Huawei

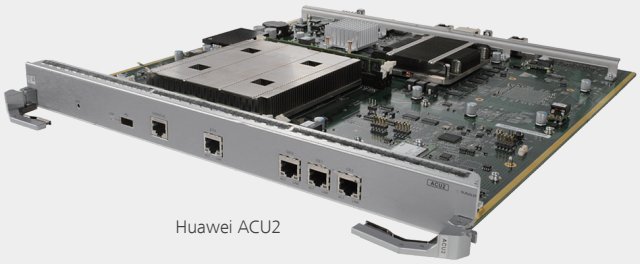
ACU2

Wireless Access Controller

Datasheet

Product Overview

Huawei wireless Access Controller Unit 2 (ACU2) is a WLAN service card used on switches to provide wireless access controller functions. It applies to S12700, S9700, and S7700 series switches. The ACU2 can manage up to 2048 access points (APs) and be used in large enterprise and campus networks to provide wireless services. It features high scalability and offers users considerable flexibility in configuring the number of managed APs. When used with Huawei's full series 802.11ac and 802.11n APs, the ACU2 can support large-scale and high-density user access.



Huawei ACU2

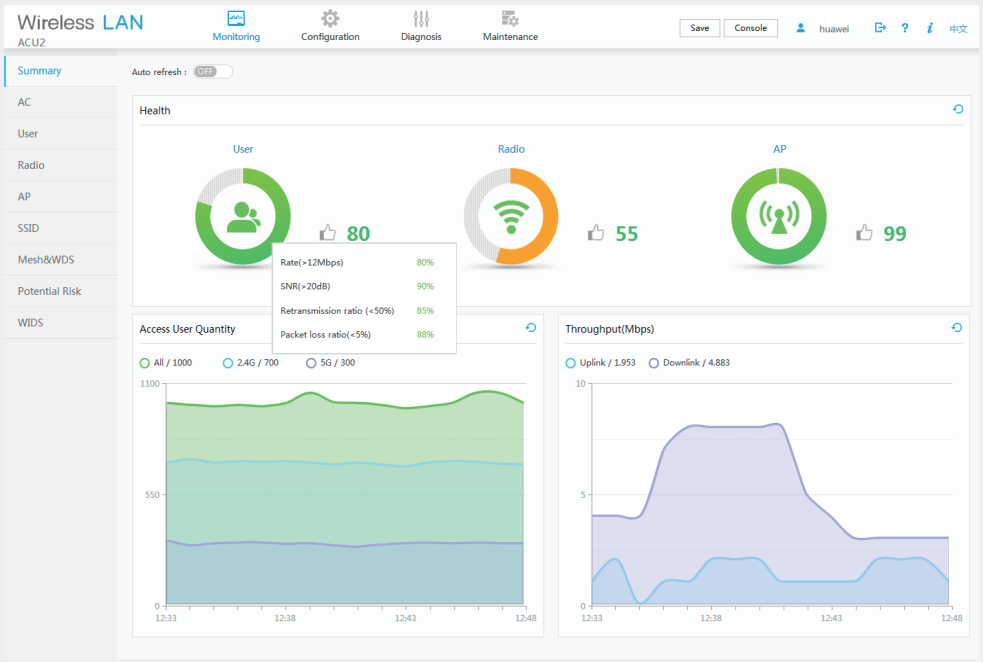
Product Features

Built-in visualized network management platform

The ACU2 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

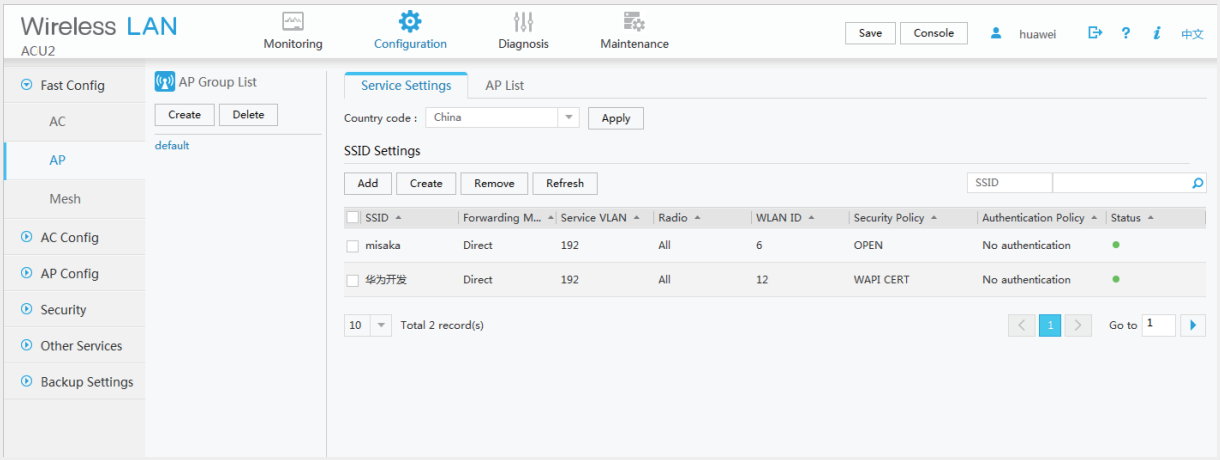
One page integrates the summary and real-time statistics. KPIs are displayed in graphs, including user performance, radio performance, and AP performance, enabling users to extract useful information from the massive amounts of monitored data, while also knowing the device and network status instantly.



Monitoring interface

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

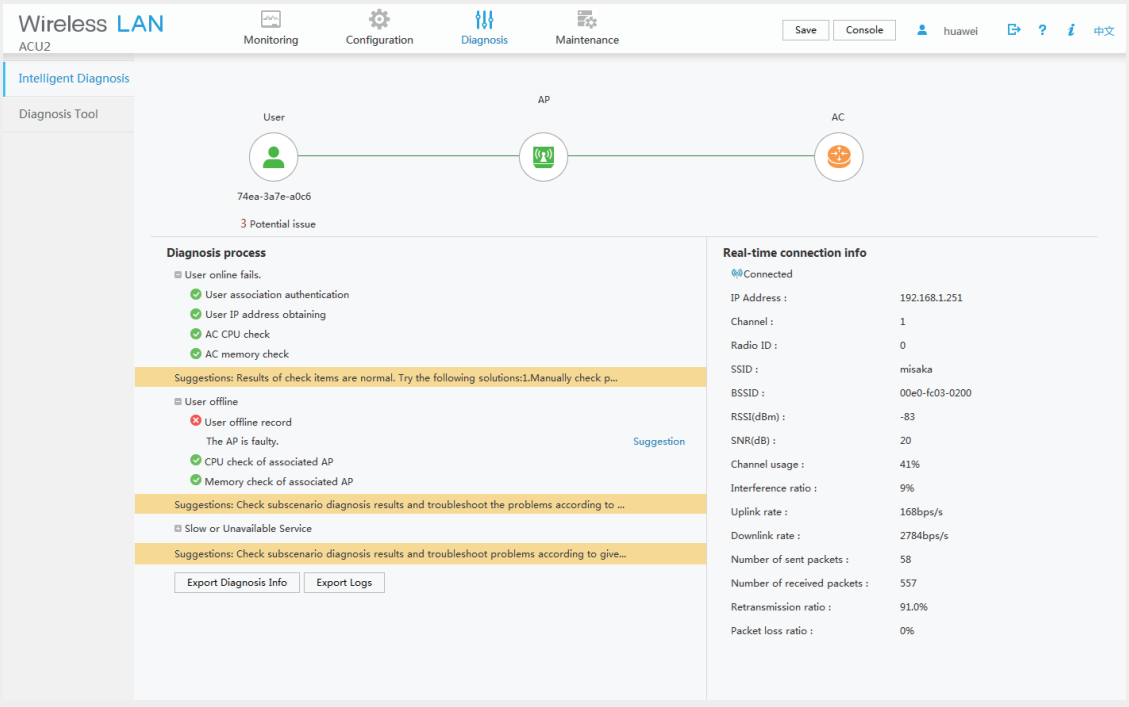
The web system supports AP group-centric configuration and automatically selects the common parameters for users, meaning that users do not need to pre-configure the common parameters, simplifying the configuration procedure.
If two AP groups have small configuration differences, users can copy the configurations 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 ACs, and provides feasible suggestions for troubleshooting the faults.



Intelligent diagnosis

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 the Boolean port for environmental monitoring and the intra-board temperature probe, which monitors the operating environment of the ACU2 in real time.
- 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).

Large-capacity and high-performance design

- The ACU2 is capable of supporting medium and large campuses with up to 2048 APs.
- The ACU2 provides a 40 Gbit/s line-speed forwarding capability.
- The ACU2 can manage up to 32K users, allowing 100 users on an AP to transmit data simultaneously.

Various roles

- The ACU2 provides wireless access capabilities. An aggregation switch with ACU2s provides both wireless and wired service capabilities, reducing space occupied and cables in equipment rooms and lowering network construction costs.
- The ACU2 has a built-in Portal/AAA server and can provide Portal/802.1x authentication for 1K users.

Flexible networking

- The AC can be deployed in inline, bypass, bridge, and Mesh network modes, and supports both centralized and local forwarding.
- The 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 AC is deployed on the public network.
- The AC is compatible with Huawei full-series 802.11n and 802.11ac APs and supports hybrid networking of 802.11n and 802.11ac APs for simple scalability.

Multiple interface support

- One GE interface
- One RJ45 serial maintenance interface
- One Mini USB serial maintenance interface

ACU2 features

Feature	Description
Scalability	Licenses are available for managing 16 or 64 APs.
Flexible networking	The AC and APs can be connected across a Layer 2 or Layer 3 network. NAT can be deployed in configurations where APs are deployed on an internal network and the AC is deployed on an external network. Services can be mapped between VLANs and Service Set Identifiers (SSIDs). The number of service VLANs and number of SSIDs can be in a ratio of 1:1 or 1:N based on service requirements. You can assign user VLANs based on SSIDs, physical locations, or services. The AC can be deployed in inline, bypass, and WDS/Mesh networks.
Flexible forwarding	The ACU2 allows you to easily configure local or centralized forwarding based on Virtual Access Points (VAPs) according to network traffic and service control requirements. • Centralized forwarding meets the requirements of most network configurations; however, when bandwidth demands from users connected to the same AP steadily increase, traffic switching loads will increase. • Local forwarding improves bandwidth efficiency; however, user authentication cannot be controlled by the AC in local forwarding mode. The ACU2 solves this problem with support for centralized authentication in local forwarding to accommodate changing needs.
Radio management	The ACU2 supports automatic selection and calibration of radio parameters in AP regions, including these features: • Automatic signal level adjustment and channel selection on power-up • Automatic signal re-calibration in the event of signal interference – Partial calibration: Adjusts a specific AP to optimal signal levels. – Global calibration: Adjusts all APs in a specified region for optimal signal levels. • When an AP is removed or goes offline, the ACU2 increases the power of neighboring APs to compensate for reduced signal strength.
Flexible user rights management	The ACU2 uses Access Control Lists (ACLs) based on APs, VAPs, or SSIDs and provides isolation and bandwidth-limiting for each option. The ACU2 also provides access controls for users, and user roles, to meet enterprise requirements regarding permissions, authentication, and authorization, as well as bandwidth limitations per user and user group. • The ACU2 implements per-user access control based on ACLs, VLAN IDs, and bandwidth limits sent from the RADIUS server. • User groups are defined with access control policies. An ACL, user isolation policy, and bandwidth limitations can be applied to user groups for additional access control. • Inter-group user isolation or intra-group user isolation can also be configured.

Feature	Description
WDS	The ACU2 provides STA access and wireless bridge management functions, as well as network bridge management when in Fit AP mode. The ACU2 supports these networking modes: point-to-multipoint bridging, single-band/dual-band multi-hop relay, dual-band WDS bridging + WLAN access, and single-band WDS bridging + WLAN access. The ACU2 can also function as a wireless bridge between a central campus network and multiple branch campuses. This configuration works well for deployments with no wired network or where cable routing is inconvenient.
High reliability	Multiple ACs can be configured in a network to increase WLAN reliability. If an active AC experiences a fault or the link between the active AC and APs disconnects, the APs can switch to a standby AC. The ACU2 system provides N+1 active/standby mode, which allows multiple active ACs to share the same standby AC. This feature provides high reliability at reduced cost.
Load balancing	• Inter-AP load balancing: When an STA is in the coverage area of multiple APs, the ACU2 connects the STA to the AP with the lightest load, delivering STA-based or traffic-based load balancing. • Inter-STA resource balancing: The ACU2 can dynamically and evenly allocate bandwidth resources to prevent some STAs from overusing available bandwidth due to network adapter performance or special applications, such as BT Total Broadband. • The ACU2 first utilizes the 5 GHz band to increase overall utilization of bandwidth.
Visualized WLAN network management and maintenance	The ACU2 and APs use Fit AP + AC networking and standard Link Layer Discovery Protocol (LLDP) for centralized AP management and maintenance. When paired with Huawei's eSight network management tool, the ACU2 provides network topology displays to easily manage and optimize network performance.
System security	• Application identification: Use the service awareness technology to identify packets of dynamic protocols such as HTTP and RTP by checking Layer 4 to Layer 7 information in the packets, helping implement fine-grained QoS management. • URL filtering: URL filtering regulates online behavior by controlling which URLs users can access. • Antivirus: The antivirus function depends on the powerful and constantly updated virus signature database to secure the network and system data. • Intrusion prevention: Intrusion prevention detects intrusions, such as buffer overflow attacks, Trojan horses, and worms, by analyzing network traffic and takes actions to quickly terminate the intrusions. In this way, intrusion prevention protects the information system and network architecture of enterprises.

ACU2 Specifications

Item	Specifications
Technical specifications	Dimensions (H x W x D): 35.56 mm x 380 mm x 378.45 mm Weight: 3.2 kg Maximum power consumption: 168 W
Interface type	One GE interface One RJ45 serial maintenance interface One Mini USB serial maintenance interface
LED indicator	ACT indicator: indicates the data transmission and receiving status. Link indicator: indicates the link connection status. RUN/ALM indicator: indicates the power-on status of a card or the system running status.
Number of managed APs	2K
Number of SSIDs	16K
Number of APs controlled by each license	16, 64
Number of access users	Entire device: 32K
User group management	The AC supports 128 user groups: • Each user group can reference a maximum of 8 ACLs. • Each user group can associate with a maximum of 128 ACL rules.
Number of MAC addresses	48K
Number of VLANs	4K
Number of ARP entries	48K
Number of routing entries	16K
Number of multicast forwarding entries	2K
Number of DHCP IP address pools	128 IP address pools, each containing a maximum of 16K IP addresses

Wireless features

Feature	Description
Network management and maintenance	Device management and statistics • Command line management based on SSH/Telnet/Console • SNMPv2/v3 • Web management • Standard MIBs and Huawei proprietary MIBs • Syslog • AP and station statistics • Alarms with different severity levels Centralized AP configuration and management • Group-based AP management • Centralized version management and automatic version file load • Built-in AP type and customized AP addition Graphic AP deployment and topology displays • AP LLDP • AC LLDP
Wireless protocols	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11k, 802.11n, 802.11ac
WLAN deployment	AP-AC networking • AP-AC Layer 2/3 networking • AC Layer 2 forwarding or Layer 3 routing • NAT traversal (APs are deployed on a private network and ACs are deployed on the public network) Data forwarding • AP-AC CAPWAP tunnel and DTLS encryption • VAP-based forwarding (centralized forwarding and local forwarding) • Centralized authentication and local forwarding VLAN deployment • Mapping between SSIDs and VLANs, and VLAN assignment based on SSIDs or physical locations WDS deployment • Point-to-point and point-to-multipoint • Automatic topology detection and loop prevention (STP) AC active/standby mode • Dual-linked active and standby ACs with Virtual Router Redundancy Protocol (VRRP) • N:1 active/standby deployment

Feature	Description
Radio management	Channel and power configuration • Centralized or static channel power configuration • Automatic channel allocation to implement global radio calibration or partial radio calibration • Automatic power adjustment to implement coverage hole compensation • AP region-based configuration and management Load balancing • Load balancing based on the traffic volume on each radio • Load balancing based on the number of users
Wireless service control	Extended Service Set (ESS)-based service management • ESS-based SSID hiding and AP isolation at Layer 2 • Maximum number of access users and associated aging time settings in an ESS • ESSs to service VLANs mapping • ESS associations with a security profile or a QoS profile • Internet Group Management Protocol (IGMP) support for APs in an ESS Wireless roaming • Layer 2 roaming • Inter-VLAN Layer 3 roaming • Pairwise Master Key (PMK) caching, rapid key negotiation • Identity check on users who request to reassociate with the AC to reject reassociation requests of unauthorized users • Delayed clearing of user information after a user goes offline so that the user can rapidly go online again DHCP service control • Built-in DHCP server • Support for DHCP snooping on APs • Support for DHCP relay and DHCP snooping on AC Multicast service management • IGMP snooping • IGMP proxy

Feature	Description
Wireless user management	WLAN user management • User blacklist and whitelist • User access number limit • User disconnection • Support for multiple queries including online user information and statistics User group management • ACLs based on user groups • Isolation based on user groups
Wireless security and authentication	Authentication and encryption • OPEN/WEP/PSK/WPA(2) + 802.1x • WEP/TKIP/AES(CCMP) • WAPI User authentication and control • MAC address authentication, Portal authentication, and 802.1x authentication • MAC + Portal authentication • PEAP/TLS/MD5/CHAP Security and defense • ACLs based on interface, users, and user groups • Isolation based on VAPs and user groups • IP source guard for STAs • Detection of unauthorized APs and alarm function • User blacklist and whitelist AAA • Local authentication/local accounts (MAC addresses and accounts) • RADIUS authentication • Multiple authentication servers
Wireless QoS control	Flow control • VAP-based rate limiting • User-group-based rate limiting • Rate limiting for a specified user • Dynamic traffic control, preventing resources from being wasted by STAs Priority mapping and scheduling • Mapping QoS settings of encapsulated data packets to 802.1p and DSCP fields of outer tunnel packets • Mapping between DSCP, 802.1p, and 802.11e

Wired features

Feature	Description
Ethernet features	802.1p, QinQ, Smart Link, LLDP Storm suppression, port isolation, and link aggregation
Ethernet loop protection	• Spanning Tree Protocol (STP)/Rapid Spanning Tree Protocol (RSTP)/Multiple Spanning Tree Protocol (MSTP) • Bridge Protocol Data Unit (BPDU) protection, root protection, and loop protection • Partitioned STP and BPDU tunnels • Rapid Ring Protection Protocol (RRPP) • Hybrid networking of RRPP rings and other ring networks
IP routing	Unicast routing protocols: RIP, OSPF, BGP, and IS-IS
Device reliability	Virtual Router Redundancy Protocol (VRRP)
QoS features	Traffic classifier, traffic behavior, queue scheduling, congestion avoidance, and outbound interface rate limiting
Link detection	BFD EFM OAM, CFM OAM, and Y.1731
IP service control	• ARP • Built-in DHCP server • RADIUS client • Built-in FTP server • DHCP relay and DHCP snooping

Professional Service and Support

Huawei Professional Services provides expert network design and service optimization tasks to help customers:

- Design and deploy a high-performance network that is reliable and secure.
- Maximize return on investment and reduce operating expenses.

Company Addendum

For more information, please visit http://e.huawei.com/en/ or contact your local Huawei office.

Copyright © Huawei Technologies Co., Ltd. 2016. All rights reserved.

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Huawei Technologies Co., Ltd.

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.

General Disclaimer

The information in this document may contain predictive statements including, without limitation, statements regarding the future financial and operating results, future product portfolio, new technology, etc. There are a number of factors that could cause actual results and developments to differ materially from those expressed or implied in the predictive statements. Therefore, such information is provided for reference purpose only and constitutes neither an offer nor an acceptance. Huawei may change the information at any time without notice.

HUAWEI TECHNOLOGIES CO.,LTD.
Huawei Industrial Base
Bantian Longgang
Shenzhen 518129,P.R.China
Tel: +86 755 28780808

www.huawei.com