5G CELLULAR ROUTER SOLUTION EVALUATION GUIDE

How to Choose the Right 5G Router Solution for Your Business

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The Benefits of 5G

Why is 5G important to your business and industry? Because it delivers wireless connectivity on par with today's wired broadband services. That gives you the flexibility to expand high-speed communications, whether video or data, to places you never considered, gain real-time control and visibility, and future-proof your business.

The best news about 5G is that it's fully compatible with 4G. When you move to 5G, your existing 4G devices and applications will continue to work as before. This significantly reduces the risk associated with moving to 5G, and lets you leverage business gains faster.

From a technology perspective, 5G delivers greatly increased performance in the following three areas:

Ultrafast Speeds and Data Rates
5G delivers real-time data communication and real-time high-resolution video connectivity. This is critical for public safety, security sectors, real-time monitoring applications, and last-mile connectivity.

Lower Latency
Reducing latency means that data can be transferred, updated, and refreshed faster. This is important for real-time applications in manufacturing, power grid controls, and self-guided autonomous vehicles.

Higher Capacity
You will be able to operate more devices at a single time without bogging down your network. As the number of your connected IoT devices expands, this increased capacity requirement will gain in importance.

5G Cellular Router Solution Challenges

While 5G delivers numerous benefits, there are some challenges associated with implementing 5G correctly. 5G uses a new radio design as compared to 4G. This new radio delivers higher power, which requires system components and chassis to effectively dissipate additional heat. This is especially critical for routers that operate at high temperature extremes.

Since 5G radios deliver faster connectivity, all router components including processors, operating systems, and input/output devices must operate at higher speeds. High performance 5G routers are now running with multi-core CPUs, Wi-Fi 6, and gigabit rate Ethernet ports.

As 5G has the capacity to connect to more devices, it also means that there are more opportunities/surfaces for cyber security attacks. Individual router security in addition to overall system security must be enforced to protect communications from device to cloud, across your enterprise.

5G Router Solution Evaluation Criteria

As 5G is a relatively new technology, it's important to carefully review and evaluate the 5G router solutions that you will use for your business and industry. In order to ensure that the solution you choose will work for your specific use case, consider these questions:

DOES YOUR SOLUTION DELIVER THE 5G PERFORMANCE THAT YOU NEED?
5G can deliver real-time data and video connectivity in addition to advanced features such as edge-computing and network slicing. To realistically accomplish 5G speeds and latency, it takes more than just a fast 5G radio. All the components within the router including CPU, memory, and operating system need to be 5G fast. Hardware acceleration enables higher performance as well.

IS THE 5G ROUTER BUILT FROM THE GROUND UP? OR IS IT A 4G SOLUTION MODIFIED FOR 5G?
The higher performance characteristics of 5G require high power and more efficient power dissipation. 4G routers with 5G radios may not be able to handle these additional power constraints. In addition to 5G radios, the chassis and other router components must be able to manage the additional demands, without compromising performance or operations. It's important to know if you are getting a purpose-built 5G router or a refreshed 4G design.

DOES YOUR 5G ROUTER SOLUTION ALLOW YOU TO RAPIDLY SWITCH BETWEEN DIFFERENT CELLULAR NETWORKS, OR BETWEEN CELLULAR AND WI-FI NETWORKS?
Have you ever experienced the lag when moving from cellular to Wi-Fi connectivity? If your application is mission-critical in mobile environments, such as for first responders in law enforcement, fire, or EMS, you can't afford delay times when switching networks. In addition, you want your router to identify the best network to use for critical data communications and the lowest cost network for non-critical data.

DOES YOUR 5G CELLULAR ROUTER DELIVER WI-FI 6 AND GIGABIT ETHERNET SPEEDS?
Having 5G cellular connectivity doesn't help if you have slow Wi-Fi and Ethernet connectivity. Wi-Fi 6 delivers a substantial increase over Wi-Fi 5 speeds with better range and improved power efficiency. Having multiple port, gigabit Ethernet connectivity is essential for mission-critical and business critical applications.

IS SECURITY BUILT INTO THE SOLUTION YOU ARE EVALUATING?
Security is top of mind for most businesses and industries these days. Does your vendor security solution just protect your router? Or does security protection extend from the field all the way to your enterprise, from devices to the cloud or data center? Does your solution have a way to efficiently deliver security updates to all your routers in real-time?

DOES YOUR SOLUTION HAVE A FAST RECOVERY MECHANISM WHEN DEVICES GET DISCONNECTED?
What happens when you can't communicate with your router? Do you have to send a technician out to troubleshoot the problem or bring a vehicle back to the depot? Is there a way to remotely troubleshoot and restore connectivity, for instance, through a centralized management platform?

DOES YOUR SOLUTION MAKE IT EASY TO MANAGE ALL YOUR DEVICES?
Managing tens or hundreds of devices is much more complex than managing a handful of devices. Does your solution deliver a simplified approach to device management and updates? Can you evaluate router fleet performance from a single pane of glass?

WILL YOUR SOLUTION SURVIVE IN YOUR OPERATING ENVIRONMENT?
Putting a desktop router in a high-temperature, high vibration, and high moisture environment won't work. Business and industrial routers must be rated and tested to operate at high and low temperature extremes, high humidity, and high shock and vibration environments. If used in a vehicle or powered by batteries, routers must survive high and low voltage extremes as well as high transient spikes.

DOES YOUR VENDOR DELIVER A COMPLETE 5G SOLUTION?
5G connectivity requires more than just a physical router. A complete 5G connectivity solution includes dedicated 5G antennas, added layers of security, such as VPNs, simple router management, professional design and implementation services, and ongoing product support.

DOES YOUR 5G ROUTER SUPPORT PRIVATE CELLULAR NETWORKING?
Private 5G cellular networks are proving to be an attractive option in shipping ports, airports, mining companies, warehouses, and manufacturing plants that need high-reliability coverage, increased security, and better flexibility. If you are considering deploying a private network, it's important to ensure that your 5G router supports the spectrum you're using for the private network.

AirLink XR Series: The World's Most Advanced 5G Cellular Router Solution

XR90

XR80

The Sierra Wireless AirLink XR series are the world's most advanced cellular router solutions, architected for 5G to deliver the highest performance, through a combination of hardware acceleration, data plane architecture, and software. Our patented cognitive wireless switching technology ensures seamless, high performance connectivity, even when switching across multi-WAN environments. The AirLink XR series also supports Wi-Fi 6 and gigabit Ethernet connectivity for maximum system throughput.

The AirLink XR series was designed for operational simplicity, from initial set up and configuration, with zero-touch out of the box provisioning, to ongoing management. We ensure ongoing operational continuity through our unique LPWA embedded radio, leveraging our own Sierra Wireless Global Connectivity with the support of the Global Network Operating Center (GNOC), and our ALMS management platform, providing remote over the air (OTA) firmware updates.

Security is designed into the XR Series with device to cloud security including secure boot, cryptographic keys, and support for WPA-3. Only signed firmware can be loaded on the XR Series routers. As a MITRE CVE Numbering Authoring (CNA), our internal security processes and security experts continuously monitor and mitigate security issues that may arise.

AirLink XR Series Advantages

- **Supercharged Performance –** AirLink XR routers use a quad-core architecture and packet acceleration to deliver 5G, Wi-Fi-6, and 5 Gbps Ethernet.

- **Cognitive Wireless Network Switching –** Delivers always-on connectivity for mission-critical applications such as First Responder fleets.

- **Flexibility –** The AirLink XR's modular design lets you configure your router as needed today and upgrade as your business grows.

- **Advanced Security –** AirLink XR routers have enhanced internal hardening, unique factory crypto keys, secure boot and secure firmware updates. AirLink XR routers work with AirLink Connection Manager (ACM) to deliver a complete end-to-end VPN security solution.

- **Responsive UI –** AirLink OS improves information flow and configurability and enables immediate configuration changes.

- **Best-In-Class Device Management –** AirLink XR routers use AirLink Management Service (ALMS) to gain a unified management experience with a single pane of glass. Additionally, Advanced Mobility Reporting (AMR) delivers fleet monitoring and management for mobile applications.

- **Out-of-Band Management –** This unique capability leverages the Sierra Wireless low-power wide-area (LPWA) network to simplify deployments, improve support, and offer new services.

- **Rugged industrial design –** For the most challenging, harsh environments, both the AirLink XR90 and AirLink XR80 are purpose-built for rugged environments with aluminum die cast housings rated to IP64 and Mil-STD 810G.

AirLink XR Router Details

AirLink XR90

AirLink XR80

The AirLink XR90 and AirLink XR80 are both purpose-built to maximize connectivity, reliability, and security for mission-critical and business-critical applications. Both routers use the same quad-core processing hardware, packet acceleration, and die-cast aluminum housings. The AirLink XR90 is designed to maximize mobile application performance while the AirLink XR80 is designed for fixed and less critical mobile applications.

AirLink XR Routers by Use Case

AirLink XR90

Best for mobile mission-critical applications in transit, rail and first responder fleets

- Buses/Transit/Rail
- Law Enforcement
- Fire
- Ambulance/EMS
- Utilities
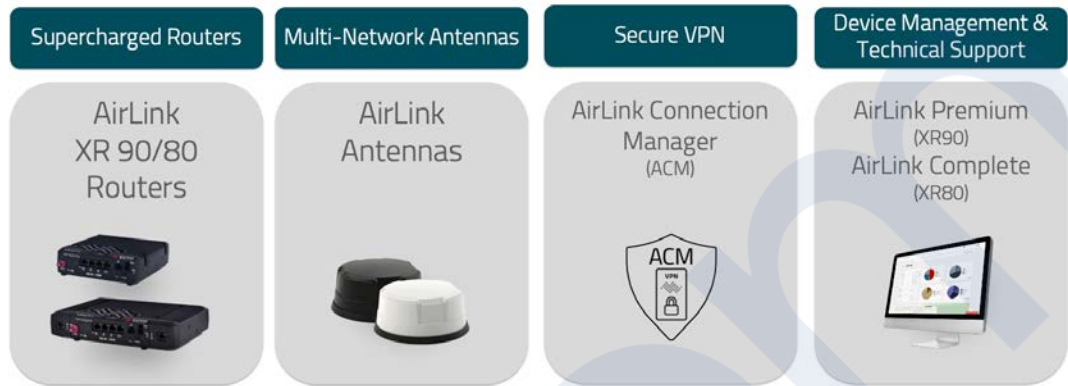- Private Networking

AirLink XR80

Best for fixed and mobile applications in public safety and field service fleets, Fixed Wireless Access, SCADA and industrial IoT

- Ambulance/EMS (Smaller agencies)
- Law Enforcement (Smaller agencies)
- Utility Bucket Trucks
- Commercial Fleets
- Manufacturing
- Fixed Utility Applications
- Pipeline Monitoring
- Remote Learning
- Retail, Digital Signage and Security
- Private Networking

AirLink XR Complete Solution

Sierra Wireless delivers a complete 5G solution including hardware, antennas, secure VPN, professional services, and support.

AirLink XR Routers

AirLink XR90 - The supercharged AirLink XR90 is purpose-built for public safety and transit with available dual-5G cellular radios and dual independent 4x4 MIMO Wi-Fi 6 antennas. It is the highest performing, most flexible router in the Sierra portfolio. The AirLink XR90 can accommodate two expansion modules and is purpose-built for rugged environments with aluminum die cast housings rated to IP64 and Mil-STD 810G.

For more information visit: AirLink XR90

AirLink XR80 - The supercharged AirLink XR80 is optimized for fixed and mobile applications. The available dual-5G cellular radio and 4X5 MIMO Wi-Fi 6 delivers flexibility for customized configurations. The AirLink XR80 can accommodate a single expansion module and is purpose-built for rugged environments with aluminum die cast housings rated to IP64 and Mil-STD 810G. A 4G LTE version of the AirLink XR80 is available.

For more information visit: AirLink XR80

AirLink XR Antennas

AirLink XR 5G antennas are designed to maximize router performance at 5G frequencies and power levels. Our single antenna solution combines cellular, Wi-Fi, and GNSS functionality reducing overall antenna footprint. All AirLink antennas are serviced and supported by Sierra Wireless with a 3-year warranty.

For more information visit: AirLink Antennas

Secure VPN

AirLink Connection Manager (ACM) - ACM works with AirLink XR routers to deliver a complete end-to-end VPN security solution. Benefits include "always-on" VPN tunnels delivering zero downtime or loss of communications, even in roaming situations between cellular and Wi-Fi networks.

For more information visit: AirLink Connection Manager

AirLink XR Complete Solution

AirLink XR Services and Support

AIRLINK PREMIUM FOR AIRLINK XR90

AirLink Premium is a subscription service that combines our best-in-class AirLink Management Service (ALMS), Advanced Mobility Reporting (AMR), ALMS Out-of-Band Management, and direct access to technical support from Sierra Wireless. AirLink Premium is required with all AirLink XR90 routers and includes our advanced replacement program, extended hardware warranty, firmware updates, and access to The Source for all technical documentation and software downloads.

For more information visit: AirLink Premium

AIRLINK COMPLETE FOR AIRLINK XR80

AirLink Complete is a subscription service that combines our best-in-class AirLink Management Services (ALMS), ALMS Out-of-Band Management, and direct access to technical support from Sierra Wireless. AirLink Complete is required with all AirLink XR80 routers and includes our extended hardware warranty, firmware updates, and access to The Source for all technical documentation and software downloads.

For more information visit: AirLink Complete

SIERRA WIRELESS PROFESSIONAL SERVICES

Sierra Wireless Professional Services use a proven, structured approach to deliver a faster time-to-success by getting your projects completed on time and in scope. The Professional Services team has extensive experience with complex organization implementations and integration of third-party equipment, video systems, and depot Wi-Fi. They are well-versed in modern security protocols including FIPS and non-FIPS compliant VPNs. Our team of experts will ensure you have a solution that suits your unique needs and delivers the best possible performance.

For more information visit: Sierra Wireless Professional Services

Why Sierra Wireless

Sierra Wireless has more than 25 years of cellular-first experience helping industrial customers, first responders, education, and other public sector organizations, as well as enterprise companies deploy reliable and cost-effective wireless solutions. As a part of the global cellular technology ecosystem, our partnership with all major cellular carriers ensures you have the performance and connectivity required for your mission-critical and business-critical applications.

Next Steps

To learn more about the AirLink XR90 and AirLink XR80 solutions from Sierra Wireless call us at **1-877-687-7795** or email **sales@sierrawireless.com.**

About Sierra Wireless

Sierra Wireless (NASDAQ: SWIR) (TSX: SW) is the leading IoT solutions provider that combines devices, network and software to unlock value in the connected economy. Companies globally are adopting IoT to improve operational efficiency, create better customer experiences, improve their business models and create new revenue streams. Whether it's a solution to help a business securely connect edge devices to the cloud, or a software/API solution to help manage processes associated with billions of connected assets, or a platform to extract real-time data to make the best business decisions, Sierra Wireless will work with you to create the right industry-specific solution for your next IoT endeavor.

For more information, visit www.sierrawireless.com.

Connect with Sierra Wireless on the IoT Blog at www.sierrawireless.com/iot-blog, on Twitter at @SierraWireless,
on LinkedIn at www.linkedin.com/company/sierra-wireless and on YouTube at www.youtube.com/SierraWireless