

# DG-WU6028C/IS

## Enterprise Wireless Access Controller



### Overview

DIGISOL DG-WU6028C/IS is a 10 Gigabit intelligent wireless controller. It is designed for a new generation of high-speed wireless networks. It is designed for small and medium-sized wireless network. With DIGISOL intelligent wireless APs, it can form a centralized management of intelligent wireless network.

DG-WU6028C/IS can manage up to 256 wireless APs. It integrates exact user control management, perfect RF management and security mechanisms, super QoS and seamless roaming, providing powerful WLAN access control functions.

DG-WU6028C/IS has a complete layer 3 core switch function and powerful forwarding performance. It can be used as a wireless controller and layer 3 core switch at the same time. It is not only the brain of the wireless network but also the data forwarding center of the entire wireless network, achieve wireless and wired integration.

### intelligent integrated control and forwarding architecture

DG-WU6028C/IS adopts the wireless forwarding technology based on ASIC chipset, the port density and wireless throughput are the highest among similar AC products in the industry; not only supports wireless forwarding, but also supports wired switching, achieve all wireless traffic and wired traffic are unified forwarding by the same chipset; wired and wireless intelligent integrated control and forwarding architecture, integrating the functions of wireless controller and L3 switch, support trunk mode deploying, greatly reducing investment cost, improving network performance .

### Emergency mechanism of APs

APs will be unable to operate normally when the wireless AC is down and then the entire wireless network will crash. DIGISOL wireless APs support an automatic emergency mechanism. This mechanism enables an AP to intelligently detect links. When detecting that the wireless AC is down, the AP quickly switches its operating mode so that it may continue to forward data while enabling new users to access the network.

## QoS

The DG-WU6028C/IS wireless controller support supports the Diff-Serv standard, includes traffic classification, traffic monitoring (Policing), queue management, and queue scheduling, but also support IPv6 QoS. DIGISOL wireless network products not only support QoS for controllers, but also implement the same QoS function for wireless access points. They also support QoS controlled by each terminal and QoS controlled by wireless air interface. The entire wireless network provides an end-to-end QoS mechanism to enable network operators can provide users with service guarantees with different levels of service quality, making the Internet truly an integrated network that simultaneously carries data, voice, and video services.

## RF management

The DG-WU6028C/IS provides an automatic power and channel adjustment function. It employs particular RF detection and management algorithms to attain a better RF coverage effect. When the signals of an AP are interfered by strong external signals, the AP may automatically switch to an appropriate operating channel under the control of the AC to avoid such interference, thereby guaranteeing wireless network communications. The system also supports wireless network blackhole compensation. When an AP on the network accidentally stops operating.

## Control of terminals based on airtime fair

The AP performance problem in a low-rate terminal access environment, however, cannot be resolved by simply employing rate control and traffic shaping. DIGISOL smart APs have essentially resolved this problem by using intelligent control of terminals based on airtime fairness, ensuring that a user can always enjoy the same joyful WLAN experience in the same location, no matter what type of the terminal the user is holding.

The intelligent control of terminals based on airtime fairness greatly improves the performance of both the client and the entire network. It enables all clients with high data transmission rates to attain strikingly higher performance while low-rate clients are almost not affected at all. The performance will be even more obviously higher on an open wireless network. Once high-rate clients finish data transmission, fewer clients will be transmitting data on the wireless network.

## Load balancing mechanism

In general, a wireless client will select an AP according to the signal strength of APs. When this uncontrolled access mode is applied, however, a large number of clients could be connected to the same AP simply because the AP provides strong signals. As more clients are connected to an AP, the bandwidth available to each client will be smaller, thereby greatly affecting user experience of the clients. DIGISOL wireless products support diversified intelligent load balancing means:

- AP load balancing based on traffic ,AP load balancing based on the number of users ,AP load balancing based on frequency bands ,Access control based on signal strength of terminals ,Mandatory roaming control of terminals to direct terminals to APs with stronger signals

## Seamless roaming

The DG-WU6028C/IS supports an advanced wireless AC cluster technology to support seamless roaming, the continuity of real-time mobile services is well guaranteed.

## Identification of terminals

DIGISOL wireless ACs may combine with DIGISOL smart APs and a unified authentication platform to intelligently identify the size, system type, and type of each terminal; and comprehensively support mainstream smart terminal operating systems, such as Apple iOS, Android, and Windows. They intelligently identify the size of a terminal and adaptively present a portal authentication page of the corresponding size and page pattern, freeing users from multiple times of dragging to adjust the screen and enabling users to enjoy more intelligent wireless experience. They can also intelligently identify the system type of each terminal and present the system type of each terminal such as Windows, MAC OS, or Android on the unified authentication platform, exhibiting every detail of intelligence to users. In addition, they can intelligently identify the type of each terminal such as the mobile phone, tablet, or PC, and implement dynamic policy control of terminals according to different types of the terminals

## IPv4/v6 dual-stack networks

Powered by DIGISOL cutting-edge IPv6 technology, the DG-WU6028C/IS may be deployed on an IPv6 network.

## Wireless intrusion detection and intrusion defense

The DG-WU6028C/IS supports wireless intrusion detection and intrusion defense features, such as detection of unauthorized wireless devices, intrusion detection, blacklist, and white list, as well as anti-DoS for various wireless management packets, thereby greatly improving security management of an entire wireless network.

## SAVI

DIGISOL wireless network products support a source address validation (SAVI) technology to deal with spoofed packet attacks that keep emerging on today's campus networks. As users' IP addresses are obtained through an address allocation protocol, users access the Internet using correct addresses in subsequent applications and cannot spoof others' IP addresses, thereby guaranteeing the reliability of source addresses. In addition, the SAVI technology is combined with a portal technology to further guarantee the authenticity and security of packets of all users accessing the Internet.

## User authentication

With the popularization and application of smart terminals, wireless terminal users require authentication mechanisms of higher usability and convenience. Using a mechanism that combines portal authentication and MAC address authentication, DIGISOL wireless network products support Protected Extensible Authentication Protocol (PEAP) authentication to attain better user experience. Initially a user needs to manually perform portal authentication and later the user gets authenticated through PEAP in automatic mode. DIGISOL wireless network products feature high terminal adaptation and provide good authentication compatibility. They adapt to the majority of WLAN terminals and do not need to adapt to clients. DIGISOL wireless network products are compatible with existing portal authentication modes.

## Secure user admission

The DG-WU6028C/IS provides multiple secure access, authentication, and accounting mechanisms for various application environments. These mechanisms include:

- 802.1x authentication
- Captive portal authentication, including built-in portal, external portal, and custom portal authentication modes
- MAC address authentication
- LDAP authentication
- WAPI encryption and authentication
- Wired/wireless integrated authentication and accounting

## Secure access mechanism of APs

An AP is usually deployed in a public area and therefore requires a strict security mechanism to guarantee the legality of access devices. The following secure access mechanisms may be applied between a DIGISOL wireless AC and a smart AP:

- AP MAC address authentication
- AP password authentication
- Bidirectional digital certificate authentication

## AP plug-and-play

The DG-WU6028C/IS smart AC can be seamlessly integrated with existing switches, firewalls, authentication servers, and other network devices. DIGISOL smart APs are able to automatically discover the DG-WU6028C/IS. A wireless network function can be enabled on an AP without performing any configuration on the AP at all.

When used with the DG-WU6028C/IS, DIGISOL smart APs support plug-and-play and zero configuration. The wireless AC undertakes all the management, control, and configuration of the APs. Network administrators do not need to separately manage or maintain a huge number of wireless APs. All actions, such as configuration, firmware upgrade, and security policy updating, are performed uniformly under the control of the wireless AC.

## Remote probe analysis

The DG-WU6028C/IS supports remote probe analysis of APs. It listens to and captures Wi-Fi packets in the coverage and mirrors them to a local analysis device in real time to help network administrators better perform troubleshooting or optimization analysis. The remote probe analysis function can perform non-convergence mirroring of a working channel and sampling of all channels in polling mode as well to flexibly meet various wireless network monitoring, operation, and maintenance requirements.

## Multiple management modes and uniform management platform

The DG-WU6028C/IS supports various management modes such as command lines and web. It can be used to plan, deploy, monitor, and manage APs on an entire network centrally and effectively at low costs. It may also be used with a DIGISOL platform for integrated management of wireless and wired devices, so that administrators can monitor and manage the entire network in a data center as follows:

- Generating topologies
- Checking the working states of APs and the states of online users
- Planning RF resources on the entire network
- Locating users
- Generating security alarms
- Checking link loads, device usage and roaming records
- Outputting reports

## Technical Specifications

### Hardware Specifications

Item		DG- WU6028C/IS
Basic Parameter	Max QTY of managed AP	256
	Default QTY of managed AP	16
	Max con-current users	10K
	Switch capacity	364Gbps
	Forwarding rate	132Mpps
	VLAN	4K
	ACL	3K
	MAC	16K

	ARP	4K
Physical Parameter	Interface	24 x 10/100/1000Base-T Ethernet ports
		2 x combo (GbE/SFP) Ethernet ports
		2 x 10G SFP+ Ethernet ports
	Management interface	1 x Console (RJ-45) 1 x 10/100/1000BASE-T MGMT 1 x USB 2.0
	Dimension	440mm*240mm*44mm, 1U
Power Parameter	Consumption	<25W
	Power input	AC 110V - 240V, 50-60Hz (+/- 3Hz)
Environmental Parameter	Working temperature	0°C~55°C
	Storage temperature	-40°C~70°C
	Working humidity	5%~90% non-condensing

## Software Specifications

Item	DG-WU6028C/IS
<b>L2 protocols and standards</b>	IEEE802.3(10Base-T)、IEEE802.3u(100Base-TX)、IEEE802.3z (1000BASE-X) IEEE802.3ab(1000Base-T)、IEEE802.3ae(10GBase-T) IEEE802.3ak(10GBASE-CX4)、IEEE802.1Q(VLAN) IEEE802.1d(STP)、IEEE802.1W(RSTP)、IEEE802.1S(MSTP) IEEE802.1p(COS) IEEE802.1x(Port Control)、IEEE802.3x(flow control) IEEE802.3ad(LACP)、Port Mirror IGMP Snooping、MLD Snooping QinQ、GVRP、PVLAN Broadcast control
<b>L3 protocols and standards</b>	Static Routing RIPv1/v2, OSPF, BGP, VRRP, IGMP v1/v2/v3 ARP, ARP Proxy

	PIM-SM, PIM-DM, PIM-SSM
<b>Wireless protocols and standards</b>	802.11, 802.11a, 802.11b, 802.11g, 802.11n, 802.11d, 802.11h, 802.11i, 802.11e, 802.11k
<b>CAPWAP protocol</b>	Supports L2/L3 network topology between an AP and an AC.
	Enables an AP to automatically discover an accessible AC.
	Enables an AP to automatically upgrade its software version from an AC.
	Enables an AP to automatically download configurations from an AC.
<b>IPv6 protocols and standards</b>	IPv4/v6 dual-stack, manual tunnel, ISATAP, 6to4 tunnel, IPv4 over IPv6 tunnel, DHCPv6, DNSv6, ICMPv6, ACLv6, TCP/UDP for IPv6, SOCKET for IPv6, SNMP v6, Ping /Traceroute v6, RADIUS, Telnet/SSH v6, FTP/TFTP v6, NTP v6, IPv6 MIB support for SNMP, VRRP for IPv6, IPv6 QoS, static routing, OSPFv3, IPv6 SAVI
<b>High reliability</b>	N+1 backup , N+N backup
<b>RF management</b>	Setting country codes
	Manually/automatically setting the transmit power
	Manually/automatically setting the working channel
	Automatically adjusting the transmission rate
	Blind area detection and repair
	RF environment scanning, which enables a working AP to scan the surrounding RF environment
	RF interference detection and avoidance
	11n-preferred RF policy
	SSID hiding
	20 MHz and 40 MHz channel bandwidth configuration
	Airtime protection in hybrid access of 11bg and 11n terminals
	Terminal-based airtime fairness scheduling
	Terminal locating (A terminal locating algorithm can be embedded in the AC)

	Spectral navigation (5 GHz preferred)
	11n only
	SSID-based or Radio-based limit on the number of users
	User online detection
	Automatic aging of traffic-free users
	Prohibiting the access of clients with weak signals
	Remote probe analysis
<b>Security</b>	64/128 WEP, dynamic WEP, TKIP, CCMP, and SMS encryption
	802.11i security authentication and two modes (Enterprise and Personal) of 802.1x and PSK
	WAPI encryption and authentication
	LDAP authentication
	MAC address authentication
	Portal authentication, including built-in portal, external portal, and custom portal authentication modes
	PEAP user authentication
	Forwarding security control, such as frame filtering, white list, static blacklist, and dynamic blacklist
	User isolation
	Periodic Radio/SSID enabling and disabling
	Access control of free resources
	Secure admission control of wireless terminals
	Access control of various data packets such as MAC, IPv4, and IPv6 packets
	Secure access control of APs, such as MAC authentication, password authentication, or digital certificate authentication between an AP and an AC
	Radius Client
	Backup authentication server



	Wireless SAVI
	User access control based on AP locations
	Wireless intrusion detection system (WIDS) and wireless intrusion prevention system (WIPS)
	Protection against flooding attacks
	Protection against spoofing attacks
<b>Forwarding</b>	IPv6 access and forwarding; constructing IPv6 WLAN access service on an IPv4 network; providing IPv4 WLAN access service on an IPv6 network; and constructing private IPv6 WLAN network service on an IPv6 network
	Fast L2/L3 roaming between APs served by the same AC
	IPv4 and IPv6 multicast forwarding
	WDS AP
<b>QoS</b>	802.11e (WMM); and 4-level priority queues, ensuring that applications sensitive to the real-time effect, such as voice and video services, are transmitted first
	Ethernet port 802.1P identification and marking
	Mapping from wireless priorities to wired priorities
	Mapping of different SSIDs/VLANs to different QoS policies
	Mapping of data streams that match with different packet fields to different QoS policies
	Access control of MAC, IPv4, and IPv6 data packets
	Load balancing based on the number of users
	Load balancing based on user traffic
	Load balancing based on frequency bands
	Bandwidth limit based on APs
	Bandwidth limit based on SSIDs
	Bandwidth limit based on terminals
	Bandwidth limit based on specific data streams
	Power saving mode

	Multicast-to-unicast mechanism
	Automatic emergency mechanism of APs
	Intelligent identification of terminals
<b>Management</b>	Web management
	Configuration through a console port
	SNMP v1/v2c/v3
	Both local and remote maintenance
	Local logs, Syslog, and log file export
	Alarm
	Fault detection
	Statistics
	Login through Telnet
	Login through SSH
	Dual-image (dual-OS) backup
	Hardware watchdog
	AC cluster management; automatic information synchronization between ACs in a cluster, and automatic or manual push of configuration information
	SSID-based user permission management mechanism

## Product Purchase Information

Product Model	Description	Remarks
DG-WU6028C/IS	DG-WU6028C/IS wireless and wired integration access controller (24x 10/100/1000Base-T , 2 x combo (GbE/SFP), 2 x 10G SFP+ ) , default with 16 units AP license, support controlling max. 256 AP	Mandatory
DG-WU-UP16 DG-WU-UP32 DG-WU-UP128	16 Unit AP Upgrade License 32 Unit AP Upgrade License 128 Unit AP Upgrade License	Optional