**SIERRA WIRELESS WHITE PAPER**

Thinking of upgrading to a 5G router?
6 Questions to Ask When Planning to Migrate to 5G

An Expert Guide from Sierra Wireless

With the roll-out of 5G, the promise of faster speeds, lower latency, and increased spectrum efficiency is real. To get the full benefit of 5G, the upgrade path involves more than just swapping out the modem of an existing 4G router. This whitepaper identifies six things to consider when upgrading to 5G so you can experience the full benefits of 5G while maximizing the return on your router investment.
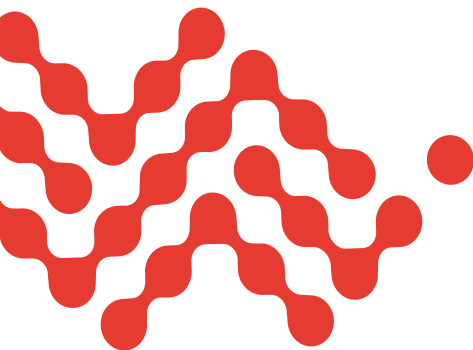
6 QUESTIONS TO ASK WHEN CONSIDERING A 5G ROUTER

1. Does the router support a 4x4 5G antenna?

2. Does the router support 5G requirements for power consumption?

3. Does the router allow for increased heat dissipation?

4. Does the router employ data acceleration technology?

5. Does the router support high-speed Ethernet?

6. Does the router support Wi-Fi 6?

What to Look For

When considering investing in 5G routers, you need to ensure that every aspect of your system can deliver the necessary performance.

There are six key subsystems that enable true 5G operation:

1. ANTENNAS

Today's 4G LTE antenna modules typically have at most three cellular antenna elements for connectivity, using a 3x3 configuration with 5GHz cables. To achieve the full potential of 5G, you will need a 4x4 antenna configuration with low-loss 6GHz cables.

2. POWER

Higher speeds means a 5G router needs as much as twice the power compared to a typical 4G LTE router. As a result, a 5G router requires a higher capacity internal power supply as well as a higher wattage power cable.

3. CHASSIS

Because a 5G router requires more power, it also needs to passively dissipate more heat. 4G LTE routers were not designed to manage the additional heat generated by 5G radios. Look for chassis optimizations, such as a massive heat, to help ensure the overall system despite the higher level of performance.

4. DATA PATH ACCELERATION ARCHITECTURE (DPAA)

Look for a router that employs DPAA in its hardware architecture. The advantage of DPAA is that you get higher overall throughput with a lower CPU load. Some routers also employ advanced hybrid network techniques know as cognitive networking, which lets the network learn and make decisions that can add redundancy and improve throughputs.

5. SYSTEM INTERFACES

In order to take advantage of 5G's very high data rates, all of the router's data paths need to handle the increase in data rates. To achieve 5G system throughput look for at least one 5Gbps Ethernet port and hardware data path acceleration.

6. WI-FI 6

To support 5G data rates over Wi-Fi, the system needs the next generation of Wi-Fi, known as Wi-Fi 6 (802.11ax). For full Wi-Fi 6 performance that matches 5G performance, the Wi-Fi antenna requires a 4x4 configuration. Collocating the 5G cellular and Wi-Fi 6 antennas in a small, highly integrated package can be challenging, but a 5G router designed for optimized performance is likely to use this configuration.

A Word about 5G Security

Data security is paramount. That's why it's imperative that a router employ all forms of modern security protection and monitoring. With 5G, the amount of data being transferred and the number of devices interacting with the network makes security an even more important consideration, and makes it all the more essential to work with a trusted router supplier who not only understands where the vulnerabilities lie but also how to mitigate them. Sierra uses a multi-pronged approach to security, with multiple security layers, to defend the integrity of the router and its data.

If you would like more information about the Sierra Wireless approach to security, you can read our "How Secure Is Your Mobile Router?" whitepaper here.

Start with Sierra

At Sierra Wireless, our approach to 5G routers has meant a complete redesign from the bottom up. We evaluated the relevant technology advances and operational use cases and have built a 5G-optimized AirLink router that delivers end-to-end 5G performance. As part of our 5G redesign, we addressed all the necessary subsystems, including antenna systems, the power subsystem, passive heat dissipation, data acceleration, high-speed Ethernet, and Wi-Fi 6. What's more, Sierra's 5G routers are supported by our network management systems to deliver added insights for 5G reporting and analytics.

Our thoughtful and thorough design and engineering approach to the 5G AirLink solutions effectively delivers accelerated mobile computing and the multi-Gbps performance that the 5G standard is designed to support.

To learn more about our unique dedication to success in 5G, visit us at www.sierrawireless.com/5G.

About Sierra Wireless

Sierra Wireless (NASDAQ: SWIR) (TSX: SW) is an IoT pioneer, empowering businesses and industries to transform and thrive in the connected economy. Customers Start with Sierra because we offer a device to cloud solution, comprised of embedded and networking solutions seamlessly integrated with our secure cloud and connectivity services. OEMs and enterprises worldwide rely on our expertise in delivering fully integrated solutions to reduce complexity, turn data into intelligence and get their connected products and services to market faster.

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