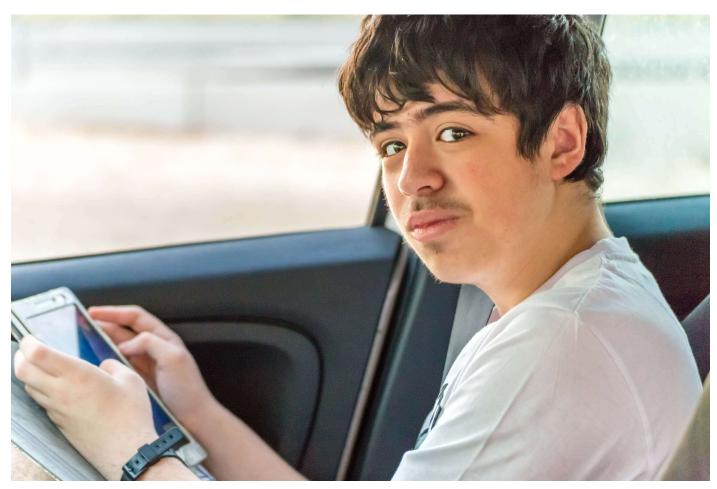Take 50% off MetaGeek products for a limited time! Discount code **CRUSH-CORONA-50** will be automatically applied at checkout.

Moving APs to facilitate parking lot WiFi

In the midst of the COVID-19 pandemic, everyone is doing their best to keep their users connected to the internet. And by everyone, we mean everyone: campuses, retail, medical, drive-thru restaurants, parents with kids staying home that are trying to coax enough out of their network to be able to work from home AND keep their kids learning online… we're all going through it.

We've published an entire Work-From-Home WiFi guide (https://www.metageek.com/work-from-home-wifi) for residential use, but what about if you're trying to pivot your entire wireless strategy to support "work-from-parking lot" WiFi?

If you help manage the WiFi deployment of a school, library, coffee shop, or other public building, read on for how to turn your facility's WiFi into a temporary outdoor deployment, so you can help your users stay connected.

1. Plan out where you need WiFi coverage

If you have a floor plan of your space, you can plug it into a tool like TamoGraph Site Survey Pro and tell it where you're planning to put your AP. TamoGraph uses predictive modeling to give you an estimate of signal strength propagation, including how well a signal will propagate through walls and doors to the exterior of a building.

    ☐ Tools needed: TamoGraph Pro (//shop.metageek.com/products/tamograph-pro), VisiWave Site Survey
         (https://www.metageek.com/products/map-plan/visiwave/) or similar
    ☐ Further Reading: WiFi Signal Strength Basics (/training/resources/wifi-signal-strength-basics.html)

2. Move your APs (as best you can)

Work with what you have

If you happen to snag some budget to buy outdoor APs, that's gonna be your best bet for providing your users with outdoor wireless connectivity. But if you're trying to make do just to get through facility closures due to the COVID-19 pandemic, your existing indoor gear it will be better than nothing.

Make the move

Move your AP(s) as close to exterior entrances as possible. Depending on how far you need to move your APs, now might be a great time to utilize that 100-ft Cat5e cable that's sitting in a tangle in the bottom of your cord storage bin. Doing this will create some dead spots inside the building, of course. That's a tradeoff we're willing to work with right now, because connectivity inside the building isn't a priority right now. Your users will be outside, so that's where the coverage should be.

Building materials and attenuation

RF in the 2.4 and 5 GHz attenuates differently as it passes through different materials like sheetrock, concrete, or glass. If you have an indoor AP, make sure to budget for this attenuation (signal loss). For an in-depth investigation of WiFi attenuation in building materials, check out Kelly Burroughs' iBwave blog post (https://blog.ibwave.com/a-closer-look-at-attenuation-across-materials-the-2-4ghz-5ghz-bands/), or Made by WiFi's tips (https://www.madebywifi.com/blog/multiple-wifi-aps-on-the-same-network/) for setting up multiple access points.

AP placement tips

- Keep in mind that unless you have an AP with directional antennas that you can aim, your signal will propagate in a radius out from your access point.
- Glass is thinner than solid walls and signals propagate better, so if you can place the AP right inside a large exterior window, that should work the best.
- Lastly, make sure to not place AP's too close to each other, or they will interfere with each other and affect connectivity.

3. Check for physical interference between APs

Before (and, if we're being honest, after as well) moving your AP, it's really helpful to do a walk-through of the site with a spectrum analyzer to look for sources of interference and to get an overall baseline of the WiFi environment.

- Tools needed: Wi-Spy DBx + Chanalyzer (//shop.metageek.com/products/chanalyzer-essential/) or other spectrum analysis solution
- Further Reading: Adjacent and Co-Channel Interference (/training/resources/adjacent-channel-congestion.html)

4. Make sure you have decent signal strength in the coverage area

After moving your AP, check your work by going out into the parking lot to simulate where your users will be when they try to access your WiFi. If your users will be required to stay in their cars, like many campuses have decreed, then sit in your car. If users are allowed to use benches in front of the building, test your signal from a bench. Test in several places around the coverage area to simulate different user scenarios.

Fire up a signal strength tool like inSSIDer (free, download here (//metageek.link/inssider-product-page)) to measure the signal strength of your network. You'll need at least -80 dBm for basic applications like checking email, and around -67 dBm for high-demand applications like streaming. Signal strength is measured in dBm so the closer to 0 dBm, the better.

If you've moved your AP as close as it can get to the parking lot but you still have a weak signal, you can try turning up the AP's radio output power (also known as transmit or "Tx" power), but use this method with caution because it can stomp on the signal of neighboring APs.

> ☐ Tools needed: inSSIDer (//metageek.link/inssider-product-page)
>
> ☐ Further Reading: WiFi Signal Strength Basics (/training/resources/wifi-signal-strength-basics.html)

5. Check throughput

After you've achieved sufficient signal strength, you'll want to run a throughput test. Throughput is a measure of the capacity network traffic in actual application, after accounting for interference, bandwidth provided by your ISP, packet issues, and other factors. It's the ultimate measure of actual performance that your users will experience, not just theoretical speeds specified in documentation.

If your signal strength and throughput are decent, your users will have a pretty reliable WiFi experience, even as they are confined to the inside of their cars while using your facility's WiFi.

> **Suggested tools:**
>
> ☐ TamoSoft Throughput Test (free, download here (//www.tamos.com/products/throughput-test/))
> ☐ Iperf (free, open-source (https://iperf.fr/))

We'll be real with you: everyone is struggling to support their WiFi networks right now, and none of this is ideal. But armed with the tools and strategies above, you'll be able to make WiFi happen for your users when they need it most, and at a time where a reliable internet connection is crucial for working and learning during this crisis.

Do you have questions or comments about "Working-From-Parking-Lot" WiFi? Let us know in the MetaGeek Community! (//community.metageek.com)

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