

Solving the connectivity gap and transforming infrastructure into business assets

A guide for the Enterprise CIO on moving from coverage gaps to private control.



Executive summary

For the modern Enterprise CIO, the physical workspace has become a digital liability. Without a dedicated in-building solution like a Distributed Antenna System (DAS) or Neutral Host Network (NHN), facilities may experience gaps in coverage from external macro networks. This can result in inconsistent performance and the inability to support a multi-carrier workforce.

However, a siloed approach to solving these problems – building one network for public coverage and a separate one for industrial operations – is fiscally inefficient. The emergence of 5G Neutral Host Networks (NHN), specifically utilizing MORAN (Multi-Operator Radio Access Network) architecture, allows enterprises to deploy a single physical infrastructure that serves two distinct masters: public employees and private industrial assets.

This white paper outlines how this “two-for-one” model resolves the immediate pain of poor connectivity and details why enterprises planning NHN or Private Wireless Networks (PWN) should strategically include both capabilities to maximize ROI and operational value.

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The cost of the status quo: the “no-system” liability

When an enterprise lacks an in-building solution, it relies entirely on outdoor macro towers to penetrate modern energy-efficient glass and concrete. This creates three critical operational failures for the CIO:

1. The indoor coverage gaps productivity drain

Physics dictates that high-frequency cellular signals struggle to penetrate deep indoors. Without an internal system, facilities suffer from sporadic dead spots where calls drop and data stalls.



Impact: Employees are tethered to desks, hindering mobility. Critical alerts are missed in stairwells or basements, and the office experience is degraded by connectivity that is inferior to the home office.

2. The single-carrier “lock-in”

Relying on outdoor macro coverage often results in a scenario where only one Mobile Network Operator (MNO) provides adequate service inside the building. This occurs because it is physically difficult for high-frequency cellular signals from outdoor macro towers to penetrate deep indoors, especially through modern energy-efficient glass and concrete.

When a facility lacks a dedicated internal network system, often only one MNO happens to deliver adequate indoor coverage (whether due to tower proximity, spectrum characteristics, antenna orientation or building-specific obstructions). Users whose devices are on other carrier networks are left with poor service or “dead spots” where calls drop and data stalls.

Ultimately, one carrier “wins” the indoor coverage, forcing an enterprise to manage expensive corporate devices tied to that single carrier just to ensure its workforce stays connected.



Impact: This breaks BYOD (Bring Your Own Device) strategies. If the building only gets a good signal from one MNO, employees and visitors with other carriers are effectively offline.

3. The “best-effort” gap for mission-critical apps

Relying on public signals means competing for bandwidth with every other user in the area.



Impact: It is difficult to assure needed network performance for critical Operational Technology (OT) like autonomous robots or real-time video security.



The strategic value: Why PWN deployments should include NHN

Many enterprises are currently exploring PWN to support Industry 4.0 use cases like robotics and IoT. However, deploying a PWN in isolation is a missed strategic opportunity. Coupling Neutral Host Network (NHN) capabilities with your private wireless strategy offers significant cost and operational advantages.

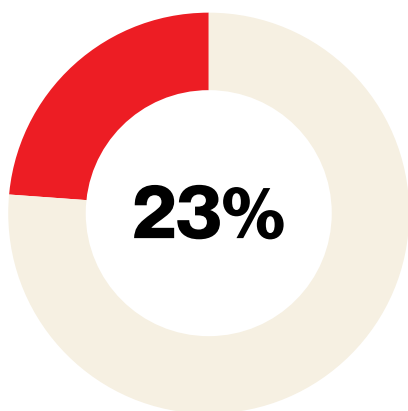
1. The “dual-purpose” asset: one investment, two networks

By utilizing a shared RAN (Radio Access Network) architecture, enterprises can leverage the same physical infrastructure (radios, cabling and power) to broadcast both a secure private network for machines and a public network for people.



Capital efficiency: By deploying a consolidated MORAN architecture, enterprises can avoid the cost and complexity of building a dedicated PWN alongside a separate legacy DAS for public coverage. This “dual-purpose” approach utilizes a shared radio infrastructure to broadcast both networks, reducing the overall hardware footprint, power consumption and facility disruption.

For a typical 200,000-square-foot office over a five-year term, this consolidated model can deliver estimated savings of up to:



in Total Cost of Ownership (TCO) savings, based on Verizon internal analysis.

2. Monetization and employee experience

Adding NHN to a private wireless project transforms the network from a pure cost center (supporting only OT) into a value driver for the entire workforce.



BYOD support: It ensures seamless indoor coverage for employees and visitors across multiple carriers without the enterprise needing to manage individual devices.



Future-proofing: It avoids MNO “lock-in,” allowing the enterprise to support a diverse ecosystem of users while maintaining strict control over their private industrial traffic.



The “upscope”: private wireless as an upgrade

The most compelling financial argument for this architecture is the “upscope.” If an enterprise deploys the infrastructure for NHN coverage first, the private network can be added later as an upgrade rather than a construction project.

1. The upgrade

In a traditional model, adding private wireless would require a secondary overlay network. With the NHN “Upscope” model, the private network is activated as an upgrade.



Mechanism: The upgrade requires a remote or onsite configuration update depending upon the network design, and the activation of private network SIMs.



Speed: The transition to activate the private layer depends on the size of the network and can be completed in the maintenance window of one day.

2. Licensed spectrum advantage

While PWN can utilize shared CBRS spectrum, an approach comparable to spectrum for Wi-Fi 6/7, deploying it with licensed spectrum delivers significantly higher reliability.

Here is why:



Dedicated access: Licensed spectrum provides an exclusive, interference-free environment, overcoming the vulnerabilities of shared CBRS and contention-based Wi-Fi.

It ensures predictable, deterministic performance for latency, jitter and throughput, moving past the unpredictable “best-effort” delivery of Wi-Fi.



Network slicing: Licensed 5G Standalone (SA) allows you to create mathematically isolated “express lanes,” ensuring your critical traffic is never degraded by general network congestion.



Superior coverage: It eliminates common Wi-Fi dead spots and delivers more consistent coverage per radio, reducing your total hardware footprint.

Coupling a NHN architecture with a PWN on licensed spectrum, you can realize high performance and high reliability for mission-critical applications, all while requiring fewer radios than alternative approaches to cover a facility.

Architecture: the best of both worlds

This hybrid architecture enables the CIO to simultaneously manage two distinct network experiences on one platform.

1. Public coverage (the “guest” lane)

The NHN ensures that standard public subscribers – employees and visitors – receive seamless coverage for calls and data. They remain on the public network core, ensuring their traffic is completely separated from the enterprise’s internal operations.





2. Private control (the “express” lane)

By activating the PWN layer, the enterprise creates a logically isolated network resource for its critical industrial devices.



Data isolation: Data isolation is achieved within the PWN. This architecture ensures that sensitive operational data is maintained within the enterprise's control, strictly isolated from the public internet and public subscriber traffic.



Resource partitioning: Through network slicing – enabled natively by the 5G Standalone (5G SA) Core – the enterprise can enforce guaranteed bit rates and deterministic performance.

Unlike Wi-Fi, which operates on a contention-based model, 5G slicing creates mathematically isolated resources, ensuring that visitor traffic in the lobby never degrades the performance of an autonomous forklift in the warehouse, for instance.

Operational benefits and visibility

Activating the private wireless layer unlocks advanced operational tools that standard public coverage does not provide, giving the enterprise full visibility and control over its digital assets.



Single pane of glass management: The private layer can leverage the network dashboard. This centralized portal provides a unified view of network resources, allowing IT teams to manage SIM activation, configure network elements and monitor key performance indicators (KPIs) and alarms in near real-time.



Real-time device intelligence: This capability in a selective network design can be enhanced by the Network Digital Twin application. This tool provides a “single source of truth” regarding how devices experience the network, offering a real-time geospatial view. Operations teams can visualize coverage heatmaps, replay device motion history to identify dead spots and proactively troubleshoot issues before they impact business continuity.

Conclusion

For enterprise leaders, the decision is no longer about “fixing dead zones.” It is about investing in a convertible platform. By standardizing on NHN MORAN infrastructure, enterprises resolve the immediate pain of poor public coverage while securing the latent capability to deploy a secure, industrial-grade PWN.

Whether your primary driver is industrial automation or employee connectivity, combining these needs onto a single, licensed spectrum infrastructure maximizes capital efficiency, ensures high reliability for critical assets and future-proofs the digital workplace.

Engage your Verizon account team

To explore how an integrated NHN and PWN solution can deliver both public employee coverage and dedicated private network reliability, contact your Verizon Sales Representative to schedule an initial site survey and ROI assessment or visit [verizon.com/private5g](https://www.verizon.com/private5g).





Appendix

What is NHN?

A Neutral Host Network (NHN) is defined as a shared network infrastructure designed to serve subscribers from multiple Mobile Network Operators (MNOs).

Also referred to simply as a “neutral host,” it provides a fast and cost-effective way to add mobile coverage for users of various public cellular services within a specific location.

Rather than each carrier installing their own dedicated and complex equipment, an NHN uses a single, shareable Radio Access Network (RAN) infrastructure – such as the radios and antennas – to drive in-building connectivity for all supported carriers.

In modern NHN architectures like MORAN (Multi-Operator Radio Access Network), multiple operators share this physical radio hardware while keeping their individual spectrum and core networks completely separate.

What is PWN?

A Private Wireless Network (PWN) is a dedicated, secure and managed 4G LTE or 5G network deployed for the exclusive use of a specific organization to connect its people and critical assets within a localized area, such as a factory, hospital, warehouse or port.

Rather than sharing bandwidth on a public macro network, an enterprise procures and controls this purpose-built infrastructure to achieve deterministic, industrial-grade connectivity.

What is DAS?

A Distributed Antenna System (DAS) is a network of antennas used to boost cellular coverage inside a building where external service is poor or non-optimal.

It serves as a dedicated in-building solution to eliminate “dead zones,” which typically occur when high-frequency signals from outdoor macro towers fail to penetrate modern building materials like energy-efficient glass and concrete.

