

# 802.11n Revelations

## *New Capabilities Dramatically Change Deploying and Managing the WLAN Spec*

802.11n Revelation	AirMagnet Solution
<p><b>Signal Strength No Longer Predicts Performance</b>            MIMO, beam forming and many other technologies combine to make 11n performance significantly different than what would normally be predicted based on signal strength.</p>	<p>AirMagnet provides the only survey solution to include active site surveys and Iperf so that you can measure and map actual end-user 11n performance. Since signal strength is not an accurate predictor of 11n performance, user <b>must</b> have the AirMagnet Survey solution in order to properly deploy 11n networks and to take advantage of the extended coverage improvements that are possible with 11n.</p>
<p><b>Your Current a/b/g Wireless Environment Will Greatly Affect 11n Performance</b>            802.11n devices are designed to respond with many protection mechanisms based on the presence of non-802.11n devices. These mechanisms increase the network overhead and in turn greatly affect the overall performance of the network.</p>	<p>AirMagnet (WLAN Throughput Simulator Tool) will automatically assess your existing wireless LAN and then show you exactly how new 11n APs or even new 11n stations will affect the overall performance of the network including effects on throughput and network overhead. This lets customers make very informed buying and deployment decisions that will ensure they can phase 11n gear into their existing network and get the best value out of the investment. AirMagnet also alerts on multiple co-existence issues including device mis-configurations and Quality of Service issues.</p>
<p><b>All 11n Vendors Implement 11n Differently</b>            The 802.11n standard covers many technologies and options, and each vendor will implement these options differently and ignore other options entirely, making it difficult to understand the overall potential of the device.</p>	<p>AirMagnet provides a device calculator that lets the user plug in the specs of a device and immediately see the best case performance and overhead information for that device. Users can directly compare multiple devices or versions of the same device with different configurations, so that they can make decisions based on independent data.</p>
<p><b>Using 40 MHz Channels Can Cause Major Interference Problems in the 11b/g Bands</b>            Users can only deploy a single 40 MHz or “bonded” channels in the 2.4 GHz space without overlap. Even a single 40 MHz channel can cause significant interference to existing devices in the 2.4 spectrum.</p>	<p>AirMagnet provides a “bird’s eye” view of the entire RF spectrum and the devices deployed on every channel. This helps make that critical decision of planning new deployments or adding to the existing one, and ensuring minimum interference at the same time. AirMagnet also maps out locations on a floor map where channel bonding is being used and the increased channel interference and packet losses in the 2.4 GHz spectrum.</p>
<p><b>The AP is Only Half of the 11n Performance Equation</b>            802.11n performance hinges on the relationship between the 11n AP, the end-user station and the environment. You will not be able to get ideal 11n performance by only focusing on the AP infrastructure.</p>	<p>AirMagnet includes analysis tools and interference monitoring features to co-relate reduced performance in the network, by comparing 802.11n options and statistics of all the device conversations between the AP and the end-user station, and the impact of interference from those devices as well as from non Wi-Fi sources.</p>
<p><b>Uplink and Downlink Performance Can Vary Widely in 802.11n</b>            Since APs and stations may have very different sets of capabilities and resources, it will be common to see very different results when uploading data versus downloading.</p>	<p>AirMagnet efficiency tools show live AP and station configurations side by side, and provides expert advice on how to optimize the relationship between the two. AirMagnet also provides full analysis of both uplink and downlink so staff can troubleshoot any type of user complaint (slow downloads, uploads).</p>

# Product Quick Facts

## *How AirMagnet Analyzer & Survey ensure success with 802.11n*

### AirMagnet Analyzer 802.11n key features and benefits

- A one-of-a-kind toolkit to analyze the unique relationship between APs and client adapters, showing how to best configure the network for ideal uplink and downlink performance.
  - **WLAN Throughput Simulator** captures the existing infrastructure environment and calculates the network performance and the overhead under user-specified conditions or options for the devices. It also allows the simulation of new APs or stations and provides their impact on performance. This tool is recommended for use by every enterprise before they introduce 802.11n devices into their existing infrastructure.
  - **802.11n Device Throughput Calculator** calculates and compares the expected performance metrics for an 802.11n AP based on 802.11n parameters entered by the user. This tool will help every enterprise make that critical purchase decision of selecting the best AP to be added to their infrastructure.
  - **802.11n Efficiency tool** enables the user to derive maximum value from their 802.11n network by diagnosing any uplink or downlink device or conversation performance and highlights areas that are optimized and those not optimized to their full potential. Users receive crisp guidance on how they can fix these under utilized areas.
  - **802.11n Analysis tool** displays historical data over a period of time for critical 802.11n statistics that may rob the network of the desired performance.
  - **Throughput measurement tool** measures live uplink and downlink performance for access points at any location to find the optimum configuration for maximizing throughput and test devices under various traffic stress scenarios.
- New 802.11n alarms alert users on 802.11n mis-configurations, co-existence and deployment issues and suggests methods to fix them and best practices to avoid their occurrence in the future.
- Educational tools and guided step-by-step tours to understand and solve daily 802.11n network problems. AirMagnet tools include explanations of the new terms and technologies of the standard as they relate to the user infrastructure, enabling users to tie 802.11n theory to what is happening in their actual deployment.
- AirMagnet provides a complete overview of the devices deployed on each channel in the spectrum along with their signal bleedover across adjacent channels. This powers users to effectively plan channel assignments for new and existing devices to minimize interference when they are using the 40 MHz channel bonding option.

### AirMagnet Survey 802.11n key features and benefits

- Coverage maps that every enterprise should use during their 802.11n deployment to verify Wireless LAN infrastructure configurations and performance.
  - **Operating mode coverage map** provides the operating mode (Greenfield, mixed-mode and legacy) for all the APs deployed in the network. The map allows the user to visualize regions where overlap from APs in the different modes may cause problems.
  - **Channel width (20/40 MHz) coverage map** shows areas where 40 MHz channel bonding is used. Depending on the available non-overlapping channels in the spectrum, users can use that information to either reduce the interference in the network or use it to double their network performance.
  - **MCS transmit/receive coverage map** to display true network performance capability of the Infrastructure.
- With varying 802.11n access point and station capabilities, different uplink (station to access point) and downlink (access point to station) data rates are measured by AirMagnet's unique lperf survey, that accounts for multipath and a variety of other factors that impact end-user performance.
- AirMagnet allows the verification of the corporate network design goals and immediate identification of problem areas.
  - Users can verify if they are using high MCS values in all locations to maximize the network performance.
  - Percentage of the floor where users can make use of 802.11n's channel bonding throughput boost.
  - The Operating mode of the deployed access points: if the APs are deployed in the 802.11n only Greenfield mode, Mixed mode or Legacy mode.