NUTS ABOUT NETS, LLC

Innovative Tools For Troubleshooting Wireless Networks

WifiBuilder

The Industry's First Diagnostic And Production Access Point

CHANNEL METRICS

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

MULTIPLE APPLICATIONS

Designed to be used at the enterprise level, in small businesses and at home.

STANDALONE OR PRODUCTION AP

Can be used as a standalone diagnostic tool or as a production AP – integrated as part of your Wi-Fi network.

For more information on WifiBuilder please visit us on the Web at:

http://www.WifiBuilder.com/

WifiBuilder is the industry's first diagnostic and production access point (AP). The WifiBuilder solution takes you to the next level of optimized network performance – beyond that of RF spectrum analyzers…

The WifiBuilder AP runs a customized version of Linux that supports diagnostic applications that are run from your PC. Until now Wi-Fi diagnostic tools have come in the form of handheld, PC-based USB or PCMCIA, or luggable RF analyzers. WifiBuilder is different -- it goes straight to the source.

Designed With These Goals In Mind:

- To compute the best channel for your Wi-Fi network -- that is, the channel with the greatest available bandwidth -- thereby improving performance of your wireless computer network.
- To be used at the enterprise level, in small businesses and at home.
- To be used as a standalone diagnostic tool or as a production AP -- integrated as part of your Wi-Fi network.

WifiBuilder uses a high-end, dual-band, 802.11N access point for data acquisition and provides a view into your local RF environment that no other tool can provide. Data collected by the WifiBuilder AP is used by our diagnostic software to troubleshoot performance problems and configure access points for optimal bandwidth and channel usage. The same WifiBuilder AP that is used for troubleshooting problems and performing diagnostics can also be used as your production AP for normal 802.11 network connectivity.

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A leader and innovator in wireless network diagnostics

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When troubleshooting an 802.11 network it is not possible to predict how it 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. Though RF spectrum analysis remains a popular tool for troubleshooting interference-related problems, IMMI technology holds greater promise since it excels at computing the best Wi-Fi channel -- that is, the channel with the greatest available bandwidth and least affected by RF interference from other wireless devices. IMMI technology employs 802.11 hardware and sees the RF environment through the same eyes as the wireless devices in your network. 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.

Our latest product WifiBuilder 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 quantitative 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 available bandwidth. 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. The benefits of the channel-centric results are significant and can't be understated. It is no longer necessary to interpret RF measurements or deduce from a spectrum trace which channel will provide the best performance -- IMMI ranks the channels from best-to-worst based on their available bandwidth. In this way an access point can be reconfigured to always use the best channel.

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If your goal is to hunt down interfering wireless devices, then an RF spectrum analyzer is still the tool of choice. However, it turns out in practice most Wi-Fi problems are solved by changing to a better channel. This is because: (a) the interfering device may belong to someone else and you have no control over it; (b) the interfering device may be perfectly legitimate in its own right (e.g. a wireless security system); (c) it's time-consuming and difficult to track down the source of interference (RF waves bounce off of walls and objects and, so, you lose all sense of direction). On the other hand, if your goal is simply to determine the best Wi-Fi channel under the current conditions, then a tool that uses IMMI is a better choice.

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HARDWARE

The WifiBuilder hardware is a simultaneous, dual-band 802.11N wireless router manufactured by Linksys / Cisco. The original operating system has been replaced with an embedded, linux variant and 802.11 software stack licensed from Atheros, a leading developer of wireless networking systems and whose 802.11 chipsets dominate enterprise-level wireless routers. The operating system on the AP was further customized to include software that implements IMMI technology. Running this customized version of linux, the WifiBuilder AP supports diagnostic applications that are run from your Windows desktop or laptop machine. These diagnostic applications are used for installing, troubleshooting and monitoring 802.11 wireless networks. That is, in addition to being used as your normal AP for wireless network communication, WifiBuilder is designed to be used as a diagnostic tool -- performing data acquisition and communicating with a Windows application that analyzes the results and displays them using graphical charts. When the WifiBuilder AP is left in-place as your normal AP then its diagnostic capabilities are always available when the need arises. Alternatively, the WifiBuilder AP can also be used as a standalone diagnostic tool -- just connect it to your PC via ethernet cable.

Production Environment

Standalone Diagnostic Tool

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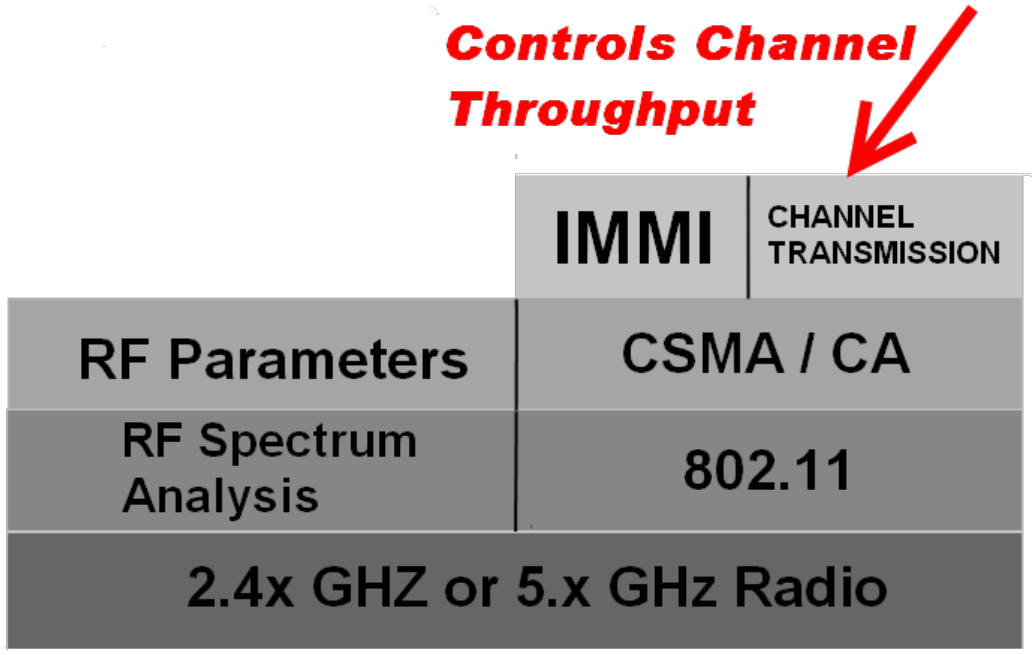
WifiBuilder (IMMI) vs RF Spectrum Analysis



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 uses CSMA/CA to probe the available bandwidth of each channel. In this way it 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, WifiBuilder and IMMI make use of the 802.11 infrastructure to compute the best channel. In contrast, RF spectrum analysis does not take into account 802.11 protocol data.

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Specification

General:

Weight:	16.2 oz

Networking:

Connectivity Technology:	Wired, Wireless
Line Coding Format:	CCK, BPSK, OFDM, QPSK, 16 QAM, 64 QAM
Bands:	Simultaneous dual-band
Data Link Protocol:	Ethernet, IEEE 802.11a, IEEE 802.11b, IEEE 802.11g, IEEE 802.11n
Switching Protocol:	Ethernet
Routing Protocol:	RIP, Static IP Routing
Status Indicators:	Power, Port Status
Compliant Standards:	IEEE 802.3, 802.3u, 802.11a, 802.11b, 802.11g, 802.11n

Antenna:

Antenna:	Internal integrated
Antenna Qty:	4

Expansion / Connectivity:

Interfaces:	1 x Network, 4 x Network - Ethernet 10Base-T/100Base-TX - RJ-45

Power:

Power Source:	External
Power Adapter:	External

Miscellaneous:

Encryption Algorithm:	WPA, WPA2, 128-bit WEP
Compliant Standards:	CE, IC, FCC, RoHS

Pricing for WifiBuilder Diagnostic & Production AP

Dual-band 802.11N wireless router manufactured by Linksys / Cisco. The WifiBuilder AP supports diagnostic applications that are run from your Windows desktop or laptop machine. The diagnostic software is not included and can be purchased separately. The WifiBuilder AP ships with an 100-240V AC adapter and 5-ft ethernet cable.

Single Unit: **$279.95 US + S/H** (Discounts available when purchasing 4 or more).

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