office applications and P2P download applications, such as Lync, FaceTime, YouTube, and Facebook.
- Supports application-based policy control technologies, including traffic blocking, traffic limit, and priority adjustment policies.
- Supports automatic application expansion in the application signature database.

#### Comprehensive reliability design

- Supports AC 1+1 HSB, and N+1 backup, ensuring uninterrupted services.
- Supports port backup based on the Link Aggregation Control Protocol (LACP) or Multiple Spanning Tree Protocol (MSTP)...
- Supports WAN authentication escape between APs and WLAN ACs. In local forwarding mode, this feature retains the
  online state of existing STAs and allows access of new STAs when APs are disconnected from WLAN ACs, ensuring service
  continuity.

#### Built-in visualized network management platform

The AC6508 has a built-in web system that is easy to configure and provides comprehensive monitoring and intelligent diagnosis.

### Health-centric one-page monitoring, visualized KPIs

• One page integrates the summary and real-time statistics. KPIs are displayed in graphs, including user performance, radio performance, and AP performance, enabling users to extract useful information from the massive amounts of monitored data, while also knowing the device and network status instantly.

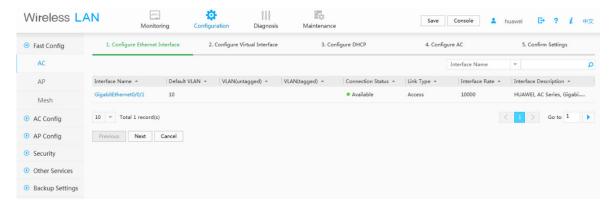
Monitoring interface



## Profile-based configuration by AP group simplifies configuration procedure and improves efficiency.

- The web system supports AP group-centric configuration and automatically selects the common parameters for users, meaning that users do not need to pre-configure the common parameters, simplifying the configuration procedure.
- If two AP groups have small configuration differences, users can copy the configurations of one AP group to the other. This improves configuration efficiency because users only need to modify the original configurations, not create entirely new ones each time.

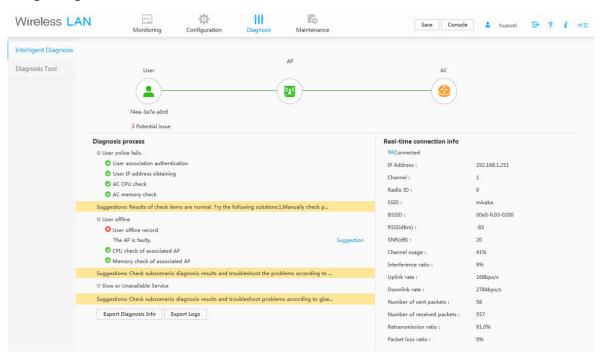
#### Configuration interface



One-click diagnosis solves 80% of common network problems.

• The web system supports real-time and periodic one-click intelligent diagnosis from the dimensions of users, APs, and WLAN ACs, and provides feasible suggestions for troubleshooting the faults.

Intelligent diagnosis



# **AC6508 Features**

## Switching and forwarding features

Feature		Description
Ethernet features	Ethernet	Operating modes of full duplex, half duplex, and auto-negotiation Rates of an Ethernet interface: 10 Mbit/s, 100 Mbit/s, 1000 Mbit/s, and auto-negotiation Flow control on interfaces Jumbo frames Link aggregation Load balancing among links of a trunk Interface isolation and forwarding restriction Broadcast storm suppression

Feature		Description
	VLAN	Access modes of access, trunk, and hybrid Default VLAN VLAN pool
	MAC	Automatic learning and aging of MAC addresses Static, dynamic, and blackhole MAC address entries Packet filtering based on source MAC addresses Interface-based MAC learning limiting
	ARP	Static and dynamic ARP entries  ARP in a VLAN  Aging of ARP entries
	LLDP	LLDP
Ethernet loop protection	MSTP	STP RSTP MSTP BPDU protection, root protection, and loop protection Partitioned STP
IPv4 forwarding	IPv4 features	ARP and RARP ARP proxy Auto-detection NAT Bonjour protocol
	Unicast routing features	Static route RIP-1 and RIP-2 OSPF BGP IS-IS Routing policies and policy-based routing URPF check DHCP server and relay DHCP snooping
	Multicast routing features	IGMPv1, IGMPv2, and IGMPv3 PIM-SM Multicast routing policies RPF
IPv6 forwarding	IPv6 features	ND protocol
	Unicast routing features	Static route RIPng OSPFv3 BGP4+ IS-IS IPv6 DHCPv6 DHCPv6 snooping

Feature		Description
	Multicast routing features	MLD snooping
Device reliability	BFD	BFD
Layer 2 multicast features	Layer 2 multicast	IGMP snooping Prompt leave Multicast traffic control Inter-VLAN multicast replication
Ethernet OAM	EFM OAM	Neighbor discovery Link monitoring Fault notification Remote loopback
QoS features	Traffic classification	Traffic classification based on the combination of the L2 protocol header, IP 5-tuple, and 802.1p priority
	Action	Access control after traffic classification  Traffic policing based on traffic classification  Re-marking packets based on traffic classifiers  Class-based packet queuing  Associating traffic classifiers with traffic behaviors
	Queue scheduling	PQ scheduling DRR scheduling PQ+DRR scheduling WRR scheduling PQ+WRR scheduling
	Congestion avoidance	SRED WRED
	Application control	Smart Application Control (SAC)
Configuration and maintenance	Terminal service	Configurations using command lines  Error message and help information in English  Login through console and Telnet terminals  Send function and data communications between terminal users
	File system	File systems Directory and file management File uploading and downloading using FTP and TFTP
	Debugging and maintenance	Unified management over logs, alarms, and debugging information Electronic labels User operation logs Detailed debugging information for network fault diagnosis Network test tools such as traceroute and ping commands Intelligent diagnosis Interface mirroring and flow mirroring
	Version upgrade	Device software loading and online software loading

Feature		Description
		BIOS online upgrade
		In-service patching
Security and management	Network management	<ul> <li>ICMP-based ping and traceroute</li> <li>SNMPv1, SNMPv2c, and SNMPv3</li> <li>Standard MIB</li> <li>RMON NetStream</li> </ul>
	System security	Different user levels for commands, preventing unauthorized users from accessing device SSHv2.0 RADIUS and HWTACACS authentication for login users ACL filtering DHCP packet filtering (with the Option 82 field) Local attack defense function that can protect the CPU and ensure that the CPU can process services Defense against control packet attacks Defenses against attacks such as source address spoofing, Land, SYN flood (TCP SYN), Smurf, ping flood (ICMP echo), Teardrop, broadcast flood, and Ping of Death attacks IPSec URL filtering Antivirus Intrusion prevention

# Wireless networking capabilities

Feature	Description
Networking between APs and WLAN ACs	APs and WLAN ACs can be connected through a Layer 2 or Layer 3 network.  APs can be directly connected to a WLAN AC.
	APs are deployed on a private network, while WLAN ACs are deployed on the public network to implement NAT traversal.
	WLAN ACs can be used for Layer 2 bridge forwarding or Layer 3 routing.
	WAN authentication escape is supported between APs and WLAN ACs. In local forwarding mode, this feature retains the online state of existing STAs and allows access of new STAs when APs are disconnected from WLAN ACs, ensuring service continuity.
Forwarding mode	Direct forwarding (distributed forwarding or local forwarding)
	Tunnel forwarding (centralized forwarding)
	Centralized authentication and distributed forwarding
	In direct forwarding mode, user authentication packets support tunnel forwarding.
	Soft GRE forwarding.
	Tunnel forwarding + EoGRE tunnel
WLAN AC discovery	An AP can obtain the device's IP address in any of the following ways:  • Static configuration

Feature	Description
	<ul> <li>DHCP</li> <li>DNS</li> <li>The WLAN AC uses DHCP or DHCPv6 to allocate IP addresses to APs.</li> <li>DHCP or DHCPv6 relay is supported.</li> <li>On a Layer 2 network, APs can discover the WLAN AC by sending broadcast CAPWAP packets.</li> </ul>
Wireless networking mode	WDS bridging:  Point-to-point (P2P) wireless bridging  Point-to-multipoint (P2MP) wireless bridging  Automatic topology detection and loop prevention (STP)  Wireless mesh network  Access authentication for mesh devices  Mesh routing algorithm  Go-online without configuration  Mesh network with multiple MPPs  Vehicle-ground fast link handover  Mesh client mode
CAPWAP tunnel	Centralized CAPWAP CAPWAP control tunnel and data tunnel (optional) CAPWAP tunnel forwarding and direct forwarding in an extended service set (ESS) Datagram Transport Layer Security (DTLS) encryption, which is enabled by default for the CAPWAP control tunnel Heartbeat detection and tunnel reconnection
Active and standby WLAN ACs	Enables and disables the switchback function.  Supports load balancing.  Supports 1+1 hot backup.  NOTE  In 1+1 VRRP HSB mode, WLAN ACs share one virtual IP address, simplifying the network topology.  Supports N+1 backup.  Supports wireless configuration synchronization between WLAN ACs.

# AP management

Feature	Description
AP access control	Displays MAC addresses or SNs of APs in the whitelist.  Adds a single AP or multiple APs (by specifying a range of MAC addresses or SNs) to the whitelist.  Automatically discovering and manually confirming APs.  Automatically discovering APs without manually confirming them.
AP profile management	Specifies the default AP profile that is applied to automatically discovered APs.
AP group management	The AP group function is used to configure multiple APs in batches. When multiple APs managed by a WLAN AC require the same configurations, you can add these APs to one

Feature	Description
	AP group and configure the AP group to complete AP configuration.
AP region management	<ul> <li>Supports three AP region deployment modes:</li> <li>Distributed deployment: APs are deployed independently. An AP is equivalent to a region and does not interfere with other APs. APs work at the maximum power and do not perform radio calibration.</li> <li>Common deployment: APs are loosely deployed. The transmit power of each radio is less than 50% of the maximum transmit power.</li> <li>Centralized deployment: APs are densely deployed. The transmit power of each radio is less than 25% of the maximum transmit power.</li> </ul>
	Specifies the default region to which automatically discovered APs are added.
AP type management	Manages AP attributes including the number of interfaces, AP types, number of radios, radio types, maximum number of virtual access points (VAPs), maximum number of associated users, and radio gain (for APs deployed indoors).  Provides default AP types.
Network topology management	Supports LLDP topology detection.
AP working mode management	Supports AP working mode switchover. The AP working mode can be switched to the Fat or cloud mode on the AC.

# Radio management

Feature	Description
Radio profile management	The following parameters can be configured in a radio profile:
	Radio working mode and rate
	Automatic or manual channel and power adjustment mode
	Radio calibration interval
	• The radio type can be set to 802.11b, 802.11b/g, 802.11b/g/n, 802.11g, 802.11n, 802.11g/n, 802.11a, 802.11a/n, 802.11ac, or 802.11ax.
	You can bind a radio to a specified radio profile.
	Supports MU-MIMO.
Unified static configuration of parameters	Radio parameters such as the channel and power of each radio are configured on the WLAN AC and then delivered to APs.
Dynamic management	APs can automatically select working channels and power when they go online.
	In an AP region, APs automatically adjust working channels and power in the event of signal interference:
	Partial calibration: The optimal working channel and power of a specified AP can be adjusted.
	Global calibration: The optimal working channels and power of all the APs in a specified region can be adjusted.
	When an AP is removed or goes offline, the WLAN AC increases the power of neighboring APs to compensate for the coverage hole.
	Automatic selection and calibration of radio parameters in AP regions are supported.
Enhanced service capabilities	Band steering: Enables terminals to preferentially access the 5G frequency band, achieving load balancing between the 2.4G and 5G frequency bands.
	Smart roaming: Enables sticky terminals to roam to APs with better signals.
	802.11k and 802.11v smart roaming

Feature	Description
	• 802.11r fast roaming (≤ 50 ms)

# WLAN service management

Feature	Description
ESS management	Allows you to enable SSID broadcast, set the maximum number of access users, and set the association aging time in an ESS.  Isolates APs at Layer 2 in an ESS.
	Maps an ESS to a service VLAN.
	Associates an ESS with a security profile or a QoS profile.
	Enables IGMP for APs in an ESS. Supports Chinese SSIDs.
VAP-based service	
management	Adds multiple VAPs at a time by binding radios to ESSs.  Displays information about a single VAP, VAPs with a specified ESS, or all VAPs.
	Supports configuration of offline APs.
	Creates VAPs according to batch delivered service provisioning rules in automatic AP discovery mode.
Service provisioning	Supports service provisioning rules configured for a specified radio of a specified AP type.
management	Adds automatically discovered APs to the default AP region. The default AP region is configurable.
	Applies a service provisioning rule to a region to enable APs in the region to go online.
Multicast service management	Supports IGMP snooping.
	Supports IGMP proxy.
Load balancing	Performs load balancing among radios in a load balancing group.
	Supports two load balancing modes:
	Based on the number of STAs connected to each radio  Based on the traffic values are as a set of the state.
	Based on the traffic volume on each radio
Bring Your Own Device (BYOD)	Identifies device types according to the OUI in the MAC address.      Identifies device types according to the year area (UA) field in an UTTD peaket.
	<ul> <li>Identifies device types according to the user agent (UA) field in an HTTP packet.</li> <li>Identifies device types according to DHCP Option information.</li> </ul>
	Carries device types according to BTOL Option mornation.      Carries device type information in RADIUS authentication and accounting packets.
Location services	Locates AeroScout and Ekahau tags.
Ecoation Sci vices	Locates Wi-Fi terminals.
	Locates Bluetooth terminals.
	Locates Bluetooth tags.
Spectrum analysis	Identifies the following interference sources: Bluetooth, microwave ovens, cordless phones, ZigBee, game controller, 2.4 GHz/5 GHz wireless audio and video devices, and baby monitors.
	Works with the eSight to display spectrums of interference sources.
Hotspot2.0	Supports a Hotspot2.0 network.
Internet of Things (IoT)	Supports IoT cards on the AP to converge the WLAN and IoT.
Navi WLAN AC	Supports remote STA access on the Navi WLAN AC.

Feature	Description
Centralized license control	Supports a license server as the centralized AP license control point.
	Allows a license server to manage license clients.
	Supports license synchronization between a license server and clients.

# WLAN user management

Feature	Description
Address allocation of wireless users	Functions as a DHCP server to assign IP addresses to wireless users.
WLAN user management	Supports user blacklist and whitelist.
	Controls the number of access users:
	Based on APs
	Based on SSIDs
	Logs out users in any of the following ways:
	Using RADIUS DM messages
	Using commands
	Supports various methods to view information:
	<ul> <li>Allows you to view the user status by specifying the user MAC address, AP ID, radio ID, or WLAN ID.</li> </ul>
	Displays the number of online users in an ESS, AP, or radio.
	Collects packet statistics on air interface based on user.
WLAN user roaming	Supports intra-AC Layer 2 roaming.
	NOTE
	Users can roam between APs connected to different physical ports on a WLAN AC.
	Supports inter-VLAN Layer 3 roaming on a WLAN AC.
	Supports roaming between WLAN ACs.
	Supports fast key negotiation in 802.1X authentication.
	Authenticates users who request to reassociate with the WLAN AC and rejects the requests of unauthorized users.
	Delays clearing user information after a user goes offline so that the user can rapidly go online again.
User group management	Supports ACLs.
	Supports user isolation:
	Inter-group isolation
	Intra-group isolation

# WLAN security

Feature	Description
WLAN security profile management	Manages authentication and encryption modes using WLAN security profiles.
Authentication modes	Open system authentication with no encryption WEP authentication/encryption

Feature	Description
	WPA/WPA2 authentication and encryption:
	WPA/WPA2-PSK+TKIP
	WPA/WPA2-PSK+CCMP
	WPA/WPA2-802.1X+TKIP
	WPA/WPA2-802.1X+CCMP
	WPA/WPA2-PSK+TKIP-CCMP
	WPA/WPA2-802.1X+TKIP-CCMP
	WPA/WPA2-PPSK authentication and encryption
	WAPI authentication and encryption:
	Supports centralized WAPI authentication.
	<ul> <li>Supports three-certificate WAPI authentication, which is compatible with traditional two-certificate authentication.</li> </ul>
	Issues a certificate file together with a private key.
	Allows users to use MAC addresses as accounts for authentication by the RADIUS
	server.
	Portal authentication:
	Authentication through an external Portal server
	Built-in Portal authentication and authentication page customization
	802.1X authentication:
	Authentication through an external 802.1X server.
	Built-in 802.1X authentication.
Combined authentication	Combined MAC authentication:
	PSK+MAC authentication
	MAC+portal authentication:
	MAC authentication is used first. When MAC authentication fails, portal authentication
	is used.
AAA	Local authentication/local accounts (MAC addresses and accounts)
	RADIUS authentication
	Multiple authentication servers:
	Supports backup authentication servers.
	Specifies authentication servers based on the account.
	Configures authentication servers based on the account.
	Binds user accounts to SSIDs.
Security isolation	Port-based isolation
	User group-based isolation
Security standards	802.11i, Wi-Fi Protected Access 2 (WPA2), WPA,802.1X
	Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP), and
	Extensible Authentication
	Protocol (EAP) types:
	EAP-Transport Layer Security (TLS)
	EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake
	Authentication Protocol Version 2 (MSCHAPv2)
	Protected EAP (PEAP) v0 or EAP-MSCHAPv2
	EAP-Flexible Authentication via Secure Tunneling (FAST)

Feature	Description
	PEAP v1 or EAP-Generic Token Card (GTC)     EAP-Subscriber Identity Module (SIM)
WIDS	<ul> <li>Rogue device scan, identification, defense, and countermeasures, which includes dynamic blacklist configuration and detection of rogue APs, STAs, and network attacks.</li> </ul>
Authority control	<ul> <li>ACL limit based on the following:</li> <li>Port</li> <li>User group</li> <li>User</li> </ul>
Other security features	<ul> <li>SSID hiding</li> <li>IP source guard:</li> <li>Configures IP and MAC binding entries statically.</li> <li>Generates IP and MAC binding entries dynamically.</li> </ul>

# WLANQoS

Feature	Description
WMM profile management	Enables or disables Wi-Fi Multimedia (WMM).  Allows a WMM profile to be applied to radios of multiple APs.
Traffic profile management	Manages traffic from APs and maps packet priorities according to traffic profiles.  Applies a QoS policy to each ESS by binding a traffic profile to each ESS.
AC traffic control	Manages QoS profiles.  Uses ACLs to perform traffic classification.  Limits incoming and outgoing traffic rates for each user based on inbound and outbound CAR parameters.  Limits the traffic rate based on ESSs or VAPs.
AP traffic control	Controls traffic of multiple users and allows users to share bandwidth.  Limits the rate of a specified VAP.
Packet priority configuration	Sets the QoS priority (IP precedence or DSCP priority) for CAPWAP control channels.  Sets the QoS priority for CAPWAP data channels:  Allows you to specify the CAPWAP header priority.  Maps 802.1p priorities of user packets to ToS priorities of tunnel packets.
Airtime fair scheduling	Allocates equal time to users for occupying the channel, which improves users' Internet access experience.

# Physical Specifications

Feature	Description
Dimensions (H x W x D)	43.6 mm x 210 mm x 250 mm
Interface type	2 x 10G (SFP+) + 10 x GE
	1 x Console port, 1 x USB port

Feature	Description
Maximum power consumption	21 W
Weight	1.47 kg
Operating temperature and altitude	-60 m to +1800 m: 0°C to 45°C  1800 m to 5000 m: Temperature decreases by 1°C every time the altitude increases 220 m.
Relative humidity	5% RH to 95% RH, noncondensing
Power modules	AC/DC adapter

# **Performance Specifications**

Feature	Description
Number of managed APs	Central APs: 32
	Common APs and RUs: 256
	NOTE
	The RUs managed by the WLAN AC do not occupy the AC's license resources. However, the total number of managed common APs and RUs cannot exceed the upper limit allowed by the AC.
Number of access users	64K
	NOTE
	The maximum number of access users varies depending on the authentication mode.
Number of MAC address entries	8K
Forwarding capability	6Gbit/s
	NOTE
	Packet length: 1024 bytes
Number of VLANs	4K
Number of routing entries	• IPv4: 8K
	• IPv6: 2K
Number of ARP entries	6K
Number of multicast forwarding entries	2K
Number of DHCP IP address pools	64 IP address pools, each of which contains a maximum of 8K IP addresses
Number of local accounts	4K
Number of ACLs	4K

# **Standards Compliance**

Item	Description
Safety standards	IEC60950-1 UL60950-1 CSA C22.2#60950-1 EN60950-1 AS/NZS 60950.1 GB 4943
EMC standards	FCC Part15B  ETSI EN 300 386  IEC61000-4-11  IEC 61000-4-2  IEC61000-4-3  IEC61000-4-5  IEC61000-4-6  IEC 61000-3-2  IEC 61000-3-3  AS/NZS CISPR 32  EN55032/EN55024  ICES-003  GB9254
RoHS	Directive 2002/95/EC & 2011/65/EU
Reach	Regulation 1907/2006/EC
WEEE	Directive 2002/96/EC & 2012/19/EU

# **Ordering Information**

Part Number	Description
02351YTV	AC6508 mainframe (10*GE ports, 2*10GE SFP+ ports, with the AC/DC adapter)
88034UVY	Access Controller AP Resource License(1 AP)
88034UWA	Access Controller AP Resource License(8 AP)
88034UWB	Access Controller AP Resource License(16 AP)
88034UWC	Access Controller AP Resource License(32 AP)
88034UWD	Access Controller AP Resource License(64 AP)
88034UWE	Access Controller AP Resource License(128 AP)

# **More Information**

For more information about Huawei WLAN products, visit <a href="http://e.huawei.com">http://e.huawei.com</a> or contact us in the following ways:

- Global service hotline: http://e.huawei.com/en/service-hotline
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