NUTS ABOUT NETS, LLC

Innovative Tools For Troubleshooting Wireless Networks

WifiEagle Channel Analyzer

Quantify And Predict Throughput Performance Of Each 802.11 Channel

CHANNEL METRICS

Performs bandwidth channel analysis to determine the best Wi-Fi channel.

NETWORK DISCOVERY

Includes a network discovery module that gathers information about nearby wireless access points and displays it using a variety of diagnostic charts.

DATA RECORDING & PLAYBACK

Features a simple, yet powerful, data logging capability. Data files that are recorded can later be viewed using WifiEagle's built-in Data Playback feature.

PDF REPORTS

Includes a simple-to-use report generation capability. Creates an Adobe PDF-formatted file that includes all charts created by the Channel Analysis module.

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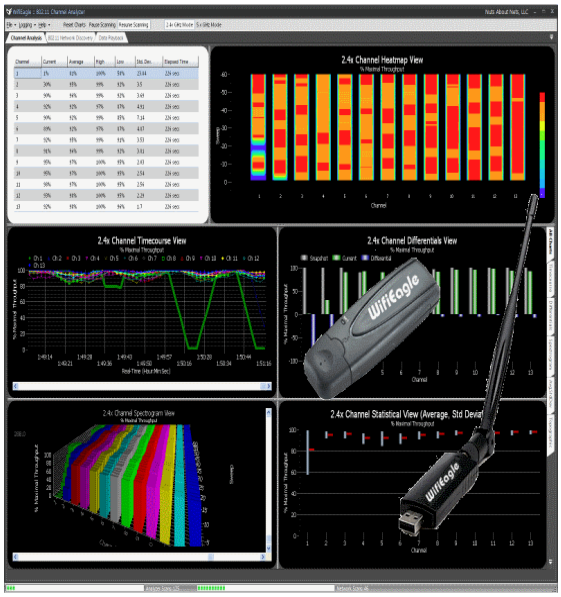

A new diagnostic tool that helps your network soar like an eagle. WifiEagle channel analyzers take you to the next level – beyond RF spectrum analyzers…

WifiEagle represents a new and innovative series of PC-based, Wi-Fi diagnostic tool used for installing, troubleshooting and monitoring 802.11 wireless networks. These tools are unique in their use of 802.11 devices for performing bandwidth channel analysis – allowing users to select the best channel ***from the perspective of an 802.11 device***.

WifiEagle Features:

- Support for both 2.4x and 5.x GHz ISM bands
- Compliant with IEEE 802.11 standards
- Simple and easy-to-use graphical UI
- Built-in modules for performing both channel analysis and network discovery
- Data recording and playback
- PDF Report Generation
- Low-cost – uses off-the-shelf 802.11 wireless devices

Employing patent-pending IMMI (Indirect Measurement of Microwave Interference) technology, WifiEagle analyzers provide unprecedented visibility into the performance of a wireless network. The information collected and displayed by WifiEagle simplifies troubleshooting of interference-related problems and predicts the throughput performance of each 802.11 channel. If your goal is to find the "best" Wi-Fi channel, then WifiEagle is the tool of choice.

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A leader and innovator in wireless network diagnostics

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'Best' Wi-Fi Channel

Computes the 'best' Wi-Fi channel by comparing available bandwidth of each channel.

Detect RF Interference

Detects potential sources of RF interference.

Compare Bandwidth

Compares available bandwidth of each channel looking for improvements.

Quantify Changes

Quantifies the expected change in performance when changing channels.

Optimally Configure

Configure wireless networks with the goal of improving bandwidth performance.

Proper Location

Aids in properly locating 802.11 wireless devices and orienting antennas to achieve optimal performance.

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Though RF spectrum analysis remains the tool of choice for troubleshooting interference-related problems, IMMI technology holds greater promise. There is a new mantra brewing -- "Using the (802.11) infrastructure to troubleshoot the infrastructure..." People understand this to mean that when it comes to troubleshooting 802.11 networks, then 802.11 devices make better diagnostic tools than spectrum analyzers. And that's because a spectrum analyzer knows nothing about the 802.11 standard, its internal protocols, or the methods it employs to mitigate interference from other wireless devices.

Unless one has intimate knowledge of the 802.11 standard and its inner workings, it is not possible to predict how an 802.11 network will behave when you are armed solely with RF measurements. This is why we focus on performance metrics and IMMI technology – because they more accurately predict how your wireless network will actually perform.

Our latest product – WifiEagle – employs IMMI technology to quantify the available throughput performance of each channel. Not only does this allow you to determine the best channel, but also to predict (in a quantifiable way) the increase or decrease you'd expect by reconfiguring an access point to use a different channel. IMMI relies on off-the-shelf 802.11 devices and the protocols inherent in the 802.11 standard. The software uses the 802.11 device to query each channel for its potential or available throughput performance. That value is affected by RF interference from other devices in the neighborhood. So, in a sense, it is like a spectrum analyzer in that it measures RF interference, but it is an indirect measurement and it is channel centric.

WifiEagle May Be Used For:

- Determine the 'best' Wi-Fi channel
- Detect potential sources of RF interference that could affect an 802.11 wireless network
- Determine whether or not the throughput performance of an 802.11 wireless network can be improved by using a different 802.11 channel
- Quantify the expected change in throughput performance that would result from using a different 802.11 channel
- Optimally configure 802.11 wireless networks with the goal of improving throughput performance
- As an aid in properly locating 802.11 wireless devices so as to maximize range and throughput and minimuze interference from competing wireless devices

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WifiEagle's Diagnostic Charts

Channel Timecourse

Monitor available throughput of 802.11 channels as a function of time.

Channel Spectrogram

3D view of each channel's available throughput as a function of time.

Channel Heatmap

Each channel's available throughput is color-coded as the chart scrolls upwards with time.

Channel Differentials

Compares current channel values against a snapshot taken earlier in time. Useful when looking for small changes in the RF landscape.

Channel Statistics

Displays the average available throughput and standard deviation for each channel.

Statistics Grid

Reports the current, average, high and low throughput values for each channel.

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1. The Channel Timecourse view is useful for monitoring 802.11 channels as a function of time. Each channel is represented by a different line -- the x-axis is time and the y-axis is % Maximal Throughput. In this way one can clearly follow how RF interference affects different channels over time.

2. The Channel Spectrogram view is a 3D plot of 802.11 channels as a function of time. Each channel is represented by its own set of bar graphs -- the Z-axis is time and the Y-axis is % Maximal Throughput.

3. The Channel Heatmap Chart is a 3-dimensional representation of the data, where channels are marked along the X-axis, the Y-axis is a time scale and indicates the last 60 scans or sweeps, and the "Z-axis" is the color scale. Each horizontal line in the Heatmap chart displays the % Maximal Throughput (as a color) for each channel measured over the time period of one scan.

4. In the Channel Differentials Chart the gray bars are a snapshot of the % Maximal Throughput values when the program was first launched, the green bars are the current values, and the blue bars represent the difference. It is useful when viewing small (or large) changes in the RF landscape over time.

5. The Channel Statistical Chart shows an averaged value of % Maximal Throughput for each channel since the program was first launched (the horizontal red bar), along with its associated standard deviation.

6. The Statistics Grid reports several properties of the % Maximal Throughput for each channel -- the current value, an averaged value, a high and low value (obtained from the average and standard deviation), the standard deviation, and the elapsed time since this session began.

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WifiEagle (IMMI) vs RF Spectrum Analysis

'Best' Channel

Defined as that channel with greatest available bandwidth.

CSMA / CA

The RF-sensing mechanism built-into 802.11 that is used to control the rate of transmission.

IMMI

Patent-pending technology that uses CSMA/CA to proble available bandwidth for each channel.

Predicting 'Best' Channel

WifiEagle is a better predictor of 'best' channel than RF spectrum analysis since it uses IMMI technology.

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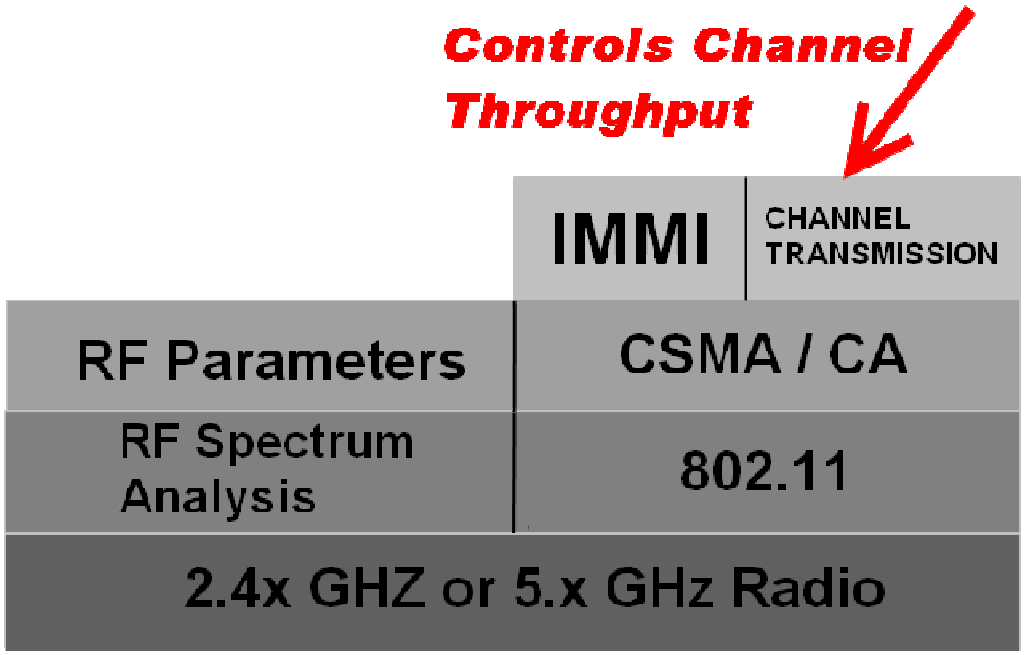

The 'best' Wi-Fi channel is defined as that channel which provides the greatest available bandwidth or throughput.

802.11 relies on its built-in, RF-sensing mechanism – CSMA / CA – to control the rate of transmissions based on its view of the RF environment. IMMI (and WifiEagle) use CSMA/CA to probe the available bandwidth of each channel. In this way WifiEagle can quantify available throughput and is a better predictor the 'best' channel than RF spectrum analysis.

Measuring RF parameters is useful but only provides a partial view. In the domain we care about most – bandwidth – it is necessary to take into account both RF analysis and 802.11 protocol data. This is what IMMI does. By combining both RF analysis and 802.11 protocol data in a single diagnostic metric then IMMI provides a more direct and, hence, accurate predictor of channel bandwidth. It does this by tapping into 802.11's built-in RF sensing mechanism – CSMA / CA.

By tapping into CSMA / CA, IMMI makes use of the 802.11 infrastructure in choosing the best channel. In contrast, RF spectrum analysis does not take into account 802.11 protocol data.

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WifiEagle ships as a hardware + software package. There are two versions of the hardware – a single-band (2.4x GHz) wireless device or dual-band (2.4x GHz and 5.x GHz) wireless device.

Specification

- Standard: IEEE 802.11 b/g (single-band wireless device) or IEEE 802.11 a/b/g (dual-band wireless device)
- Interface: USB 2.0 and 1.1 compliant
- Channels: 1 – 13 (single-band wireless device) or 1 – 13 plus 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140 (dual-band wireless device)
- Antenna: RP-SMA (single-band wireless device) or internal (dual-band wireless device)
- Certifications: FCC, CE and RoHS

Minimum System Requirements

- Microsoft Windows XP PRO (with SP3), Windows Vista or Windows 7
- Microsoft Windows .NET Framework 3.0 (or higher)
- Intel Pentium M 1.6 GHz (Intel Core 2 Duo 2.0 GHz or higher recommended)
- 1 GB memory (2 GB recommended)
- a minimum of 300 MB available hard disk space (for installation and data recording)
- an available USB port for the 802.11 adapter supplied by Nuts About Nets
- built-in 802.11 capability or an external 802.11 adapter installed with NDIS 5.x drivers (required for network discovery functionality)

Pricing

- WifiEagle Package with Single-Band Wireless Device: **$249.95 USD + S/H**
- WifiEagle Package with Dual-Band Wireless Device: **$349.95 USD + S/H**

NOTE: Discounts are available when purchasing 4 (or more) units…

www.NutsAboutNets.com

Nuts About Nets, LLC
2855 152nd Ave NE
Redmond, WA 98052

Tel. +1 425.881.6506
sales@NutsAboutNets.com