Ruckus®
Simply Better Wireless.

feature sheet

FEATURES

- Multiple directional high-gain elements
- Real time optimization system
- Thousands of antenna patterns that are optimized via patented software to ensure the best path to the client
- Compatible with 802.11a/b/g/n networks and clients
- Continuous learning based on inputs from network layers 0 through 7
- On-the-fly antenna reconfiguration and transmission policy management per packet, per flow, per receiving device
- Up to 6 dBi signal gain and 15 dB interference mitigation

BENEFITS

- Fewer APs deliver a higher capacity coverage over a greater area delivering more reliable client connectivity
- Self-healing, self-optimizing antenna system proven in more than 3.5 million installations
- Mitigates interference in a high density client and AP environment
- Extends Wi-Fi range and coverage by focusing Wi-Fi signals toward client
- Maximizes AP and client performance
- Eliminates dead spots
- Better reception and transmission for handheld clients that are hard to hear and constantly move orientation

BeamFlex®

SMART ANTENNA SYSTEM

The industry's only smart antenna system that delivers stable connectivity and higher performance

BeamFlex is a combination of multiple high-gain polarized antenna elements and patented software algorithms that are combined in real time to offer an exponential increase in performance. With up to 21 high-gain, directional antenna elements, a BeamFlex smart antenna offers over 4,200 unique antenna patterns to optimize the reception of a given client.

Ruckus' adaptive antenna technology also includes adaptive polarization diversity further increasing signal gain. Translating into better reception and transmission, polarization diversity is particularly advantageous for handheld devices that are hard to hear and constantly change direction.

Completely standards based, the BeamFlex smart antenna system works with any off-the-shelf 802.11a/b/g/n chipset and is integrated into every Ruckus Smart Wi-Fi access point.

How it works

Unlike omnidirectional antennas that radiate signals in all directions, BeamFlex directs transmit energy towards the best path to the receiving device. And unlike fixed-positioned directional antennas, BeamFlex dynamically configures and re-configures its antenna pattern to achieve focused coverage with directional performance within a given environment thus increasing signal gain.

The BeamFlex smart antenna is controlled by an optimization engine that automatically reconfigures the antenna patterns on a packet by packet basis, selecting the best performing and highest quality signal path and optimum data rate for each receiving device.

BeamFlex takes advantage of 802.11's built-in acknowledgement mechanisms using 802.11 acknowledgements to continually ascertain the quality and performance of a physical RF link.

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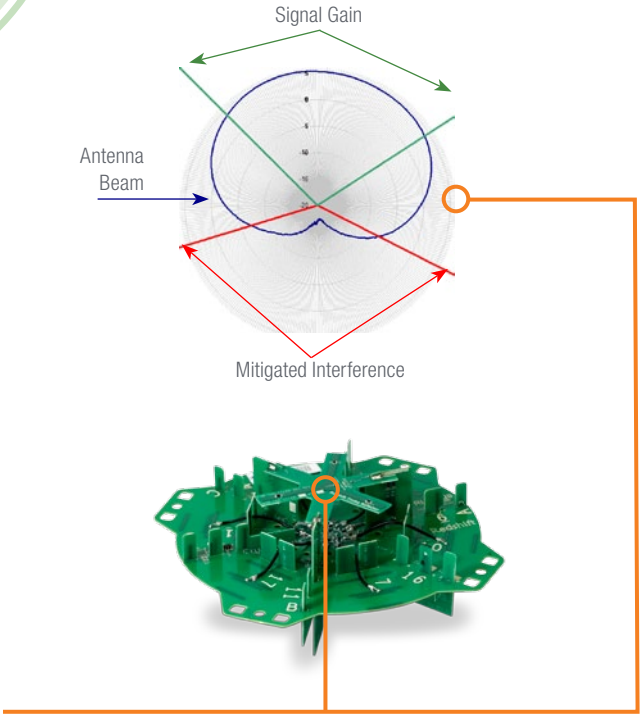

BeamFlex not only focuses RF energy only where it's needed but also mitigates interference coming from other directions. This ensures that the highest possible PHY rate is used and that the highest possible throughput is achieved for all clients.

The expert software system within BeamFlex extracts important information from all 802.11 packets received such as the sender's performance, the optimum data rate, RSSI, error rates and approximate location. It then ranks the optimum antenna patterns for each communicating device keeping track of the best performing signal path at any time for any given client. The resulting antenna pattern shows RF energy directed toward the client thus increasing performance while mitigating interference by removing energy where it does not need to go for each packet transmitted.

What's the big deal?

Consistent Performance

By continuously steering transmissions to high quality signal paths, BeamFlex maximizes and sustains Wi-Fi transmission speeds while minimizing transmission errors. BeamFlex stabilizes wireless network performance to enable consistent throughput at range.

Extended Range

And because BeamFlex enables high-gain, directional Wi-Fi signals to clients, it delivers a up to a four-fold increase in range over any other Wi-Fi access point.

Stable Connections

Through antenna diversity and dynamic adaptation, BeamFlex ensures that the best performing and most reliable signal path is used at any given time thereby minimizing erratic Wi-Fi behavior such as dropped connections.

Interference Mitigation

BeamFlex is able to select antenna patterns that focus RF energy away from the direction of interference; thereby attenuating noise to the receiving station. This enables remarkable improvements in signal gain while at the same time reducing interference or contention among other APs. Using these interference mitigation techniques, a single ZoneFlex AP can realize up to 6 dBi in signal gain and 15 dB in interference mitigation. An interference mitigation algorithm enables the BeamFlex software to detect the direction of interference from, for example, a neighboring network, a microwave oven or a nearby Bluetooth device. In response, BeamFlex is able to select antenna patterns that direct energy away from the direction of interference, thereby attenuating noise to the receiving station.

Better RF Neighbor

Because BeamFlex only focuses RF energy where it's needed, it interferes less with other Wi-Fi access points and clients.

Automatic Adaptation

Dynamically configuring the Wi-Fi "beam" hundreds of times each second, BeamFlex can adapt in real-time to environmental changes — steering signals around obstacles, interference and other hazards that would otherwise negatively affect performance.

BeamFlex effectively allows each Ruckus AP to deliver high gain directional Wi-Fi signals in 360° while simultaneously minimizing noise to nearby networks, devices and other APs.

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