Simply SMARTER WIRELESS for a MOBILE WORLD
10 Years and Counting

- Formed: 2004
- Customers: 48,000+
- Partners: 11,000+
- Patents: 100+ (Granted)
RF Technology
Competitors – Omni-Directional

Omni-Directional

Cisco

Aruba

Aerohive

Meraki

Light Bulb Effect
(Short Distances and Interference)
Competitive Advantage – BeamFlex

Ruckus BeamFlex

Flashlight Light Effect (Connect Further)
Automatic Interference Mitigation

Minimizes Packet Loss and Re-Transmissions, Increases Reliability

- Interference mitigated by positioning antenna nulls in specific directions
- Avoiding interference delivers more benefits than a stronger signal
  - Better throughput
  - More predictable connectivity

Signal Gain up to 10dBi from beamforming

Smart Wi-Fi antenna arrays deliver additive gain of up to -17dB from interference avoidance
Good communication isn't just about how well a Wi-Fi access point can talk…

…its about how well they listen
Solutions Portfolio
Comprehensive Wi-Fi Portfolio

**INDOOR**
- **Wi-Fi Wall Switch**
  - 802.11n/.ac
  - H500

- **Low End**
  - 802.11n
  - R300

- **Mid-Range**
  - 802.11n/.ac
  - R500/600

- **High-End**
  - 802.11n/.ac
  - R700

- **Point to Point / multipoint**
  - 802.11n Bridges
  - P300 and 7731

- **Mid-Range 802.11n/.ac**
  - T300/301
  - Omni, Sectorized & Narrowbeam

- **High End**
  - 802.11n
  - 7782

**OUTDOOR**
- **Low End Unleashed**
  - Up to 25 APs

- **Low End**
  - 1200
  - Up to 75 APs

- **Mid-Range**
  - 3000
  - Up to 500 APs

- **High End**
  - 5000
  - Up to 1,000 APs

- **High End SmartZone 100**
  - Up to 3,000 APs

- **Virtual SCG**
  - Up to 3,000 APs

**CONTROLLERS/ GATEWAYS**
Indoor APs
### Indoor Access Point Positioning

<table>
<thead>
<tr>
<th>Model</th>
<th>Model Number</th>
<th>Wi-Fi Standards</th>
<th>Price</th>
<th>Positioning Points</th>
<th>Speed</th>
</tr>
</thead>
</table>
| **BEST** | R710         | 4x4:4 802.11ac  | $1295 USD | + Best performance  
  - Fastest processor  
  - Most BeamFlex+ patterns (>3k per band)  
  - WAVE 2  
  + Extended operating temperature range (0 to 50C)  
  + 1733 Mbps (5 GHz), 800 Mbps (2.4 GHz) | ![Clock] |
| **NEW** | R600         | 3x3:3 802.11ac  | $795 USD | + Better performance  
  - 3rd Spatial Stream  
  - More BeamFlex+ patterns (512 per band)  
  + 1300 Mbps (5 GHz), 450 Mbps (2.4 GHz) | ![Clock] |
| **BETTER** | R500        | 2x2:2 802.11ac  | $645 USD | + Better performance  
  - 802.11ac  
  - BeamFlex+ “Mobile-Ready” PD-MRC  
  + Additional Ethernet Port (2x GE ports total)  
  + 866 Mbps (5 GHz), 300 Mbps (2.4 GHz) | ![Clock] |
| **GOOD**  | R310         | 2x2:2 802.11ac  | $495 USD | + BeamFlex (64 patterns per band)  
  + 1 Gigabit Ethernet Port  
  + 866 Mbps (5 GHz), 300 Mbps (2.4 GHz) | ![Clock] |
**802.11ac: An Overview**

- **Increased Speed**
  - Breaks “gigabit” barrier
  - Max of 6.9 Gbps

- **5 GHz Only**
  - Focuses on capacity-rich, low-interference spectrum
  - Benefits entire Wi-Fi ecosystem

- **80/160 MHz channels**
  - Very wide channels
  - One of the primary reasons for 11ac's very high data rates

- **Up to 8 spatial streams**
  - N-fold efficiency improvement
  - Requires client-side support

- **256-QAM**
  - More efficient modulation
  - 33% data rate gains
  - Very short ranges only
  - Requires 11ac clients

- **Multi-user MIMO (MU-MIMO)**
  - Simultaneous downlink Tx to single-stream clients
  - Multiplies network capacity
  - Key differentiator from 802.11n
Outdoor APs
Outdoor Access Point Positioning

T300 Series

2x2:2 802.11ac
$1295 - $1495 USD

+ High Capacity .11ac
+ Small lite weight form factor
+ 802.3af PoE input power
+ BeamFlex+ (PD-MRC, 64 patterns per band*)
+ Outdoor operating temperature range (-20 to 55C)

Enterprise Outdoor
Stadiums
Convention Centers
Transportation Hubs
Warehousing
Industrial

* Omni T300 and T300e
**ZoneFlex P300 Bridge**

Outdoor 802.11ac Point-to-Point; Point-to-Multi-Point Bridge

- Compact Outdoor 2x2:2 Stream 802.11ac Bridge
  - 5 GHz band operation
  - Channel widths: 20, 40, 80 MHz
  - Integrated 14dBi dual-polarization antenna
  - External antenna support (2x N-female)
  - Radar Avoidance Pre-Scanning - RX Sensor

- Single 10/100/1000 Ethernet
- 802.3af PoE Input
- Environmental: IP 67, Operating Temperature
- Adjustable bracket for easy aiming
- Availability: July 2015

* Future s/w release*
Management
Unleashed Controllerless Solution

- At GA, Unleashed wireless access points include the R500 and R600
- Any AP can be Primary/Standby-Master/Member AP
- Any AP can actively serve clients
- Supports up to 25 APs and 512 Clients

Unleash your network in 60 seconds!
Family of Smart Controllers

**ZONEDIRECTOR**

**1200 Series**
- APs: 5-75 APs
- Clients: 2,000
- Size: Desktop
- WLANs: 256
- App: SMB
- Price: $1095 USD and up

**3000 Series**
- APs: 25-500 APs
- Clients: 10,000
- Size: 1U rack mount
- WLANs: 1024
- App: Medium Enterprise
- Price: $6K USD and up

**5000 Series**
- APs: 100-1,000 APs
- Clients: 20,000
- Size: 2U rack mount
- WLANs: 2048
- App: Large Enterprise, Service Provider
- Price: $35K USD and up
Smart Zone 100

- Two Models: 1GE (Base Model) and 10GE
- RuckOS (formerly SCG) with Enterprise GUI
- Supports AP Local break-out and Centralized data tunneling
- Port Configurations
  - Base Model: 4xGE ports
  - 10G Model: 2x10GE ports + 4xGE
- Highly Available and Greatly Scalable
  - Single node: 1,000 APs, 20K clients, 2K WLANs
  - 4-node cluster (3+1 redundancy): 3,000 APs, 60K clients, 2K WLANs
- 320 GB Hard disk drive for long term storage
- 1G platform: 1 Gbps Data Throughput
- 10G platform: 10 Gbps Data Throughput
- Single 77W AC power supply
- Redundant fans

- 2x10GE + 4xGE
  - 10 Gbps Data Throughput
  - $9,995
- 4xGE
  - 1 Gbps Data Throughput
  - $4,995
Virtual SmartCell Gateway (vSCG)

- Carrier class cloud-based WLAN controller
- Runs in Service Providers / Partners data center
- Highly Flexible and Scalable Virtual Appliance
  - 25 to 3,072 APs
  - 500 to 20K Clients
- Hypervisor Support
  - VMware vSphere
  - KVM (OpenStack)
- Active/Active Clustering for Resiliency
- HA Extended from Hypervisor
- Multi-tenant or dedicated VM modes
- Unmatched Scalability

• Starting at $995 USD for vSCG base software
• $100 USD additional for vSCG Licenses supporting 1 APs
Virtual Controller Architecture

Global Network

VSZ On Premise Network

NOC

Virtual SmartZone

VSZ On Premise Hosted Services

SCI-SmartCell Insight Analytics Platform

CloudPath Express Connect Server

Control Data

INTRO TO RUCKUS WIRELESS
Software
Ruckus SmartCell Insight

- Collects, correlates and reports on WiFi KPIs
- Software only package
- Big Data for Multi-year historical analysis
- Data export to upstream OSS systems

- Browser driven, flexible point & click report generation
- Out of the Box Reporting
- Custom Report Generator
Best-in-Class Secure Wi-Fi

Wi-Fi Needs a Solution That Provides...

- stress-free security
- complaint-free connectivity
- hassle-free administration

Cloudpath ES: **Set-It-And-Forget-It Wi-Fi**

The Industry’s Most Comprehensive and Easy-to-Deploy Device Onboarding Solution
BYOD Client Authentication Options

- **Ruckus BYOD HS2.0 (AD, Radius FB, Google)**
- **Radius Against Existing Database (using standard client)**
- **Cloudpath**
Location Services
Smart Positioning Technology (SPoT)

- Industry's first completely cloud-based smart Wi-Fi positioning service
- Works seamlessly with all Ruckus APs to deliver:
  - Business/user/location analytics
  - Real-time client tracking
- Provides unprecedented insight into customer behavior
- Enables customized services that can be monetized
- Includes API for third-party developers

- No new hardware
- Unlimited compute power
- Easy & quick provisioning

$300 USD for 1 year SPoT supporting a single AP

- Shopper behavior (footfall), ad revenue, coupons
- Loyalty customer satisfaction, instant concierge
- Retail + Hotel
- Loyalty customer convenience, ad revenue, retail coupons
- Traveler behavior (footfall), ad revenue, retail coupons
Wi-Fi Location Based Services
Customers Tell the Story

LOOK WHO’S CAUSING A RUCKUS
Dealing with Density

- 5th largest tennis event in the world
- 72-acre complex
- 2 stadium bowls seating 25,000
- 29 tennis courts
- Over 430,000 fans in 2 weeks
- Live video streaming of matches

30º Narrowbeam and 120º sectorized Smart Wi-Fi directional Access Points
Angel’s Baseball Stadium

- Ruckus SCG Controllers
- Designed to support up to 40,000 Clients
- 200 Outdoor Access Points
- 100 Indoor Access Points
- Went live last game of the season
- Make sure to check it out next time you’re at the stadium!!
The Ruckus system just worked without a lot of kludgy configuration or nerd knobs.
The hardware effectively configures itself, giving us insanely better coverage and performance at a much lower total cost of ownership compared to other suppliers. It’s just that simple.
Unplugging the City by the Bay

- Free Wi-Fi along Market St Corridor and 31 city parks
- 130+ ZoneFlex 7782s currently deployed
- Meshed and wired
- Hotspot 2.0 enabled
Legacy outdoor Wi-Fi network failing

- Standardized on Ruckus indoor/outdoor, airport, convention center
- Smart Wi-Fi for free downtown public access, parking meters, video surveillance, airport public access hotspot 2.0
Thank you!