

What's New in ZF Version 10.0?

This application note describes the new features available in Version 10.0 of Ruckus Wireless ZoneFlex family. This document assumes familiarity with the Ruckus ZoneFlex product line and the features of earlier releases till ZF version 9.13.3.

Highlights of this Release

ZoneFlex software release 10.0 provides Enterprises, HotZone Operators and Managed Service Providers a higher performing, more reliable, and easier to deploy WiFi network to provide wireless access to diverse groups of users across multiple locations.

Key features of release 10.0 are

- Support for indoor 802.11ac Multi-User MIMO (MU-MIMO) Wave 2 AP R720
- Increased scale for ZD 1200
- New UI
- Bonjour Fencing
- Enhancements to Application Recognition & Control (ARC)
- SSID Rate-limiting
- Deep integration with Cloudpath
- Role Based ACL
- Change of Authorization (CoA)
- Named ACL
- Spectrum Analysis for 11ac APs (Wave 1 & 2)
- Modular software for APs
- Support for 802.11w
- Simplified Self-Service Guest workflow
- GUI support for BSS Min Rate, OFDM Only, and Management Tx Rate



Supported Platforms

- FlexMaster v.10.0
- ZoneDirector Remote Control 9.12 (Mobile App for iPad and Android phones)
- ZoneDirector 1200 WLAN Controller
- ZoneDirector 3000 WLAN Controller
- ZoneDirector 5000 WLAN Controller
- ZoneFlex R720 802.11ac Multi-User MIMO (MU-MIMO) Indoor Access Point
- ZoneFlex R710 802.11ac Multi-User MIMO (MU-MIMO) Indoor Access Point
- ZoneFlex R610 802.11ac Multi-User MIMO (MU-MIMO) Indoor Access Point
- ZoneFlex R510 802.11ac Multi-User MIMO (MU-MIMO) Indoor Access Point
- ZoneFlex H510 802.11ac Multi-User MIMO (MU-MIMO) Indoor AP with Wired/Wireless Wall Switch
- ZoneFlex T710 802.11ac Multi-User MIMO (MU-MIMO) Outdoor Access Point
- ZoneFlex T710S 802.11ac Multi-User MIMO (MU-MIMO) Outdoor Access Point with Sector Antenna
- ZoneFlex T610 802.11ac Multi-User MIMO (MU-MIMO) Outdoor Access Point
- ZoneFlex C110 802.11ac Multi-User MIMO (MU-MIMO) Indoor Access Point with Cable Modem
- ZoneFlex R310 802.11ac Dual-band Access Point
- ZoneFlex R300 802.11n Dual-band Access Point
- ZoneFlex R500 802.11ac Dual-band Access Point
- ZoneFlex R600 802.11ac Dual-band Access Point
- ZoneFlex R700 802.11ac Dual-band Access Point
- ZoneFlex T300 802.11ac Dual-band Access Point
- ZoneFlex T300E 802.11ac Dual-band Access Point
- ZoneFlex T301N 802.11ac Dual-band Access Point
- ZoneFlex T301S 802.11ac Dual-band Access Point
- ZoneFlex H500 802.11ac Dual-band Wired/Wireless Wall Switch
- ZoneFlex 7055 802.11n Dual-band Wired/Wireless Wall Switch
- ZoneFlex 7352 802.11n Dual-band Access Point
- ZoneFlex 7372 802.11n Dual-band Access Point
- ZoneFlex 7372-E 802.11n Dual-band Access Point
- ZoneFlex 7982 802.11n Dual-band Access Point
- ZoneFlex 7781-CM 802.11n Dual-band Outdoor Access Point with Cable Modem
- ZoneFlex 7782 Dual Band 802.11n Outdoor Access Point with Omni Antenna
- ZoneFlex 7782-S Dual Band 802.11n Outdoor Access Point with Sector Antenna
- ZoneFlex 7782-E Dual Band 802.11n Outdoor Access Point with External Antenna



- ZoneFlex 7782-N Dual Band 802.11n Outdoor Access Point with 30 deg. Narrow Sector Antenna

EoL (End of Life) APs

The following AP models have reached end-of-life (EoL) status and, therefore, are no longer supported in ZF 10.0 release. If your ZoneDirector is currently managing any of these models, a warning will appear when you attempt to upgrade to ZF 10.0. If your ZoneDirector is currently managing any of these models, do NOT upgrade to this release. ZoneDirector will be unable to manage them.

- ZoneFlex 7321 802.11n Access Point
- ZoneFlex 7321-u 802.11n Access Point
- ZoneFlex 7341 802.11n Access Point
- ZoneFlex 7343 802.11n Access Point
- ZoneFlex 7363 802.11n Dual-band Access Point
- ZoneFlex 7441 802.11n Access Point for In-Building Distributed Antenna Systems
- ZoneFlex 7761-CM 802.11n Dual-band Outdoor Access Point with Cable Modem
- ZoneFlex 7762 802.11n Dual-band Outdoor Access Point
- ZoneFlex 7762-S 802.11n Dual-band Outdoor Access Point with Sector Antenna
- ZoneFlex 7025 802.11n Wired/Wireless Wall Switch
- ZoneFlex 7762-T 802.11n Dual-band Outdoor Access Point with High Gain 2.4 GHz Omni Antenna
- ZoneFlex 7762-AC Dual-band 802.11n Outdoor Access Point
- ZoneFlex 7762-S-AC Dual-band 802.11n Outdoor Access Point with Sector Antenna
- SmartCell 8800-S Dual Band 802.11n Outdoor Access Point with Sector Antenna
- SmartCell 8800-S-AC Dual Band 802.11n Outdoor Access Point with Sector Antenna

Support for 802.11ac Multi-User MIMO (MU-MIMO) Wave 2 AP R720

The R720 is a new dual-band concurrent 4x4:4 802.11ac Wave 2 access point capable of supporting up to 2.5Gbps Ethernet backhaul and 80 MHz, 160 MHz and 80+80 MHz channelization, designed for high-density indoor applications. The R720 features one 100/1000/2500 Ethernet port that supports 802.3at and 802.3af Power over Ethernet (PoE), a second 10/100/1000 Ethernet port, and a USB port for IoT applications.

Key Features:

- 4-stream 802.11ac Multi-User MIMO (MU-MIMO), with concurrent dual-band (5GHz/2.4GHz) support
- 80MHz, 80+80MHz and 160MHz channelization; 256-QAM modulation support; 1733 Mbps PHY rates at 5GHz
- Backward compatible with legacy 802.11 clients
- BeamFlex+ (PD-MRC) improves signal reception of mobile devices
- Integrated smart antenna with many unique patterns for ultra-reliability
- One 2.5Gbps Ethernet port and one 1Gbps Ethernet port
- Ethernet Port Link Aggregation (LACP)
- USB port for hosting Internet-of-Things (IoT) devices such as Bluetooth Low Energy (BLE) smart beacons

Increased Scale for ZoneDirector 1200

Starting with version 10.0, ZoneDirector 1200's (ZD 1200) scale has been increased. ZD 1200's ability to manage APs has increased from 75 to 150, and the max clients/DPSKs/guest passes has been increased from 2,000 to 4,000. However, the max number of temporary AP licenses remain at 75.



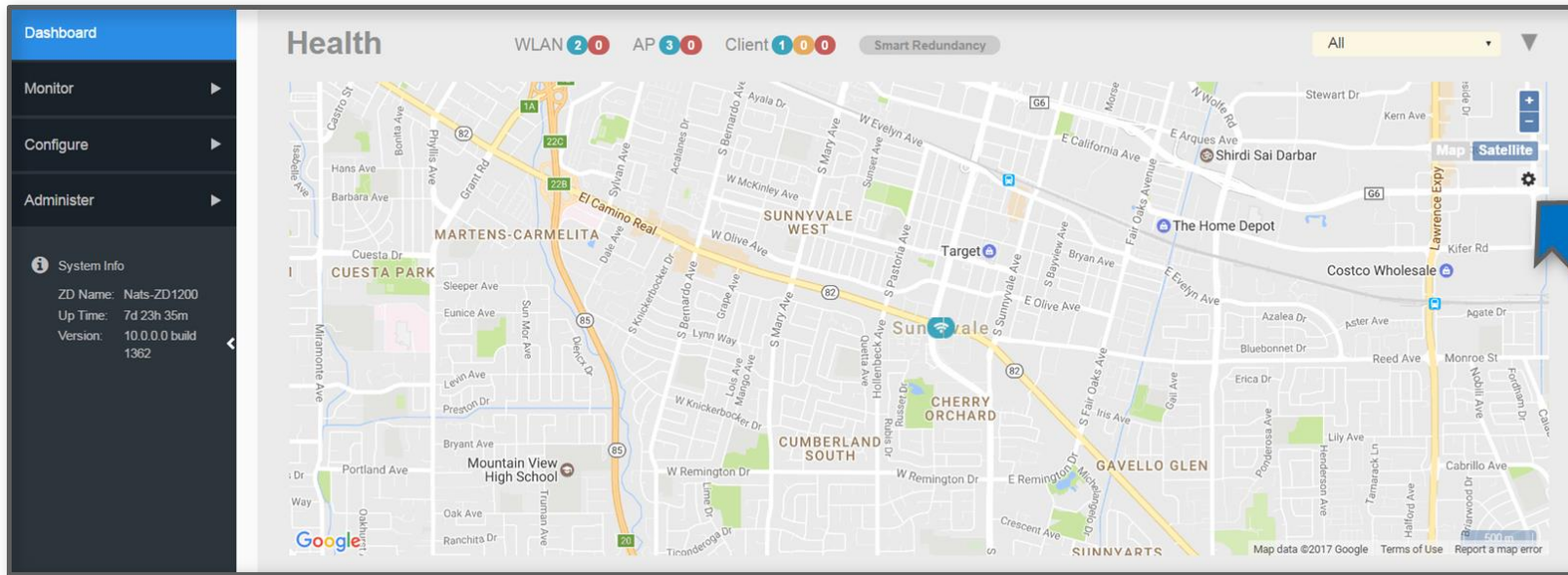
Both existing and new customers will be able to reap the benefits of ZD 1200's increased scale. To gain the increased scale benefits on ZD 1200 customers will need to:

1. Upgrade ZD 1200's software version to 10.0.
2. Buy more APs, AP licenses, and Support as needed to expand network capacity.

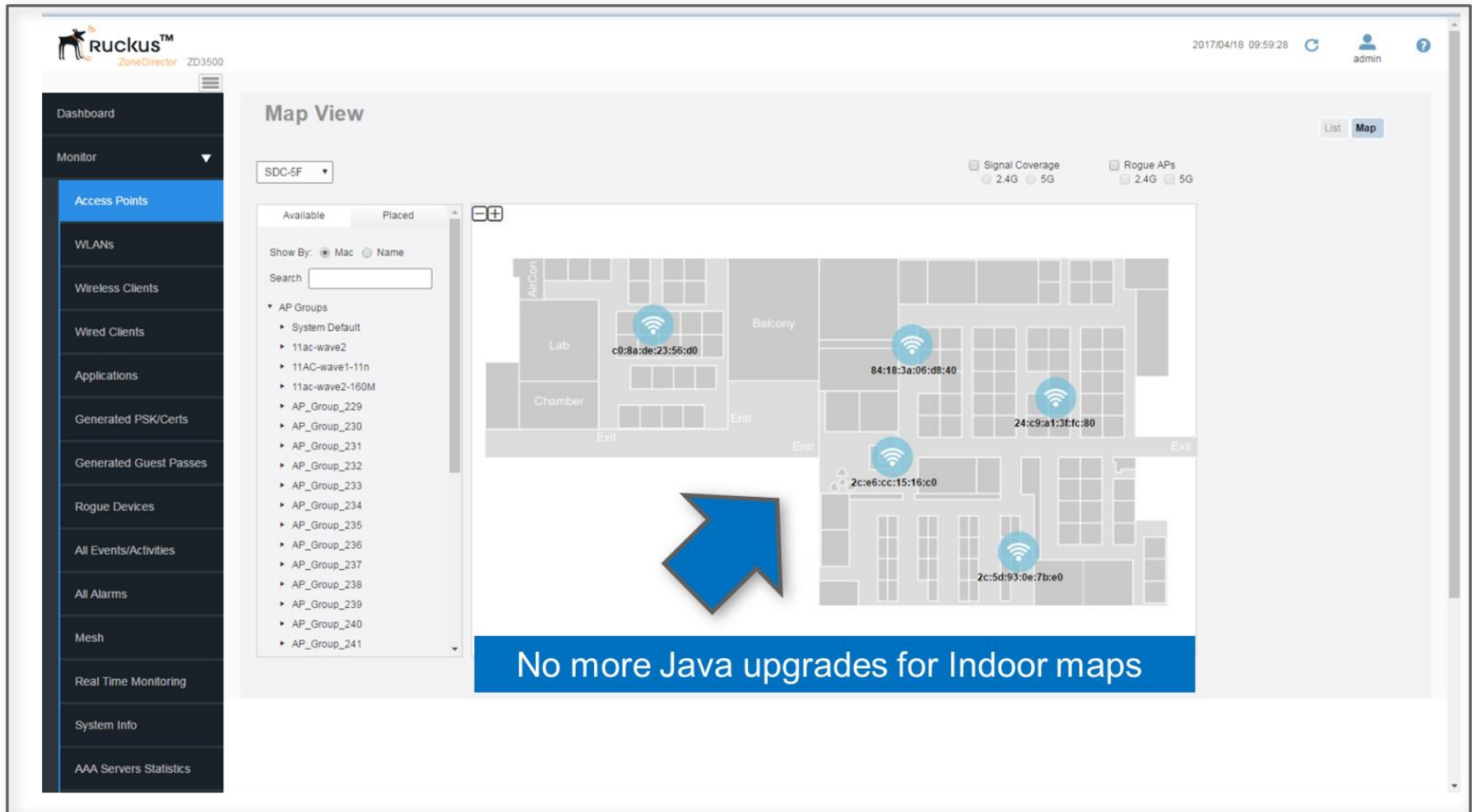
New UI

ZoneDirector version 10.0 brings a very refreshing "look & feel" for ZD's web User Interface (UI). The new UI provides an updated layout with completely redesigned dashboard experience with traffic analysis, a new map view interface based on Google maps (default, but can be changed to Microsoft's Bing if needed).

As the newly designed UI is not based on Java, customers are no longer required to upgrade their Java version in order to use the Indoor maps.



- Google map is default
- Customer may choose to change it to Microsoft's Bing



The screenshot shows the Ruckus ZoneDirector ZD3500 web interface. The top left features the Ruckus logo and 'ZoneDirector ZD3500'. The top right shows the date '2017/04/18 09:59:28', a refresh icon, and a user profile for 'admin'. A dark sidebar on the left contains navigation options: Dashboard, Monitor (with a dropdown arrow), Access Points (highlighted in blue), WLANs, Wireless Clients, Wired Clients, Applications, Generated PSK/Certs, Generated Guest Passes, Rogue Devices, All Events/Activities, All Alarms, Mesh, Real Time Monitoring, System Info, and AAA Servers Statistics. The main content area is titled 'Map View' and includes a dropdown menu set to 'SDC-5F'. On the right, there are checkboxes for 'Signal Coverage' (with radio buttons for 2.4G and 5G) and 'Rogue APs' (with radio buttons for 2.4G and 5G). Below these are 'List' and 'Map' buttons. The central map displays a floor plan with several AP locations marked by blue Wi-Fi icons and their MAC addresses: c0:8a:de:23:56:d0, 84:18:3a:06:d8:40, 24:c9:a1:3f:fc:80, 2c:e6:cc:15:16:c0, and 2c:5d:93:0e:7b:e0. A large blue arrow points from the bottom of the map area towards the text 'No more Java upgrades for Indoor maps' which is overlaid on a blue banner at the bottom of the map view.

Customer Benefits

1. Simplified navigation menu for easier use.
2. Traffic analysis enables customers to quickly find the highest points of AP and WLAN load as well as the top network users and devices.
3. Indoor maps support without the pain of Java upgrades.

Bonjour Fencing

Bonjour is a multicast based discovery protocol (aka mDNS) that is primarily used by Apple and Google devices such as Apple TV, Apple Printers, Google Chromecast. As these devices advertise their services client devices like Apple Mac, Mobile devices such as iPhone and Android devices can discover them using the Bonjour protocol. Since this is a multicast protocol, if there are a large number of service advertising devices (like Apple TVs) in the same VLAN, then end users will have difficulty choosing from a huge list of available devices. This problem can be magnified if VLANs are spread geographically.

This is when Bonjour Fencing feature comes in very handy as it provides a mechanism to limit the scope of Bonjour (mDNS) service discovery in the physical/spatial domain. In other words, although there may be several Bonjour devices in the same VLAN, the Bonjour Fencing feature would show a narrowed list of nearby devices for users to choose from.

This feature supports both Wired and Wireless devices. However, in this release, only one wired device can be anchored on an AP.

While Bonjour Fencing is related to Bonjour Gateway, they are two separate features designed for different purposes. At the same time, Bonjour Fencing works with Bonjour Gateway to complement each other.



Customer Benefits

1. Displays a narrowed list of Bonjour devices for easier selection. For example, the network may have 100s of Apple TVs or Printers but only few nearby devices are displayed to choose from.
2. Limits multicast flooding from Bonjour devices to improve overall network performance.

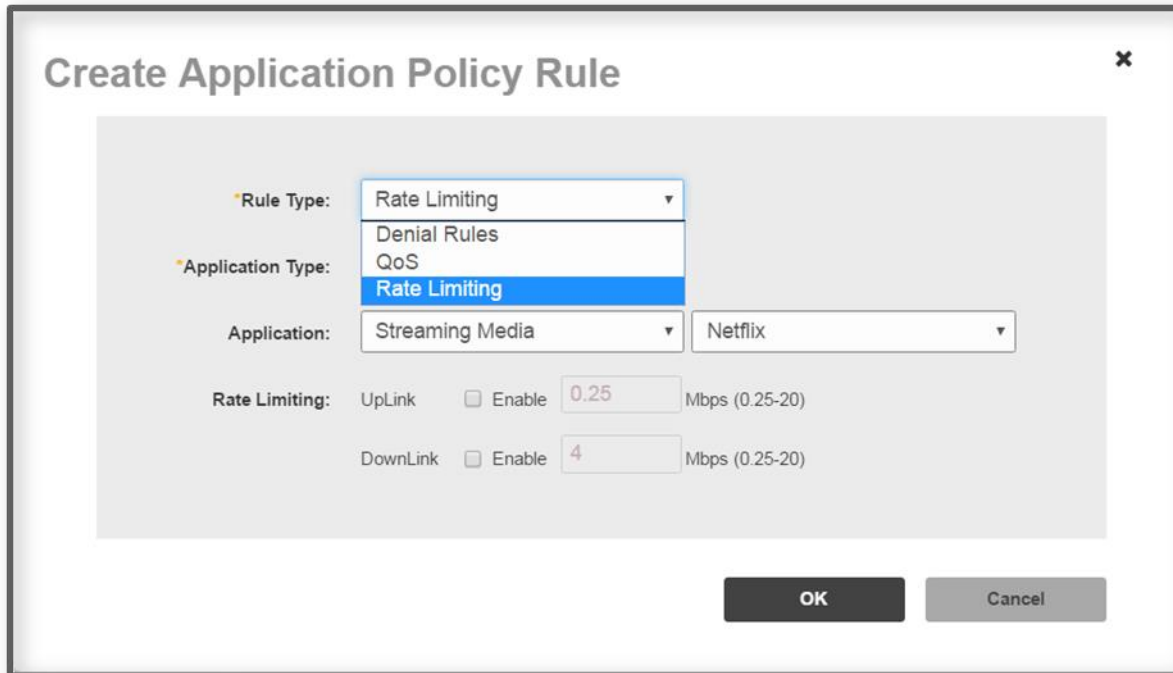
Enhancements to Application Recognition & Control (ARC)

Application Recognition & Control (ARC) is a feature that was introduced in version 9.8. Since then it has been continuously getting enhanced so that customers can enjoy the benefits to its fullest. Ruckus' ARC is based on Deep Packet Inspection (DPI) or L7 based mechanism to accurately recognize applications used in the WiFi network.

This release adds the following enhancements to ARC:

1. **Rate-limit applications.**
2. **Prioritize/de-prioritize (QoS) applications.**
3. **Decoupled Application Signature package from ZD's firmware.**

Note that in prior releases Applications can be denied from access on a given WLAN.



Create Application Policy Rule [X]

Rule Type: Rate Limiting

Application Type: Rate Limiting

Application: Streaming Media Netflix

Rate Limiting:

UpLink Enable 0.25 Mbps (0.25-20)

DownLink Enable 4 Mbps (0.25-20)

OK Cancel

Customer Benefits

1. **For example**, on a Guest WLAN, Netflix can be rate-limited to a few Mbps in order to avoid few guest users gobbling up most of the available WiFi bandwidth by watching high resolution movies on Netflix.
2. **For example**, on an employee WLAN, ERP applications used within the enterprise can be given higher priority over non-business critical applications.

3. Application signature packages can be upgraded regularly in order to recognize new applications that are being used in the network.
4. Higher network uptime as no need to upgrade ZD firmware & reboot in order to recognize newer applications.

SSID Rate-limiting

Starting in ZD release 10.0, customers will have the ability to rate-limit / cap a WLAN to a certain Mbps up to a maximum of 200 Mbps per WLAN.

If per-SSID rate limiting is enabled, per-device rate limiting is disabled.

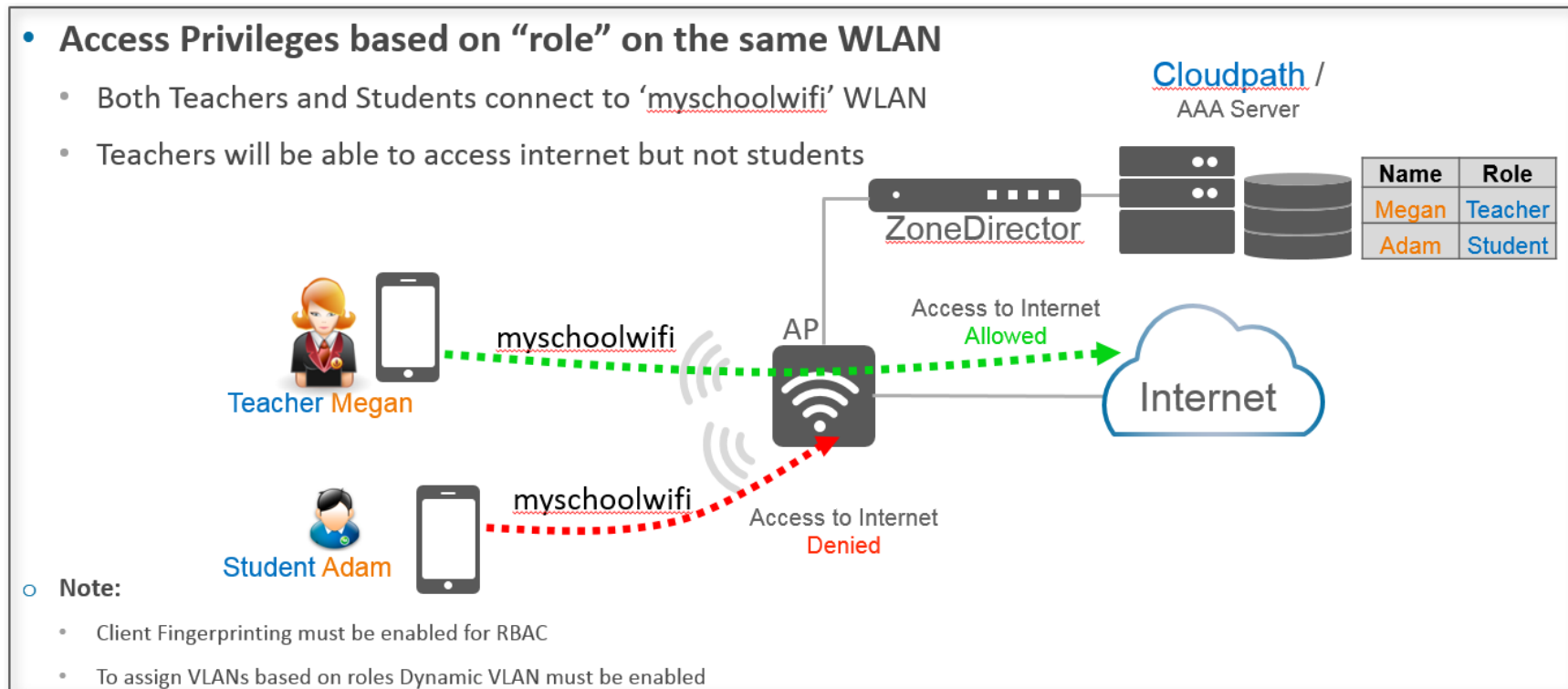
Rate Limiting	Per Station Uplink	Disabled	Per Station Downlink	Disabled
SSID Rate Limiting	Uplink	<input type="checkbox"/> Enable		mbps (0.1~200) <i>Per STA rate limiting will not work if SSID rate limiting is enabled.</i>
	DownLink	<input type="checkbox"/> Enable		mbps (0.1~200)

Customer Benefits

1. **Effective use of the WLAN.** *For example*, Teachers and Students have two separate WLANs. Students WLAN can be rate-limited to 50 Mbps. This 50 Mbps will be shared between all students while teachers will have enough bandwidth to do their tasks.

Role Based ACL

Role based policy options have been supported on ZD for quite some time. This release adds the option for altering WLAN access privileges based on users' roles.



In previous releases, ZD had support for the following role based policy options which will continue to be available in 10.0 as well:

- OS type: Limit access based on operating system/device type.
- VLAN: Assign a VLAN ID to this role.
- Rate Limiting: Limit per-station uplink and downlink speeds.
- Time Range: Limit the time range during which this role will be allowed access.

Customer Benefits

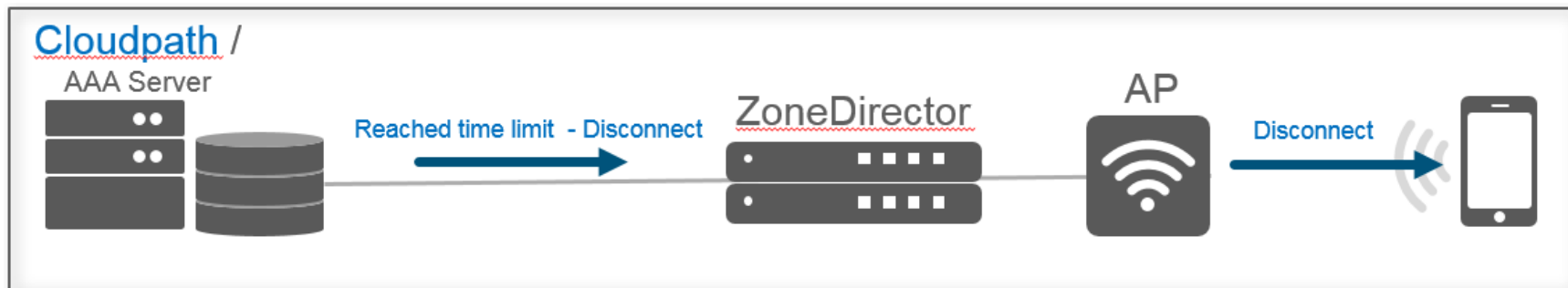
1. Simplified network management and control
2. Fewer WLANs needed which would contribute to improving overall network performance

Change of Authorization (CoA)

This release adds support for RADIUS Change of Authorization (CoA) messages. CoA enables the dynamic reconfiguring of sessions from external authentication, authorization, and accounting (AAA) servers.

The following CoA attributes are supported in release 10.0

- Disconnect-Message
- Uplink rate limit
- Downlink rate limit
- Idle timeout
- Session Timeout
- Accounting interval
- Filter ID (ACL ID)

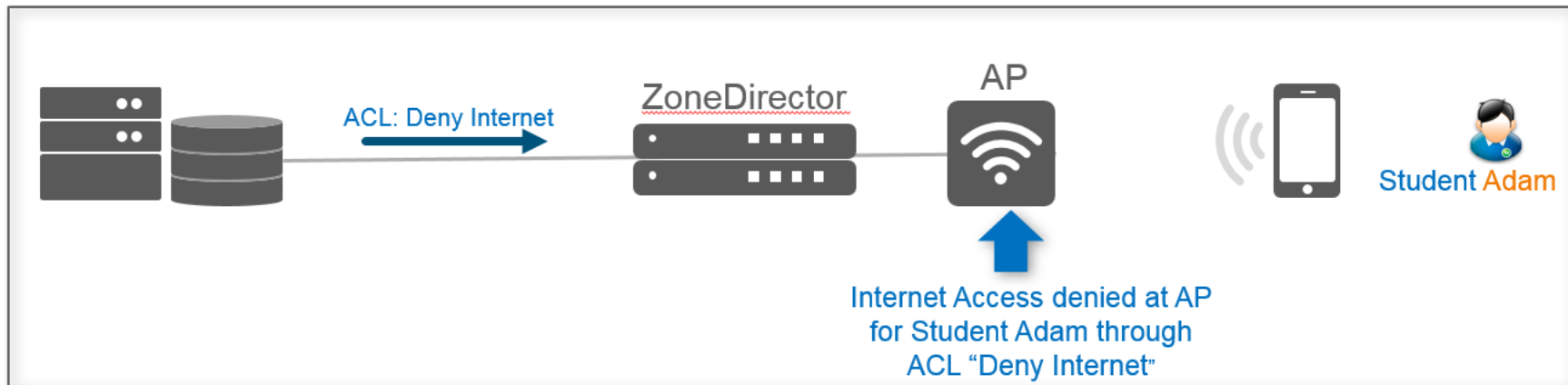


Customer Benefits

1. Simplified yet dynamic control of users' access to WLANs. As the above diagram illustrates, a user has paid to access a WLAN for internet connectivity. Upon reaching the time limit, the radius server pushes a CoA message to disconnect the user from the network. Other supported CoA attributes can be leverage to enforce certain actions dynamically.

Named ACL

This release adds support for named ACLs, allowing customers to create ACLs with meaningful names for easier network management.



Customer Benefits

1. Simplifies network management.

Deep Integration with Cloudpath

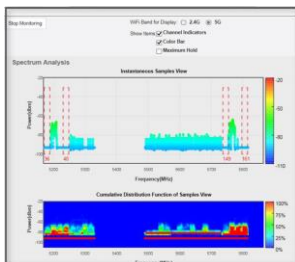
This release adds new APIs in order to provide an interface to improve ease of use between ZoneDirector and Cloudpath. All of the above specified policy control features ('Role Based policies, CoA, Named ACL') can be leveraged for greater control and enforcement of policies. New APIs will be leveraged by Cloudpath version 5.2 to provide the benefit of ease of deployment between ZD and Cloudpath.

Customer Benefits

1. For easier deployment when configuring the integration between ZD and Cloudpath, information such as WLAN names will appear automatically on Cloudpath.

Spectrum Analysis for WAVE 1 & 2 APs

Release 10.0 enables the support for Spectrum Analysis for both WAVE 1 & 2 APs.



Customer Benefits



1. Provides on-demand real-time spectrum troubleshooting using AP radio

Modular Software for APs

In this release WLAN controller (ZoneDirector) firmware and AP firmware are decoupled. This enables admins to import a new AP model patch file to ZoneDirector to add new AP models without requiring a full upgrade of the ZoneDirector firmware.

Customer Benefits

1. Higher network uptime as
 - No need to upgrade ZD firmware and reboot it to add new AP models
 - No need to upgrade ZD firmware in order to address AP-specific issues
2. Take advantage of new technologies that are introduced through new AP models sooner without the need to wait for the next ZD firmware release.

Support for 802.11W

This release adds the ability to enable management frame protection for any WPA2-AES (either 802.1X or PSK) encrypted WLANs. The Protected Management Frame (PMF) also known as Management Frame Protection (MFP) is defined in 802.11w to protect 802.11 Robust Management frames, including Disassociation, Deauthentication, and Robust Action frames.

Customer Benefits

1. Improves WiFi network security

Simplified Self-Service Guest workflow

The self-service guest pass workflow has been further simplified in order to improve guest users' experience. In addition, when an email is sent to the guest's sponsor for approval, the email link now contains the FQDN instead of ZD's IP address.

Customer Benefits

1. Simplified guest experience leads to higher satisfaction for guest users
2. FQDN support in sponsor approval email improves overall security

GUI support for BSS Min Rate, OFDM Only, and Management Tx Rate

Added the ability to set BSS Min Rate, OFDM Only and Mgmt Tx Rate in the web User Interface (UI) under WLAN configuration. These configuration options were available via CLI in prior releases.

Customer Benefits

1. These options can be configured to improve overall throughput capacity and prevent older 802.11b clients from joining in high density environments.



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