UNLOCKING CONNECTIVITY

The business benefits of deploying both private networks and neutral host infrastructure

boldyn NETWORKS

Connectivity is a key enabler of digital transformation

Organisations that need to connect sensors and devices across large, complex sites, or remote or autonomous-guided vehicles or machinery, need secure, reliable connectivity everywhere. This is beginning to drive investment in wireless private networks, which assure performance and keep sensitive data segregated from the public networks run by mobile network operators (MNOs).

But private networks are by definition closed, managed networks with no public access. Many campus-style sites, such as stadiums, airports, hospitals and manufacturing complexes, also want to enable guests, visitors and workers to connect via their devices while onsite.

In practice, that often means working with multiple MNOs to enable seamless access to each network. But that can be costly, time-consuming, complex, and result in a proliferation of onsite infrastructure which can consume both additional space and power.

In this guide: Get the best of both worlds with private networks + neutral host

This guide is about how to provide the best of both worlds: private, secure connectivity for critical data, and site-wide guest connectivity via public 4G, 5G, LTE and CBRS networks.

It shows the benefits of deploying a new ‘dynamic duo’: a private network for critical operations, with carrier-grade neutral host infrastructure for public connectivity to multiple MNO networks.

We’ll look at the many benefits of a private network + neutral host approach, from faster connectivity, to reduced costs, to the introduction of potential new revenue streams. It also looks at the benefits of working with an experienced partner to implement both network types.

Know your network: understanding the technologies

Wireless Private Networks

What it is: A private, dedicated wireless network for exclusive use by a single organisation.

What it does: Keeps data safe by allowing only authorised users and devices to connect. It also offers high reliability and high performance, since it's designed to meet specific speed, latency, coverage and capacity needs, and doesn't have the same congestion issues as public networks.

What it's for: Wireless private networks are typically used to support advanced, connectivity-critical applications such as automation, IoT, real-time analytics, augmented reality (AR), and mission-critical voice and video communications.

Why invest in a wireless private network?

A dedicated, fully-private and expertly-managed network offers many advantages over shared infrastructure or legacy technologies, including:

- **Custom-built and expertly managed:** The managed network partner will build, manage, evolve and scale the network in line with an organisation's requirements, ensuring their current and future needs are covered.
- **Optimised speed and capacity:** A private network can support the rapid transfer of large volumes of data at high speed from a high density of devices, as there are no other users on the network to affect performance. That's vital for organisations that rely on continuous exchange of data between devices, sensors and servers.
- **Low latency:** The short distances between devices and servers means there's only a millisecond-level delay between data being generated, a server processing it and issuing an instruction, and a device receiving the instruction and acting on it. That's vital for latency-critical use cases like remote controlled equipment or autonomous vehicles.
- **Optimum coverage:** A wireless private network can ensure total coverage across all areas of a site—indoors and outdoors. This can bring connectivity to previously hard-to-connect areas, or areas where public cellular network signals may be degraded.
- **Enhanced security:** As a closed system that is only accessible to authorised devices, a wireless private network offers greater security than having sensitive data travel across public cellular infrastructure.
- **High reliability:** A wireless private network maximises reliability for business-critical operations by eliminating risks like coverage dropouts and peak-time congestion. It's also typically backed by an SLA from the managed network partner, assuring high levels of uptime and availability.

Neutral Host Infrastructure

What it is: Telecoms infrastructure that's designed, built and maintained by an independent third party rather than by an MNO or communications service provider (CSP). The third party recoups their investment by leasing the infrastructure to multiple MNOs and CSPs.

What it does: Enables MNOs to provide connectivity in locations where coverage would otherwise be poor, or where building their own infrastructure would be commercially unviable.

What it's for: Neutral host infrastructure is increasingly used to extend public mobile network coverage into high-footfall or signal-challenged environments like airports, stadia, arenas, hospitals, and large office campuses.

Why invest in neutral host infrastructure?

For organisations running large, campus-style sites, investing in neutral host infrastructure can bring multiple benefits, including:

- **Enhanced productivity:** Neutral host networks can provide seamless high-speed connectivity across all areas of the site, supporting all digital applications and improving user experience. Site-wide coverage and full capacity mean people can always be productive.
- **Elevated customer experience:** Infrastructure that can be shared by multiple MNOs allows more public networks to be extended into the site. That mean guests, visitors and contractors can connect seamlessly, no matter which MNO's network they subscribe to.
- **Competitive advantage for landlords and tenants:** For landlords, guaranteed, high-performance indoor wireless connectivity can attract high-value tenants. For tenants, neutral host infrastructure can help attract and retain talent by supporting BYOD policies and freeing people to work productively anywhere on the floorplan, with no dropped calls or video connections.
- **Improved energy efficiency:** By consolidating networks on to a single infrastructure, a neutral host network can reduce energy consumption compared to traditional Distributed Antenna Systems (DAS) solutions. Organisations investing in neutral host infrastructure have reported net energy savings of up to 38% and cost savings of up to 47% (see graphic).
- **High value with low disruption:** Just one suite of hardware covers every connectivity requirement, from IoT sensors to video conferencing, minimising the disruption caused by installation work.

Cost and energy consumption:

In dense urban environments:		**Net energy savings of**	20%	**and cost savings of**	40%[2]
In urban environments:		**Net energy savings of up to**	33%	**and cost savings of**	47%
In suburban areas:		**Net energy savings of up to**	38%	**and cost savings of**	47%[3]

The dynamic duo: Why private networks and neutral host work best together

When private networks and neutral host infrastructure are co-located at a single site, it can open up opportunities not previously supported by legacy infrastructure.

By deploying both to serve a single location, organisations can benefit from:

- **Ensuring mission-critical communications:** In an emergency, such as in an airport during a storm. All of the planes are grounded, the terminal buildings are full of passengers using their devices and congesting the Wi-Fi network. You need to ensure that you can communicate with emergency or maintenance vehicles or gritting trucks. A private network ensures that vital communications are always there.

- **Comprehensive coverage:** Private networks ensure secure indoor and outdoor connectivity for critical operations, while neutral host infrastructure offers MNOs an attractive way to provide access to their public networks throughout the premises.

- **Improved end-user experience:** Employees can move between the enterprise private network and their personal mobile provider without coverage loss or quality degradation. This continuity supports complex work environments, BYOD policies, and multi-tenant spaces.

- **Cost efficiency:** The availability of neutral host infrastructure makes it more economical for MNOs to provide quality public coverage in less-profitable environments. For enterprises, this means improved mobile coverage without funding or subsidising multiple discrete systems.

- **Safety and compliance:** In regulated sectors such as healthcare, energy, and transport, reliable mobile coverage is often a compliance requirement—for instance, supporting emergency services communication or enabling lone worker safety apps. A combined network solution ensures these obligations are met across the site and that vital communications to coordinate activity fast, and right first time, are possible.

- **Device and sensor mobility:** Some use cases call for devices or sensors to move between private and public wireless networks within a single site or operational sphere. An airport employee might use the Wi-Fi network for day-to-day activities, for example, but use the private network with an eSIM for emergency communications, like directing fire services. Such use cases are well served by a mix of private wireless and neutral host—especially as it means devices can transition between private and public networks without service interruption.

Use cases: Wireless private networks and neutral host infrastructure in action

What does the combination of a wireless private network and neutral host infrastructure look like in action? These use cases show how the dynamic duo can work in different industry scenarios.

Healthcare

At an operating hospital campus, a private network is used for secure patient data and medical devices, while neutral host infrastructure supports visitors and emergency services.

- **The private network** supports the tracking of high value assets, allows consultants to access patient records anywhere via AR glasses, and connects clinicians anywhere in the facility.
- **The neutral host infrastructure** means visitors, patients, contractors and emergency services personnel can connect seamlessly, regardless of their mobile network operator.

Manufacturing

At a factory embarking on an Industry 4.0 transformation, a private network supports critical operations while neutral host infrastructure keeps visitors and contractors connected.

- **The private network** provides secure, high-bandwidth and low-latency connectivity for automation, remote control of machinery and the tracking of high value assets.
- **The neutral host infrastructure** allows contractors and visitors to connect easily, without requiring Wi-Fi onboarding.

Commercial property

In a multi-tenanted office building, a private network supports the smart building management system, while neutral host infrastructure provides anyplace, anywhere connectivity for workers.

- **The private network** enables state of the art facilities management, including sensors that inform automated smart building systems and enable granular access control.
- **The neutral host infrastructure** delivers the kind of wall-to-wall, floor-to-floor, wireless connectivity that enables flexible working, boosting tenant satisfaction and rental values.

Transport

In an airport or major transport/logistics hub, a private network supports efficient, secure operations, while neutral host infrastructure ensures seamless coverage everywhere.

- **The private network** supports IoT sensors, autonomous vehicles, real-time tracking of cargo, and secure communications between control systems, for operational efficiency and resilience.
- **The neutral host infrastructure** ensures passengers, staff, and third-party logistics providers have uninterrupted coverage from all major MNOs, even in underground or remote areas.

Retail and hospitality

In a large shopping centre, a private network supports retail operations, while neutral host infrastructure enhances the digital customer and employee experience.

- **The private network** enables smart building management, security teams' communications, and secure point-of-sale systems.
- **The neutral host infrastructure** provides seamless mobile coverage for guests, shoppers, and staff, regardless of their mobile provider.

Higher education

At a university campus, a private network supports digital learning styles, while neutral host infrastructure keeps students and visitors connected everywhere.

- **The private network** facilitates secure access to academic resources, supports AR/VR learning tools, and connects IoT-enabled classrooms.
- **The neutral host infrastructure** ensures students and visitors have reliable mobile access across campus, including in lecture halls and accommodation blocks.

Utilities and energy generation

At a power plant or water treatment facility, a private network keeps the plant operating efficiently, while neutral host infrastructure offers seamless connectivity for mobile workers.

- **The private network** supports plant management or telemetry systems, remote monitoring, and predictive maintenance.
- **The neutral host infrastructure** provides mobile coverage for field engineers, contractors, and emergency responders.

Construction

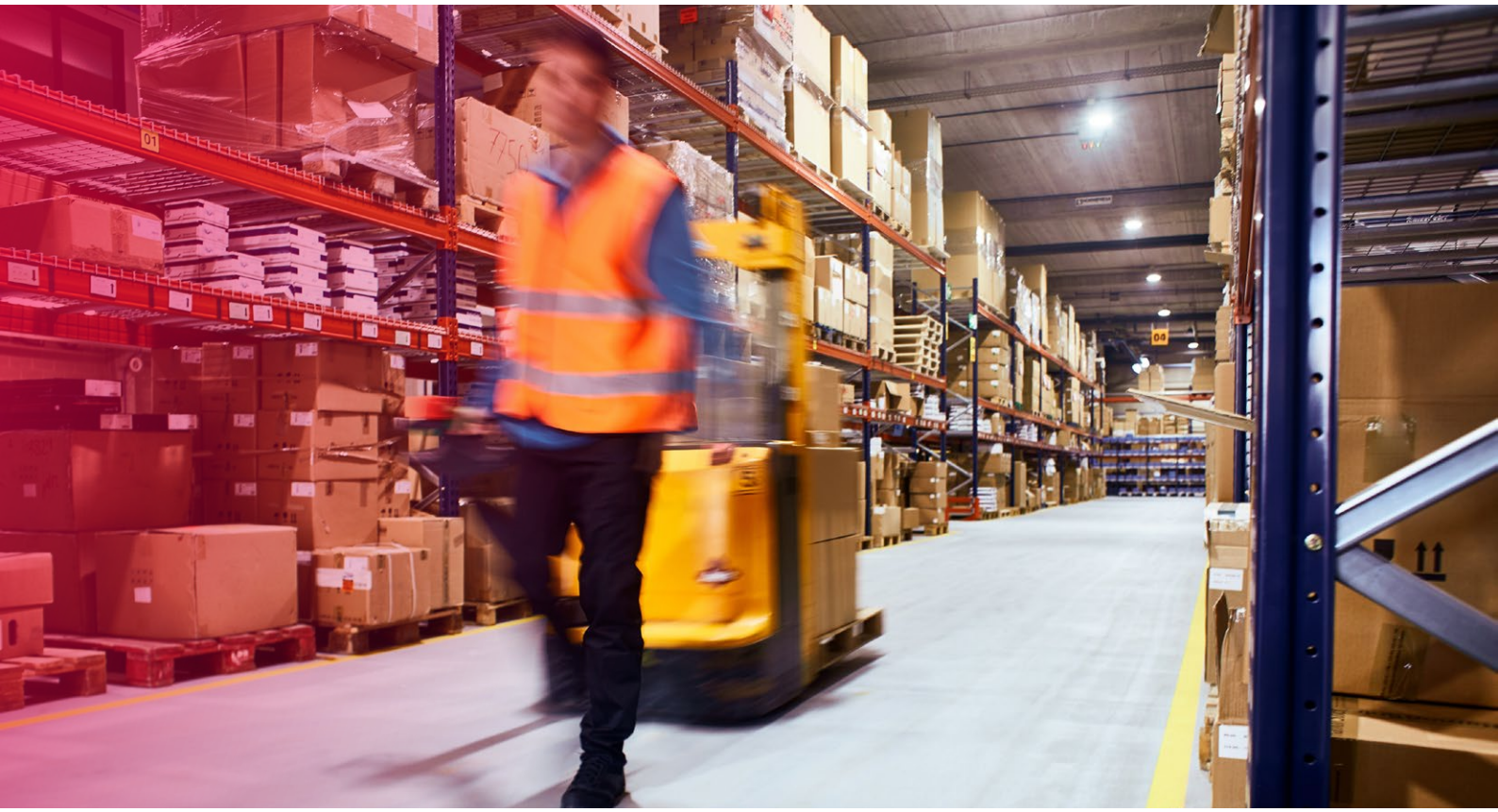
At a large construction or development site, a private network enables secure onsite operations, while neutral host infrastructure offers easy and flexible connectivity.

- **The private network** supports connected (possibly autonomous guided) machinery, site surveillance, and high value asset tracking to reduce wastage and lost time.
- **The neutral host infrastructure** provides mobile coverage for workers, site managers and visitors, even in temporary or evolving environments.

Smart cities

At an urban local authority, a private network supports smart city infrastructure, while neutral host infrastructure narrows the digital divide.

- **The private network** connects traffic lights, environmental sensors, and public safety systems whilst also supporting autonomous vehicles.
- **The neutral host infrastructure** ensures residents and emergency services have consistent mobile access across public spaces, closing the digital divide for citizens and taxpayers.



Next steps: Choosing a partner for your private network + neutral host deployment

Implementing a private network and neutral host is easier when you work with a provider that has experience in both camps. An experienced partner can not only deliver a network that meets your requirements, but also ensure you generate the most value from your investment.

Some of the many ways an experienced partner can help include:

- **Technical integration:** Having a single provider manage both network types allows for tighter integration and orchestration between the private network and public MNO services. This can improve handover performance, enable seamless mobility, and allow differentiated service levels for employees, guests and third parties.
- **Reduced complexity:** A single provider means you can reduce procurement and management overhead by consolidating the infrastructure into a single delivery and support framework. This is especially beneficial for organisations with limited in-house IT and telecoms expertise or where economies of scale are possible.
- **Future-readiness:** A unified provider will understand the evolution of mobile standards (such as 5G Standalone, 6G and Open RAN) and can architect solutions that accommodate future upgrades with minimal disruption.
- **Regulatory and spectrum expertise:** Navigating spectrum licensing, planning permission, and compliance frameworks can be complex. A partner experienced in both private and shared-access networks brings the regulatory and commercial insight needed to ensure swift, compliant deployment.

Conclusion

Digital transformation initiatives rely on networks that can support every tier of activity, from low-level IoT sensors to immersive digital experiences. Matching the right type of network to the right type of activity can pay dividends in terms of performance, security and future-readiness.

More and more organisations are finding that combining a wireless private network with neutral host infrastructure is the most efficient and cost-effective way to enable multiple types of connectivity across a complex, campus-style site. This ‘dynamic duo’ delivers the most benefits when it’s designed, installed and managed by a partner with experience in both areas.

Boldyn has already delivered over 130 private networks to organisations including power plants, wind farms, airports, manufacturing and chemical plants. Providing connectivity into over 300 venues from offices, stadiums, indoor arenas as well as smart cities and public infrastructure including underground train networks. If you’d like to discuss how we could help with your private wireless + neutral host initiative, please get in touch.

boldyn NETWORKS

Boldyn Networks delivers the advanced shared network infrastructure needed for a smart, inclusive, and sustainable future. We enable connected transit, venues, enterprises, heavy industry, college campuses and smart cities to create new possibilities in the way people live, work and play.

We don’t just talk about the future. We exist to help build it. Creating the foundation from which a better collective future can be imagined.

To learn more visit **boldyn.com**

2025-07-23