

NUTS ABOUT NETS, LLC

Innovative Tools For Troubleshooting Wireless Networks

Profiler24x Channel Analyzer

Quantify And Predict The Available Bandwidth Of Each 802.11 Channel

CHANNEL METRICS

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

DATA RECORDING & PLAYBACK

Features a simple, yet powerful, data logging capability. Data files that are recorded can later be viewed using Profiler24x'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.

For more information on WifiBuilder and Profiler24x please visit us on the Web at: <http://www.WifiBuilder.com/>



A new diagnostic application that optimizes Wi-Fi network performance by computing the best channel. Profiler24x takes you to the next level – beyond RF spectrum analyzers...

WifiBuilder AP and Profiler24x software belong to a family of new and innovative Wi-Fi diagnostic tools used for installing, troubleshooting and monitoring 802.11 wireless networks. These tools are unique in their use of an 802.11 access point for performing bandwidth channel analysis – allowing users to select the best channel.

Profiler24x Features:

- Uses WifiBuilder AP for data acquisition
- Computes the best Wi-Fi channel within the 2.4x GHz ISM band
- Compliant with IEEE 802.11 standards
- Simple and easy-to-use graphical UI
- Data recording and playback
- PDF Report Generation

Employing patent-pending IMMI (Indirect Measurement of Microwave Interference) technology, Profiler24x provides unprecedented visibility into the performance of a wireless network. The information collected and displayed by Profiler24x 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 Profiler24x is the tool of choice.

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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 a popular tool 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.

The WifiBuilder AP and Profiler24x software employ 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. Profiler24x uses the WifiBuilder AP to query each channel for its available throughput performance. That value is affected by RF interference from other devices in the neighborhood. So, on one hand, it is like a spectrum analyzer in that it measures RF interference. But, on the other, it differs in that the measurements are channel centric.

Profiler24x May Be Used For:

- Determining the best Wi-Fi channel
- Detecting potential sources of RF interference that could affect an 802.11 wireless network
- Determining whether or not the throughput performance of an 802.11 wireless network can be improved by using a different 802.11 channel
- Quantifying the expected change in throughput performance that would result from using a different 802.11 channel
- Optimally configuring 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 minimize interference from competing wireless devices

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Profiler24x'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.

For more information on

[WifiBuilder and Profiler24x](#)

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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 Bandwidth. 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 Bandwidth.

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 Bandwidth (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 Bandwidth 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 Bandwidth 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 Bandwidth 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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Profiler24x (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 probe available bandwidth for each channel.

Predicting 'Best' Channel

Profiler24x is a better predictor of best channel than RF spectrum analysis since it uses IMMI technology.

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Controls Channel Throughput



	IMMI	CHANNEL TRANSMISSION
RF Parameters	CSMA / CA	
RF Spectrum Analysis	802.11	
2.4x GHZ or 5.x GHz Radio		

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 Profiler24x) use CSMA/CA to probe the available bandwidth of each channel. In this way Profiler24x can quantify available throughput and is a better predictor of 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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Profiler24x Channel Analyzer is available as a software download. A fully-functional trial version will allow you to launch the application ten (10) times. After the trial period ends then an activation code will be required to run the application. Without the WifiBuilder AP the application runs in a fully-functional "Demo Mode" using simulated data.

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)
- A WifiBuilder AP attached to the LAN adapter on your PC or accessible on your ethernet network*

* Please note the WifiBuilder AP is sold separately.

Pricing for Profiler24x Channel Analyzer – Diagnostic Software

- Single Computer License: **\$179.95 USD**

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