

# Smart/OS

Smart Wi-Fi Application Engine

## Smart Wireless LAN software for Ruckus Smart WLAN controllers

Ruckus Smart/OS is a software suite and application engine included in every Ruckus ZoneDirector Smart Wireless LAN (WLAN) controller that delivers a myriad of breakthrough WLAN features not found in any other centrally-managed wireless system.

Designed for busy networking and IT staff, Ruckus Smart/OS is one of the industry's most elegant and straightforward WLAN systems available today. Smart/OS leverages a highly-intuitive Web interface that enables everything with a click of a mouse.

At the heart of Smart OS is a unique set of advanced capabilities made extremely simple to configure and manage. These include adaptive wireless meshing, advanced RF management, robust security capabilities, simple-to-use guest networking, hot spot authentication and traffic redirection.

In addition, Smart OS offers all the traditional WLAN management tasks – sophisticated authentication, state-of-the-art encryption, fast roaming, guest networking and wireless intrusion detection – standard in centrally-managed WLAN systems.

With Smart/OS, a central dashboard gives IT staff a complete at-a-glance overview of the entire WLAN environment from recent user and system activities to detailed usage summaries, most frequently used access points (APs) to currently active WLANs and much more.

From this dashboard, administrators can quickly and easily drill down to specific APs and clients to test Wi-Fi connectivity, determine the current used channels, troubleshoot problems, block clients and perform a number of other monitoring and configuration tasks.

With Smart/OS, up to 32 discrete WLANs can be created and mapped to the same or different APs or VLANs. WLANs can also be grouped and shared by specific APs.



## BENEFITS

### Ultra-simple WLAN configuration and administration

An intuitive, graphic-rich Web interface makes WLAN configuration and ongoing administration the easiest it has ever been.

### Elegant guest networking without the hassle

Enabling guest access can be performed in minutes. Customize guest-pass printout pages, generate random or exact passes unique to every user and define the duration of each guest pass.

### Flexible and scalable WLAN configuration

Create up to 32 unique WLAN per controller. Maps WLANs to specific APs or VLANs and create WLAN groups to be shared by certain APs.

### Smart Mesh Networking for flexible WLAN deployment

A simple checkbox enables Smart Mesh Networking for the entire WLAN. Once enabled, APs require only power source and self-configure and self-optimize.

### Users access policies provide rich WLAN control

Administrators can easily create and enforce access controls based on specific users, traffic types or TCP ports.

### Multi-site authentication to scale large deployments

Support for WISPr tunneling from each ZoneDirector allows all traffic to be automatically directed to a central NOC or external Web server for remote authentication and processing.

### Seamless integration with existing network infrastructure

Authentication using RADIUS, native Active Directory or LDAP via a captive portal makes integration with existing network elements seamlessly.

### Robust remote management

SNMP support lets administrators remotely control and easily integrate Ruckus Smart WLANs with existing management systems or using the Ruckus FlexMaster Wi-Fi management platform.



### Ultra simple configuration and management

One of the easiest to manage WLAN systems on the market, Smart/OS enables administrators to configure an entire WLAN in less than 5 minutes using an intuitive, point-and-click wizard. Once configured, a robust set of features, such as user access policies, adding/changing SSIDs, enabling Smart Meshing, is performed by clicking a checkbox.

### Adaptive Wi-Fi meshing

Ruckus Smart Mesh Networking enables self-organizing and self-healing wireless meshing. Smart Mesh Networking eliminates the need to run Ethernet cabling to every Smart Wi-Fi AP, allowing administrators to simply plug in ZoneFlex APs to any power source, then walk away. All configuration and management is delivered through Smart/OS on the ZoneDirector Smart WLAN platform.

### Secure authentication, encryption and access controls

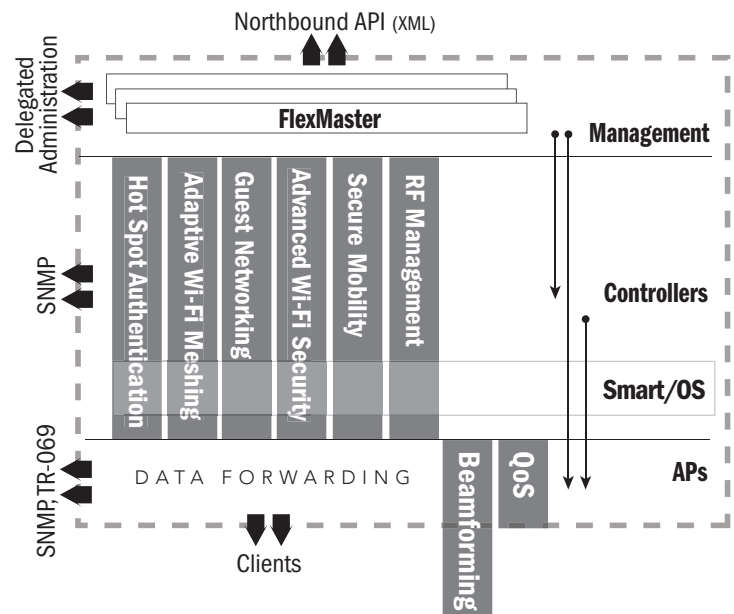
Ruckus Smart/OS provides state-of-the-art encryption and simplified authentication options along with user access controls for robust Wi-Fi security.

In addition, Smart/OS supports unique capabilities such as Dynamic Pre-Shared Keys (Dynamic PSK) that automates the generation and installation of unique encryption keys on each end device without IT intervention. Support for Web-based captive portal, LDAP support, native Active Directory, 802.1x and RADIUS all come standard.

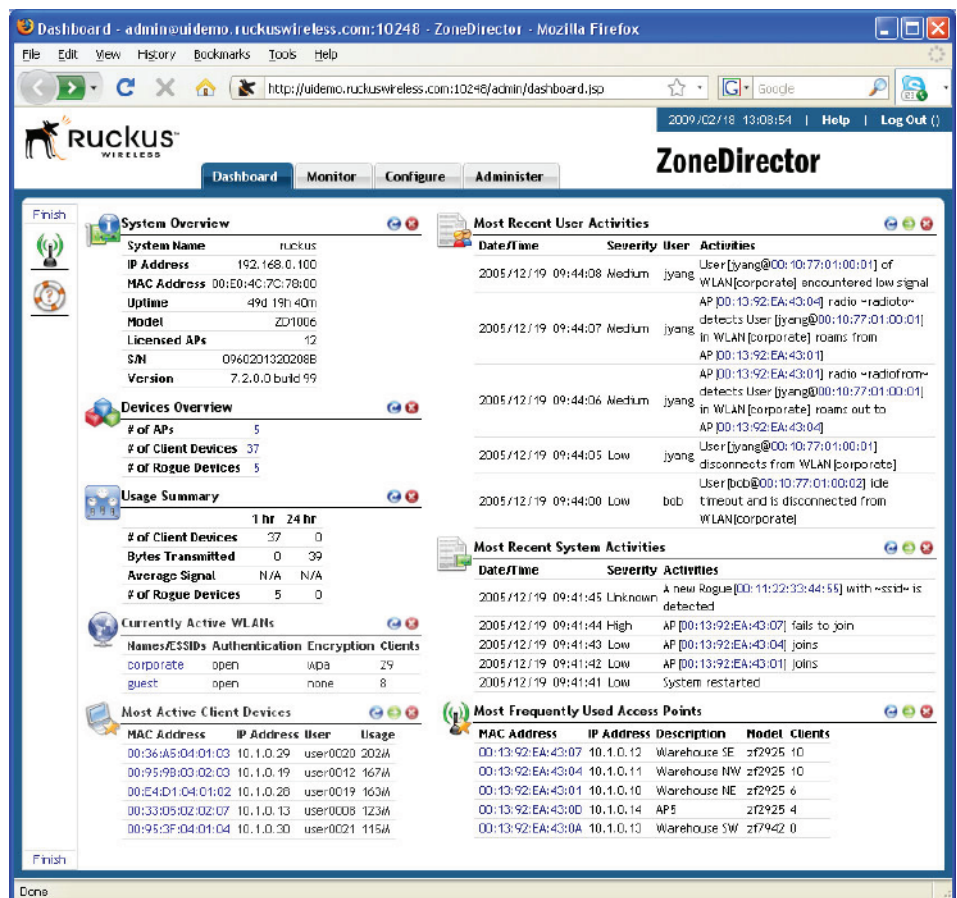
To protect against unsanctioned wireless devices, Smart/OS rogue AP detection differentiates between "rogue" APs installed on the local network and authorized APs.

Strong access controls include MAC, IP and TCP-based filters. This gives administrators the power to protect against peer snooping and man-in-the-middle attacks by eliminating unauthorized users from hijacking sessions via DHCP/DNS spoofing. Role-based user access allows only authorized users to access authorized resources. Clients can also be automatically blacklisted after authentication attempts.

Ruckus Smart Wireless LAN Architecture with Smart/OS



Smart/OS features one of the industry's most intuitive and easy to use WLAN graphical user interfaces. This at-a-glance dashboard provides a comprehensive view of the entire WLAN, letting administrators quickly drill down to diagnose problems and optimize the network.



### Fast and seamless mobility

Ruckus Smart/OS delivers faster and more secure Wi-Fi roaming. Advanced Layer 3 tunneling and key caching techniques eliminate client reauthentication with a remote servers when roaming across APs.

By creating a separate and dedicated WLAN that tunnels VoIP clients back to the ZoneDirector WLAN controller roaming clients maintain their IP address when associating with any AP. Smart/OS also supports the caching of Pairwise Master Keys (PMK) as well as opportunistic PMK caching to reduce or eliminate delays caused by performing full 802.1X reauthentication.

### Elegant and easy guest networking

Within Smart/OS, guest networking is easily enabled through a highly intuitive, browser-based facility that lets any guest-facing staff generate a unique Wi-Fi guest pass in less than 60 seconds with no configuration changes required on any client device.

Guest passes can be time-limited in hour, day, and week increments allowing more granularity between different types of guests. Unique pass keys can be dynamically generated by the ZoneDirector for each guest and bound to a specific client MAC address upon successful authentication. A single pass key can also be shared among many users. Unlike other solutions, no additional appliances are needed.

Guest pass print outs can be customized and fixed guest passes, that are easy to remember, can be generated and bound to a single users or shared by multiple users.

### Advanced multi-site authentication

Ruckus Smart/OS allows each ZoneDirector to automatically interact with an external Web or authentication server through the use of the Wireless Internet Service Provider (WISPr) protocol. Ideal for university and enterprises that want to create a Wi-Fi hotspot experience, end users are redirected to the external Web server where their sessions can be timed and customized.

### Dynamic RF management

Smart/OS provides dynamic controls over RF channel assignments and transmit power levels (SmartAir) to further optimize the RF environment without manual intervention. But RF management is taken to new levels with BeamFlex - an integrated smart antenna system. BeamFlex automatically coordinates local RF management – automatically steering Wi-Fi signals toward each receiver and away from noise. Unlike omni antennas, BeamFlex does not constantly radiate in all directions thereby minimizing adjacent AP interference.

### Sophisticated quality of service

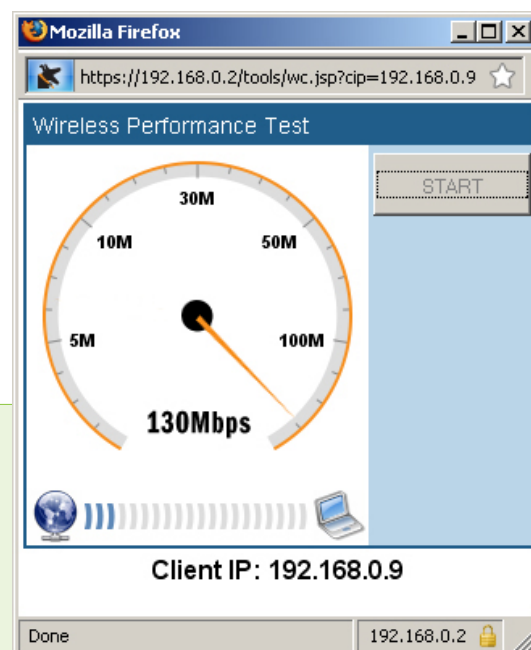
Advanced quality of service mechanisms within Ruckus Smart/OS and ZoneFlex APs deliver unmatched support for latency-sensitive VoIP and IP-based streaming video. Smart/OS allows administrators to set traffic thresholds for users on a specific SSID and limit the number of users per APs.

Additionally, on each Ruckus AP, four software queues are dedicated for every client while video and voice traffic is automatically classified and prioritized. And multicast IP traffic is automatically directed to requesting clients and prioritized to ensure picture-perfect video streaming.

### Robust management for seamless integration

Smart/OS allows for seamless integration with existing SNMP-based management systems. Administrators can gather detailed stats about WLANs, APs and clients. SNMP traps can be generated for events and alarms such as APs joining the ZoneDirector, loss of AP connectivity, rogue AP detection and client authentication failures.

RADIUS accounting provides enhanced monitoring, management and compliance, enabling back-end billing.



SpeedFlex™ is a unique wireless performance test tool integrated within Ruckus Smart/OS that measures the Wi-Fi throughput of associated wireless LAN (WLAN) clients and can be invoked directly from the controller.

## Specifications

### RF MANAGEMENT

#### DYNAMIC RF MANAGEMENT

- Dynamic channel management
- Dynamic power management

#### ANTENNA-BASED BEAMFORMING

- Supported through BeamFlex intelligent antenna array system

### MOBILITY

#### SEAMLESS MOBILITY

- <50ms inter-AP handoff
- PMK caching (requires Mobility license)
- Opportunistic PMK caching (requires Mobility license)
- L3 fast roaming via VoIP tunneling (requires Mobility license)

### SECURITY

#### WIRELESS IDS

- Rogue AP detection
- Mapping rogue APs on map view
- Alarms, emails and SNMP traps

#### DoS ATTACK PREVENTION

- Supported
- Password guessing protection

#### ENCRYPTION

- WEP, WPA, WPA2, TKIP, AES, 802.11i

#### AUTHENTICATION

- 802.1X, captive portal, ActiveDirectory, LDAP, RADIUS, MAC address-based and local database (5000 entries)
- Dynamic Pre-Shared Key (Dynamic PSK) generation

#### ACCESS CONTROLS

- Role-based policies
- L2-4 ACLs

#### CLIENT BACKLISTING

- Supported

#### WIRELESS CLIENT ISOLATION

- Supported

#### TRAFFIC SEPARATION

- Via VLANs (VLAN per WLAN)

### SMART MESHING

#### WIRELESS MESHING

- 802.11g and 802.11n
- Auto-provisioning
- Automatic topology
- Self-healing
- Throughput based
- Mesh AP ACLs
- Mesh map view management and control

### HOT SPOT AUTHENTICATION

#### WISPr

- Web redirection
- External Web server and RADIUS server support
- Configurable or RADIUS-based session termination
- Walled garden (with WISPr)

### GUEST NETWORKING

#### CUSTOMIZABLE GUEST PORTAL

- Logo
- Welcome message
- Fully-customizable (and localized) guest pass printout

#### TEMPORARY GUEST PASS GENERATION

- Automatic
- Configurable
- Time-based (hours, days, weeks)

#### TERMS AND CONDITIONS

- Customizable

#### POST AUTHENTICATION WEB PAGE REDIRECTION

- Requested page
- Pre-configured page

#### GUEST POLICIES

- Supported

### MANAGEMENT

#### USER INTERFACE

- HTTPS Web-based

#### SSL

- Certificate upload

#### AUTO AP DISCOVERY

- Layer 2, Layer 3

#### MAP VIEW

- Supported

#### WLAN MANAGEMENT

- 32 WLANs
- Map WLANs to different APs
- Map WLANs to different VLAN (VLAN override supported)

#### ADMIN AUTHENTICATION

- Via AD, LDAP or RADIUS
- Role-based read only and read/write administration

#### DHCP

- Supported

#### ACCOUNTING

- RADIUS

#### SNMP

- MIBs and Traps

#### REMOTE MANAGEMENT

- AP and controllers by FlexMaster

### HARDWARE SUPPORT

#### CONTROLLER

- ZoneDirector 1000/3000

#### ACCESS POINTS

- ZoneFlex 7962, 7942, 2942, 2741, 2925

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