

Aruba Instant 6.5.2.0



Release Notes

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Aruba Instant 6.5.2.0 is a major software release that introduces new features and enhancements.

For information on upgrading IAPs to the new release version, refer to the *Upgrading an IAP* topic in the *Aruba Instant 6.5.2.0 User Guide*.

Contents

[What's New in this Release on page 6](#) lists the regulatory information, new features and enhancements, and fixed issues in Aruba Instant 6.5.2.0 release.

[Known Issues and Limitations on page 12](#) lists the known issues and limitations identified in the Aruba Instant 6.5.2.0 release.

Contacting Support

Main Site	arubanetworks.com
Support Site	support.arubanetworks.com
Airheads Social Forums and Knowledge Base	community.arubanetworks.com
North American Telephone	1-800-943-4526 (Toll Free) 1-408-754-1200
International Telephone	arubanetworks.com/support-services/contact-support/
Software Licensing Site	hpe.com/networking/support
End-of-life Information	arubanetworks.com/support-services/end-of-life/
Security Incident Response Team	Site: arubanetworks.com/support-services/security-bulletins/ Email: sirt@arubanetworks.com

This chapter lists the regulatory information, features, enhancements, fixed issues, known issues and limitations in the Aruba Instant 6.5.2.0 release.

Regulatory Domain Updates

The following table lists the DRT file versions supported by Instant 6.5.2.0 release:

Table 1: *DRT Versions*

Instant Release Version	Applicable DRT Version
Aruba Instant 6.5.2.0	1.0_59118

For a complete list of countries certified with different AP models, see the respective DRT release notes at support.arubanetworks.com.

New Features and Enhancements

The following new features and enhancements are introduced in this release:

Support for New IAP Devices

IAP-203R Series Remote Access Points

The IAP-203R Series (IAP-203R and IAP-203RP) Remote APs are IEEE 802.11ac standard high-performance Remote APs ideal for home and branch deployments. MIMO technology allows these Remote APs to deliver high-performance 802.11n 2.4 GHz and 802.11ac 5 GHz functionality, while also supporting 802.11a, b, and g wireless services.

The Remote APs provides the following capabilities:

- IEEE 802.11a, b, g, n, or ac operation as a wireless access point
- IEEE 802.11a, b, g, n, or ac operation as a wireless air monitor
- Compatible with IEEE 802.3at PoE
- Centralized management configuration
- Support for PoE-in (E0 port)/PoE-out (E2 port)
- Support for selected USB peripherals
- Integrated BLE radio

For technical specifications, see the AP-203R Series data sheet. For installation instructions, see the *203R Series Remote Access Points Installation Guide*.

IAP-303H Access Point

The IAP-303H access point is an IEEE 802.11ac standard high-performance wireless device ideal for hospitality and branch deployments. MIMO technology allows the AP to deliver high-performance 802.11n 2.4 GHz and 802.11ac 5 GHz functionality, while also supporting 802.11a, b, and g wireless services.

The IAP provides the following capabilities:

- IEEE 802.11a, b, g, n, or ac operation as a wireless access point
- IEEE 802.11a, b, g, n, or ac operation as a wireless air monitor
- Compatible with IEEE 802.3af PoE and 802.3at PoE+
- Centralized management configuration
- Support for PoE-in (E0 port)/PoE-out (E3 port)
- Support for selected USB peripherals
- Integrated BLE radio

For technical specifications, see the AP-303H data sheet. For installation instructions, see the *AP-303H Access Point Installation Guide*.

360 Series Outdoor Access Points

The 360 Series (IAP-365 and IAP-367) outdoor IAPs support IEEE 802.11ac standard for high performance WLAN, and are equipped with two radios, which provide network access and monitor the network simultaneously. MIMO technology allows these APs to deliver high-performance 802.11n 2.4 GHz and 802.11ac 5 GHz functionality, while also supporting 802.11a, b, and g wireless services.

The outdoor IAPs provide the following capabilities:

- IEEE 802.11a, b, g, n, or ac operation as a wireless access point

- IEEE 802.11 a, b, g, n, or ac operation as a wireless air monitor
- IEEE 802.11 a, b, g, n, or ac spectrum monitor
- Compatible with IEEE 802.3af PoE
- Centralized management configuration
- Integrated BLE Radio

For technical specifications, see the 360 Series data sheet. For installation instructions, see the *360 Series Outdoor Access Points Installation Guide*.

Support for BLE-based Asset Tracking

Starting with Instant 6.5.2.0, IAPs can monitor BLE asset tags to track the location of time-sensitive, high-value assets embedded with BLE tags.

Support for Franklin Wireless U772 LTE Modem

Instant 6.5.2.0 introduces support for the Franklin Wireless U772 LTE modem on the following IAP platforms:

- 200 Series access points
- 203R Series access point
- IAP-205H access points
- 210 Series access points
- 220 Series access points
- 300 Series access points
- IAP-303H access points
- 310 Series access points
- 320 Series access points
- 330 Series access points

IAP Discovery Logic

Starting with Instant 6.5.2.0, APs can run in both controller-based mode and controller-less mode. Based on the selected mode, the AP runs a different image:

- Controller-based APs run an ArubaOS image.
- Controller-less APs run an Instant image

In the earlier releases of Instant, APs are predefined as either controller-based campus APs or controller-less Instant APs. Each campus AP is shipped with the ArubaOS manufacturing image and must connect to a controller in order to receive configurations. Campus APs can only run the ArubaOS image and cannot be converted into an Instant AP. Each Instant AP is shipped with the Instant manufacturing image and must join an IAP cluster in order to receive configurations from a virtual controller.

In Instant 6.5.2.0, each AP is shipped with a manufacturing image based on the Instant image, but containing reduced functions. When the AP is booted up with the manufacturing image, it enters the controller/Instant discovery process to determine if it will be upgraded to the controller-based mode (ArubaOS image) or controller-less mode (Instant image). After the controller, Instant virtual controller (VC), or Activate/AirWave/Central is discovered, the AP image is upgraded accordingly. For more information, see

- IAP Discovery Logic in *Aruba Instant 6.5.2.0 User Guide*.

Enabling Flexible Radio

This feature allows the IAP to seamlessly switch between modes where the radio resources are either combined in a single 2x2 radio (2.4 GHz or 5 GHz), or separated in two 1x1 radios (2.4 GHz and 5 GHz).

Intelligent Power Monitoring

Starting with Instant 6.5.2.0, IPM is supported in IAP-303H access points. IPM is a feature that actively measures the power utilization of an IAP and dynamically adapts to the power resources.

Smart Antenna Polarization

The IAP-335 access point supports the smart antenna feature, which optimizes the selection of antenna polarization values based on data collected from the training of polarization pattern combinations. This feature identifies the clients most likely to benefit from smart antenna polarization, based upon the average RSSI of the received frames, and the number of streams. This feature uses frame-based antenna training, which allows the IAP to cycle through training combinations for training and collect statistics without any impact on the client. At the end of training sequence, the IAP selects the best antenna polarization based upon these collected statistics.

BLE Firmware Image Support

Starting with Instant 6.5.2.0, the BLE firmware image is part of Instant. The BLE firmware will be upgraded automatically when Instant is upgraded.

Enhancement in ARM Configuration Parameter

The default value for Channel Quality Aware Arm is now changed to **Disabled** to match the ArubaOS configuration settings and behavioral logic.

Mesh Support

Starting with Instant 6.5.2.0, mesh support is introduced for IAP-303H, 300 Series, 330 Series, and 360 Series access points.

Support for RADIUS parameters on Wired Profiles

Starting from Instant 6.5.2.0, you can configure the RADIUS parameters `use-ip-for-calling-station-id` and `called-station-id` for wired profiles using the Instant CLI.

WebUI Management Certificate for Instant

Instant 6.5.2.0 now supports uploading a separate certificate for WebUI management.

Transmit Power Calculation support

Starting with Instant 6.5.2.0, this feature allows calculation of the transmit power of each outgoing 802.11 packet, so that the AP adheres to the latest regulatory limits.

Enhancement of Audit Trail

Instant 6.5.2.0 introduces `show audit-trail` to easily debug which operations be executed in IAP, and where the operations comes from.

Resolved Issues in this Release

The following issues are fixed in the Instant 6.5.2.0 release.

AppRF

Table 2: *AppRF Fixed Issue*

Bug ID	Description
154245	Symptom: The web classification for the singular.team site was incorrect on the IAP. This issue is resolved by enhancing the parsing logic in the latest SDK file. Scenario: This issue was observed in IAPs running a software version prior to Instant 6.5.2.0.

ARM

Table 3: *ARM Fixed Issue*

Bug ID	Description
153576	Symptom: ARM was changing channels frequently. The fix ensures that ARM does not change channels frequently. Scenario: This issue was observed in IAPs running a software version prior to Instant 6.5.2.0.

Captive Portal

Table 4: *Captive Portal Fixed Issue*

Bug ID	Description
156360	Symptom: Apple devices were sometimes not redirected to the ClearPass Guest welcome page or URL when connecting to the guest SSID. This issue is resolved by preventing the close notify alert from being issued. Scenario: This issue occurred as a close notify alert was issued by the Apple device to the client while closing the SSL session. This issue was observed in IAPs running a software version prior to Instant 6.5.2.0.

CLI

Table 5: *CLI Fixed Issue*

Bug ID	Description
156295	Symptom: NAS ID was sent with extra double quotes to the radius server. The fix ensures that the NAS ID is not sent with the extra double quotes. Scenario: This issue occurred due to a space in the NAS ID string and was observed in IAPs running a software version prior to Instant 6.5.2.0.

Central

Table 6: *Central Portal Fixed Issues*

Bug ID	Description
156360	<p>Symptom: Apple devices were sometimes not redirected to the ClearPass Guest welcome page or URL when connecting to the guest SSID. This issue is resolved by preventing the close notify alert from being issued.</p> <p>Scenario: This issue occurred as a close notify alert was issued by the Apple device to the client while closing the SSL session. This issue was observed in IAPs running a software version prior to Instant 6.5.2.0.</p>
155630	<p>Symptom: The username field on Cloud Guest was showing up encrypted. The fix ensures that the username text is not encrypted.</p> <p>Scenario: This issue was observed Cloud Guest was integrated with Central in IAPs running a software version prior to Instant 6.5.2.0.</p>
158008	<p>Symptom: The IAP VC was unable to recover the connection with Central after getting disconnected. This issue is resolved by ensuring the start connect time is trigger as soon the IAP disconnects and attempts to reconnect to Central.</p> <p>Scenario: This issue occurred due to a timer issue and was observed in IAPs running a software version prior to Instant 6.5.2.0.</p>

Datapath/Firewall

Table 7: *Datapath/Firewall Fixed Issue*

Bug ID	Description
154464	<p>Symptom: Continuous packet drops were observed when traffic was sent through the Eth1 port at 100Mbps. This issue is resolved by enabling flow control inside the ethernet switch clip.</p> <p>Scenario: This issue occurred due to the difference in speeds between the uplink and downlink ports. This issue was observed in IAP-205H access points running a software version prior to Instant 6.5.2.0.</p>

L3 Mobility

Table 8: *L3 Mobility Fixed Issue*

Bug ID	Description
152688	<p>Symptom: Windows clients lost connectivity when they roamed to a different L3 cluster. The fix ensures the client is not disconnected when roaming from one cluster to another.</p> <p>Scenario: This issue was observed in IAPs running a software version prior to Instant 6.5.2.0.</p>

Other

Table 9: *Other Fixed Issue*

Bug ID	Description
158869	<p>Symptom: XML API did not return calls made through the port 443. The ensures that the calls are successfully made through the port 443.</p> <p>Scenario: This issue was observed in IAPs running a software version prior to Instant 6.5.2.0.</p>

Platform

Table 10: *Platform Fixed Issues*

Bug ID	Description
158297	Symptom: The ESSID name in DHCP option 82 was missing for IAP-315 access points. This issue is resolved by making a change in the driver function to display the ESSID. Scenario: This issue was observed in IAP-315 access points running a software version prior to Instant 6.5.2.0.
150473	Symptom: Runtime and input errors were increasing on the switch interface when the uplink port is set to access. The fix ensures that the runtime and input errors do not increase. Scenario: This issue was observed in IAP-205 access points running a software version prior to Instant 6.5.2.0.

UI

Table 11: *UI Fixed Issue*

Bug ID	Description
154558	Symptom: IAP Web UI was not loading on the Internet Explorer or Mozilla Firefox browsers if the IAP name contained special characters. The fix ensures that the Web UI is able to load on the Internet Explorer and Mozilla Firefox browsers. Scenario: This issue was observed in IAPs running a software version prior to Instant 6.5.2.0.

Known Issues and Limitations

Known Issues

The following is identified as a known issue in Instant 6.5.2.0:

Symptom: In the releases prior to Instant 6.5.2.0, the default VC name format used is **instant-AA:BB:CC** (where AA:BB:CC is the last three octets of the IAP mac address). On upgrading to Instant 6.5.2.0, a configuration mismatch is observed on AMP as the current VC name format used is **SetMeUp-AA:BB:CC**.

Scenario: This issue is observed only in IAPs which are managed by AMP using a template.

Workaround: This configuration mismatch can be corrected by updating the VC name on the AMP group. You can also contact Aruba Support (arubanetworks.com/support-services/contact-support/) to get the script to update this change automatically.

The following table lists the acronyms and abbreviations used in Aruba documents.

Table 12: *List of Acronyms and Abbreviations*

Acronym or Abbreviation	Definition
3G	Third Generation of Wireless Mobile Telecommunications Technology
4G	Fourth Generation of Wireless Mobile Telecommunications Technology
AAA	Authentication, Authorization, and Accounting
ABR	Area Border Router
AC	Access Category
ACC	Advanced Cellular Coexistence
ACE	Access Control Entry
ACI	Adjacent Channel interference
ACL	Access Control List
AD	Active Directory
ADO	Active X Data Objects
ADP	Aruba Discovery Protocol
AES	Advanced Encryption Standard
AIFSN	Arbitrary Inter-frame Space Number
ALE	Analytics and Location Engine
ALG	Application Layer Gateway
AM	Air Monitor
AMON	Advanced Monitoring
AMP	AirWave Management Platform
A-MPDU	Aggregate MAC Protocol Data Unit
A-MSDU	Aggregate MAC Service Data Unit
ANQP	Access Network Query Protocol
ANSI	American National Standards Institute
AP	Access Point

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Acronym or Abbreviation	Definition
API	Application Programming Interface
ARM	Adaptive Radio Management
ARP	Address Resolution Protocol
AVF	AntiVirus Firewall
BCMC	Broadcast-Multicast
BGP	Border Gateway protocol
BLE	Bluetooth Low Energy
BMC	Beacon Management Console
BPDU	Bridge Protocol Data Unit
BRAS	Broadband Remote Access Server
BRE	Basic Regular Expression
BSS	Basic Service Set
BSSID	Basic Service Set Identifier
BYOD	Bring Your Own Device
CA	Certification Authority
CAC	Call Admission Control
CALEA	Communications Assistance for Law Enforcement Act
CAP	Campus AP
CCA	Clear Channel Assessment
CDP	Cisco Discovery Protocol
CDR	Call Detail Records
CEF	Common Event Format
CGI	Common Gateway Interface
CHAP	Challenge Handshake Authentication Protocol
CIDR	Classless Inter-Domain Routing
CLI	Command-Line Interface
CN	Common Name

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Acronym or Abbreviation	Definition
CoA	Change of Authorization
CoS	Class of Service
CPE	Customer Premises Equipment
CPsec	Control Plane Security
CPU	Central Processing Unit
CRC	Cyclic Redundancy Check
CRL	Certificate Revocation List
CSA	Channel Switch Announcement
CSMA/CA	Carrier Sense Multiple Access / Collision Avoidance
CSR	Certificate Signing Request
CSV	Comma Separated Values
CTS	Clear to Send
CW	Contention Window
DAS	Distributed Antenna System
dB	Decibel
dBm	Decibel Milliwatt
DCB	Data Center Bridging
DCE	Data Communication Equipment
DCF	Distributed Coordination Function
DDMO	Distributed Dynamic Multicast Optimization
DES	Data Encryption Standard
DFS	Dynamic Frequency Selection
DFT	Discreet Fourier Transform
DHCP	Dynamic Host Configuration Protocol
DLNA	Digital Living Network Alliance
DMO	Dynamic Multicast optimization
DN	Distinguished Name

Table 12: *List of Acronyms and Abbreviations*

Acronym or Abbreviation	Definition
DNS	Domain Name System
DOCSIS	Data over Cable Service Interface Specification
DoS	Denial of Service
DPD	Dead Peer Detection
DPI	Deep Packet Inspection
DR	Designated Router
DRT	Downloadable Regulatory Table
DS	Differentiated Services
DSCP	Differentiated Services Code Point
DSSS	Direct Sequence Spread Spectrum
DST	Daylight Saving Time
DTE	Data Terminal Equipment
DTIM	Delivery Traffic Indication Message
DTLS	Datagram Transport Layer Security
DU	Data Unit
EAP	Extensible Authentication Protocol
EAP-FAST	EAP-Flexible Authentication Secure Tunnel
EAP-GTC	EAP-Generic Token Card
EAP-MD5	EAP-Method Digest 5
EAP-MSCHAP EAP-MSCHAPv2	EAP-Microsoft Challenge Handshake Authentication Protocol
EAPoL	EAP over LAN
EAPoUDP	EAP over UDP
EAP-PEAP	EAP-Protected EAP
EAP-PWD	EAP-Password
EAP-TLS	EAP-Transport Layer Security
EAP-TTLS	EAP-Tunneled Transport Layer Security
ECC	Elliptical Curve Cryptography

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Acronym or Abbreviation	Definition
ECDSA	Elliptic Curve Digital Signature Algorithm
EIGRP	Enhanced Interior Gateway Routing Protocol
EIRP	Effective Isotropic Radiated Power
EMM	Enterprise Mobility Management
ESI	External Services Interface
ESS	Extended Service Set
ESSID	Extended Service Set Identifier
EULA	End User License Agreement
FCC	Federal Communications Commission
FFT	Fast Fourier Transform
FHSS	Frequency Hopping Spread Spectrum
FIB	Forwarding Information Base
FIPS	Federal Information Processing Standards
FQDN	Fully Qualified Domain Name
FQLN	Fully Qualified Location Name
FRER	Frame Receive Error Rate
FRR	Frame Retry Rate
FSPL	Free Space Path Loss
FTP	File Transfer Protocol
GBps	Gigabytes per second
Gbps	Gigabits per second
GHz	Gigahertz
GIS	Generic Interface Specification
GMT	Greenwich Mean Time
GPP	Guest Provisioning Page
GPS	Global Positioning System
GRE	Generic Routing Encapsulation

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Acronym or Abbreviation	Definition
GUI	Graphical User Interface
GVRP	GARP or Generic VLAN Registration Protocol
H2QP	Hotspot 2.0 Query Protocol
HA	High Availability
HMD	High Mobility Device
HSPA	High-Speed Packet Access
HT	High Throughput
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
IAS	Internet Authentication Service
ICMP	Internet Control Message Protocol
IdP	Identity Provider
IDS	Intrusion Detection System
IE	Information Element
IEEE	Institute of Electrical and Electronics Engineers
IGMP	Internet Group Management Protocol
IGP	Interior Gateway Protocol
IGRP	Interior Gateway Routing Protocol
IKE PSK	Internet Key Exchange Pre-shared Key
IoT	Internet of Things
IP	Internet Protocol
IPM	Intelligent Power Monitoring
IPS	Intrusion Prevention System
IPsec	IP Security
ISAKMP	Internet Security Association and Key Management Protocol
ISP	Internet Service Provider
JSON	JavaScript Object Notation

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Acronym or Abbreviation	Definition
KBps	Kilobytes per second
Kbps	Kilobits per second
L2TP	Layer-2 Tunneling Protocol
LACP	Link Aggregation Control Protocol
LAG	Link Aggregation Group
LAN	Local Area Network
LCD	Liquid Crystal Display
LDAP	Lightweight Directory Access Protocol
LDPC	Low-Density Parity-Check
LEA	Law Enforcement Agency
LEAP	Lightweight Extensible Authentication Protocol
LED	Light Emitting Diode
LEEF	Log Event Extended Format
LI	Lawful Interception
LLDP	Link Layer Discovery Protocol
LLDP-MED	LLDP-Media Endpoint Discovery
LMS	Local Management Switch
LNS	L2TP Network Server
LTE	Long Term Evolution
MAB	MAC Authentication Bypass
MAC	Media Access Control
MAM	Mobile Application Management
MBps	Megabytes per second
Mbps	Megabits per second
MCS	Modulation and Coding Scheme
MD5	Message Digest 5
MDM	Mobile Device Management

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Acronym or Abbreviation	Definition
mDNS	Multicast Domain Name System
MFA	Multi-factor Authentication
MHz	Megahertz
MIB	Management Information Base
MIMO	Multiple-Input Multiple-Output
MLD	Multicast Listener Discovery
MPDU	MAC Protocol Data Unit
MPLS	Multiprotocol Label Switching
MPPE	Microsoft Point-to-Point Encryption
MSCHAP	Microsoft Challenge Handshake Authentication Protocol
MSS	Maximum Segment Size
MSSID	Mesh Service Set Identifier
MSTP	Multiple Spanning Tree Protocol
MTU	Maximum Transmission Unit
MU-MIMO	Multi-User Multiple-Input Multiple-Output
MVRP	Multiple VLAN Registration Protocol
NAC	Network Access Control
NAD	Network Access Device
NAK	Negative Acknowledgment Code
NAP	Network Access Protection
NAS	Network Access Server Network-attached Storage
NAT	Network Address Translation
NetBIOS	Network Basic Input/Output System
NIC	Network Interface Card
Nmap	Network Mapper
NMI	Non-Maskable Interrupt
NMS	Network Management Server

Table 12: *List of Acronyms and Abbreviations*

Acronym or Abbreviation	Definition
NOE	New Office Environment
NTP	Network Time Protocol
OAuth	Open Authentication
OCSF	Online Certificate Status Protocol
OFA	OpenFlow Agent
OFDM	Orthogonal Frequency Division Multiplexing
OID	Object Identifier
OKC	Opportunistic Key Caching
OS	Operating System
OSPF	Open Shortest Path First
OUI	Organizationally Unique Identifier
OVA	Open Virtual Appliance
OVF	Open Virtualization Format
PAC	Protected Access Credential
PAP	Password Authentication Protocol
PAPI	Proprietary Access Protocol Interface
PCI	Peripheral Component Interconnect
PDU	Power Distribution Unit
PEAP	Protected Extensible Authentication Protocol
PEAP-GTC	Protected Extensible Authentication Protocol-Generic Token Card
PEF	Policy Enforcement Firewall
PFS	Perfect Forward Secrecy
PHB	Per-hop behavior
PIM	Protocol-Independent Multicast
PIN	Personal Identification Number
PKCS	Public Key Cryptography Standard
PKI	Public Key Infrastructure

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Acronym or Abbreviation	Definition
PLMN	Public Land Mobile Network
PMK	Pairwise Master Key
PoE	Power over Ethernet
POST	Power On Self Test
PPP	Point-to-Point Protocol
PPPoE	PPP over Ethernet
PPTP	PPP Tunneling Protocol
PRNG	Pseudo-Random Number Generator
PSK	Pre-Shared Key
PSU	Power Supply Unit
PVST	Per VLAN Spanning Tree
QoS	Quality of Service
RA	Router Advertisement
RADAR	Radio Detection and Ranging
RADIUS	Remote Authentication Dial-In User Service
RAM	Random Access Memory
RAP	Remote AP
RAPIDS	Rogue Access Point and Intrusion Detection System
RARP	Reverse ARP
REGEX	Regular Expression
REST	Representational State Transfer
RF	Radio Frequency
RFC	Request for Comments
RFID	Radio Frequency Identification
RIP	Routing Information Protocol
RRD	Round Robin Database
RSA	Rivest, Shamir, Adleman

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Acronym or Abbreviation	Definition
RSSI	Received Signal Strength Indicator
RSTP	Rapid Spanning Tree Protocol
RTCP	RTP Control Protocol
RTLS	Real-Time Location Systems
RTP	Real-Time Transport Protocol
RTS	Request to Send
RTSP	Real Time Streaming Protocol
RVI	Routed VLAN Interface
RW RoW	Rest of World
SA	Security Association
SAML	Security Assertion Markup Language
SAN	Subject Alternative Name
SCB	Station Control Block
SCEP	Simple Certificate Enrollment Protocol
SCP	Secure Copy Protocol
SCSI	Small Computer System Interface
SDN	Software Defined Networking
SDR	Software-Defined Radio
SDU	Service Data Unit
SD-WAN	Software-Defined Wide Area Network
SFTP	Secure File Transfer Protocol
SHA	Secure Hash Algorithm
SIM	Subscriber Identity Module
SIP	Session Initiation Protocol
SIRT	Security Incident Response Team
SKU	Stock Keeping Unit
SLAAC	Stateless Address Autoconfiguration

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Acronym or Abbreviation	Definition
SMB	Small and Medium Business
SMB	Server Message Block
SMS	Short Message Service
SMTP	Simple Mail Transport Protocol
SNIR	Signal-to-Noise-Plus-Interference Ratio
SNMP	Simple Network Management Protocol
SNR	Signal-to-Noise Ratio
SNTP	Simple Network Time Protocol
SOAP	Simple Object Access Protocol
SoC	System on a Chip
SoH	Statement of Health
SSH	Secure Shell
SSID	Service Set Identifier
SSL	Secure Sockets Layer
SSO	Single Sign-On
STBC	Space-Time Block Coding
STM	Station Management
STP	Spanning Tree Protocol
STRAP	Secure Thin RAP
SU-MIMO	Single-User Multiple-Input Multiple-Output
SVP	SpectraLink Voice Priority
TAC	Technical Assistance Center
TACACS	Terminal Access Controller Access Control System
TCP/IP	Transmission Control Protocol/ Internet Protocol
TFTP	Trivial File Transfer Protocol
TIM	Traffic Indication Map
TKIP	Temporal Key Integrity Protocol

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Acronym or Abbreviation	Definition
TLS	Transport Layer Security
TLV	Type-length-value
ToS	Type of Service
TPC	Transmit Power Control
TPM	Trusted Platform Module
TSF	Timing Synchronization Function
TSPEC	Traffic Specification
TTL	Time to Live
TTLS	Tunneled Transport Layer Security
TXOP	Transmission Opportunity
U-APSD	Unscheduled Automatic Power Save Delivery
UCC	Unified Communications and Collaboration
UDID	Unique Device Identifier
UDP	User Datagram Protocol
UI	User Interface
UMTS	Universal Mobile Telecommunication System
UPnP	Universal Plug and Play
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
USB	Universal Serial Bus
UTC	Coordinated Universal Time
VA	Virtual Appliance
VBN	Virtual Branch Networking
VBR	Virtual Beacon Report
VHT	Very High Throughput
VIA	Virtual Intranet Access
VIP	Virtual IP Address

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Acronym or Abbreviation	Definition
VLAN	Virtual Local Area Network
VM	Virtual Machine
VoIP	Voice over IP
VoWLAN	Voice over Wireless Local Area Network
VPN	Virtual Private Network
VRD	Validated Reference Design
VRF	Visual RF
VRRP	Virtual Router Redundancy Protocol
VSA	Vendor-Specific Attributes
VTP	VLAN Trunking Protocol
WAN	Wide Area Network
WebUI	Web browser User Interface
WEP	Wired Equivalent Privacy
WFA	Wi-Fi Alliance
WIDS	Wireless Intrusion Detection System
WINS	Windows Internet Naming Service
WIPS	Wireless Intrusion Prevention System
WISPr	Wireless Internet Service Provider Roaming
WLAN	Wireless Local Area Network
WME	Wireless Multimedia Extensions
WMI	Windows Management Instrumentation
WMM	Wi-Fi Multimedia
WMS	WLAN Management System
WPA	Wi-Fi Protected Access
WSDL	Web Service Description Language
WWW	World Wide Web
WZC	Wireless Zero Configuration

Table 12: *List of Acronyms and Abbreviations*

Acronym or Abbreviation	Definition
XAuth	Extended Authentication
XML	Extensible Markup Language
XML-RPC	XML Remote Procedure Call
ZTP	Zero Touch Provisioning

