What is neutral host?

Explore the key characteristics & benefits of neutral host networks.

IONX Networks designs, develops, and installs neutral host network infrastructure, enabling more people to get connected and stay connected.

IONX

www.IONXnetworks.com

INTEGRATED & OPTIMIZED NETWORK EXPERIENCE

Introduction

Instead of each mobile network operator (MNO) building its own telecom infrastructure, a neutral host (NH) provides a shared alternative. The NH invests in, owns, and manages infrastructure that supports multiple MNOs and service providers on a wholesale, multi-tenant basis - forming what's known as a neutral host network (NHN).

The evolution of neutral host networks began with passive infrastructure sharing, which transformed the TowerCo model by improving the economics of site leasing. As new technologies emerged, this concept expanded to include active infrastructure. Today, neutral host networks and managed services are recognized as vital enablers for extending 4G and particularly 5G coverage, in areas where a single operator's return on investment is unviable or where traditional macrocell deployments are inefficient or impractical.

The primary goal of the NHN is to:

- **Optimize the use of telecom infrastructure**

By sharing infrastructure and optimizing resource utilization, neutral host networks can contribute to more sustainable and efficient network deployments.

- **Cost-Effectiveness**

Neutral host networks enable the neutral host provider to get a greater return on their investment across multiple revenue streams.

- **Targeted Network Enhancement**

With much of the demand for greater service quality, neutral host networks are increasingly seen as the perfect solution for indoor / in-building connectivity.

Key Characteristics

Neutral Host Networks are distinct from traditional architectures and business models which to date have shaped our communications infrastructure. Below are the key characteristics of a NHN.

1. Cost Effective

NHNs can deliver significant cost benefits. By sharing infrastructure among multiple MNOs and service providers, NHNs can significantly reduce both capital expenditure (CAPEX) and operational expenditure (OPEX), making it economically viable to deploy and manage network services in areas where individual deployments might otherwise not make financial sense. Major operator savings would typically include:

- **CAPEX** - includes everything from the deployment site, the infrastructure, passive material, active material, radios, antennae, etc.
- **Direct OPEX** - energy, rent, etc.
- **Indirect OPEX** - management and manpower.

2. Shared Infrastructure

Allowing multiple MNOs and other service providers to share the same infrastructure drives efficiency, reduces costs, and promotes sustainability.

There are two distinct types of infrastructure sharing:

- A **Passive NHN** provides a non-electrical infrastructure onto which MNOs and service providers can deploy their own radio equipment and services.
- An **Active NHN** provides not just the underlying infrastructure but also manages and optimizes active telecom equipment. This allows multiple MNOs and other service providers to use a single third-party network while allowing them to maintain their own distinct core network services.

How they compare

Passive		Active
Physical components only	**Shared Components**	Both physical & electrical components
Not shared	**Active Electronics**	Shared
Less complex	**Management**	More complex
Lower	**Cost savings**	Higher
Higher	**Power Usage**	Lower
Slower	**Installation**	Faster
Challenging Upgrade	**4G to 5G**	Upgrade Friendly
Less Efficient	**Deployment**	More Efficient

> **“Neutral host networks are emerging as a seriously compelling solution, taking the mess out of mobile infrastructure by offering operator-agnostic platforms”**

Networkingplus.co.uk, May 2025

3. Technology Agnostic

The NHN has the flexibility to be technology agnostic. This capability enables NHN providers to accommodate specific technology requests from operators while, at the same time, not be tied to a specific platform or vendor. This flexibility allows for greater adaptability and interoperability across different environments, use-cases, and systems.

- **Flexibility** – It is adaptable to changing technological landscapes and evolving requirements.
- **Interoperability** - It ensures that the solution can integrate and function with a variety of systems, platforms, and devices, regardless of the underlying technology.
- **Vendor Independence** - There is no reliance on a single vendor, thus reducing the risk of vendor lock-in and increasing the ability to mix and match technologies as and when required.
- **Scalability** - The solution can be easily scaled or modified without being limited by specific technologies, making it suitable for diverse environments.
- **Future proofing** – With no specific technology tie-in, the solution remains relevant and adaptable as new technologies emerge.

4. Independent Ownership

The NH provides independent third-party ownership of the shared telecom infrastructure, which in turn, ensures that no single operator has control over the infrastructure. This promotes fairness and equal access across all participating MNOs and service providers.

5. Scalability

A scalable NHN can efficiently expand its capacity, coverage, and services as the needs of the network operators and their customers evolve:

- Capacity Expansion - The network can increase its capacity to handle more users, higher data traffic, or additional operators without requiring a complete overhaul of the existing infrastructure.

- Geographic Coverage - A NH has the ability to extend the network's geographic coverage to new or underserved areas. This can be achieved by deploying additional infrastructure in these areas while at the same time, integrating it seamlessly within the existing network.
- Flexible Resource Allocation - The infrastructure can dynamically allocate resources such as spectrum, power, and bandwidth based on real-time demand from different operators, ensuring efficient use of shared assets as the network scales.
- Operator Integration - The NHN can scale by onboarding new operators or service providers when necessary, allowing them to use the shared infrastructure without negatively impacting existing users.

6. Multi-Access Support

The NHN, has the ability, if required, to handle multiple types of access technologies (eg. 4G, 5G, Wi-Fi) simultaneously. This is essential for supporting multiple connections in wireless and wired networks, ensuring that users can communicate without any interference or degradation in the quality of service.

7. Equal Service

A fundamental concept of the NHN is that each operator has fair and non-discriminatory access to the network resources and services available. This ensures that no single operator has an unfair advantage over others in terms of network performance or quality of service - promoting healthy competition and better service for end-users:

- All participating operators must be granted the same level of access to the shared infrastructure, without any preferential treatment.
- All operators must receive the same quality of service, with no degradation or prioritization of one operator's traffic over another.

Benefits & Challenges

Benefits

Multiple Carrier Support:

Enable multiple MNOs to simultaneously share a single telecom infrastructure.

Cost Efficiency:

Lower infrastructure and maintenance costs, with reduced capital expenditure for MNOs.

Enhanced User Experience:

Improved network coverage and reliability, eliminating connectivity “dead zones” often found in large buildings. Increased capacity to manage high data traffic.

Speed of Deployment:

Faster rollout of a shared RAN infrastructure, without the need for a custom system for each MNO.

Environmental Impact:

Smaller physical footprint due to fewer required structures. Overall energy consumption reduced.

Innovation and Flexibility:

Accelerated adoption of new technologies, with flexibility to support diverse services and applications.

Enhanced Security:

Carrier-grade encryption and secure protocols, making them far safer than Wi-Fi for businesses handling sensitive data.

Challenges

Despite the many advantages of NHNs, there are still some challenges that need to be considered:

Service Level Agreements (SLAs):

These can become complex across multiple MNOs.

Regulatory Compliance:

NHs must navigate varying regulatory requirements across many different regions, each having their own regulatory requirements.

Interoperability:

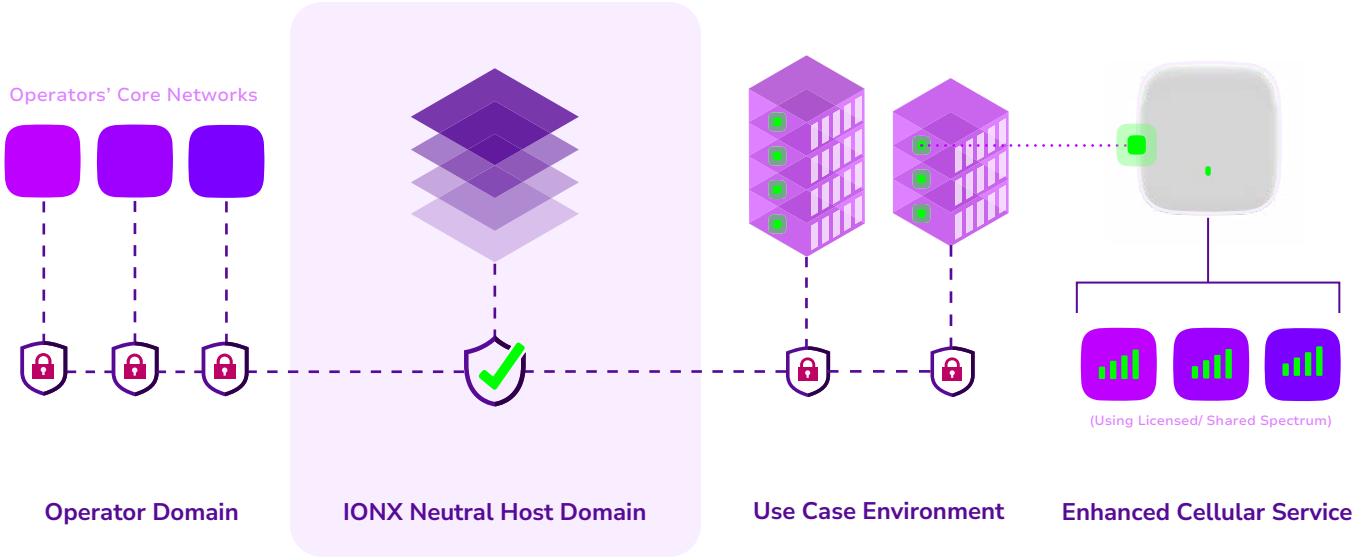
Ensuring seamless integration between the NHN and multiple MNO systems can be technically challenging.

Why IONX

Working with building owners, IONX enhances in-building, multi-operator 4G and 5G cellular connectivity through a fully managed, shared small cell infrastructure to keep pace with growing user demand.

Fully Managed Service

Multi-Operator Services / Improving In-Building Cellular / Managed Small Cell Installations



IDENTIFY

Market leading network analytics to target underserved locations and venues.

DESIGN

Pre-approved by operators, optimized with AI to simplify delivery.

BUILD

Deployed and on-air within weeks, with a significantly smaller in-building footprint

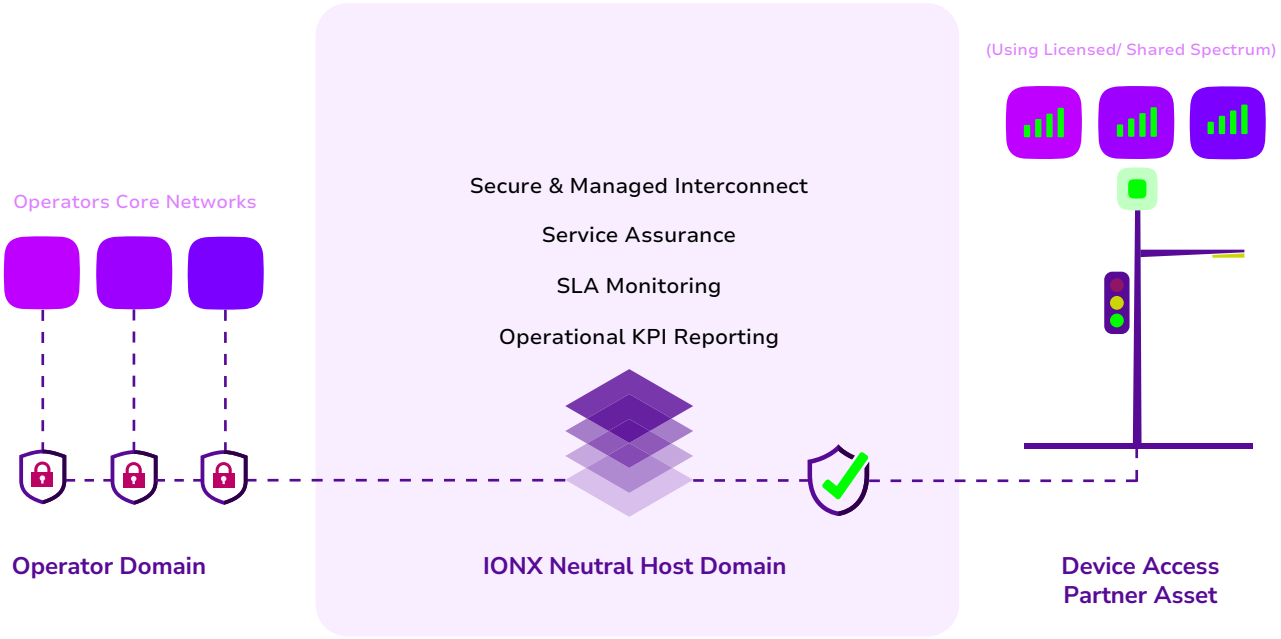
MANAGE

Active 24/7/365 support and monitoring through our internal NOC.

Working with infrastructure owners and operators, IONX provides access to our secure, neutral-host platform to enable partners to leverage their assets and enhance connectivity in hard-to-reach locations - transforming the economics of shared connectivity.

Neutral Host Platform-as-a-Service

Delivering Cellular Services / Through Infrastructure & RAN Partners / On Street Assets



TRUSTED

Our secure interconnect enables the delivery of operator services.

INTELLIGENT

Pre-qualification and site acceptance. Ongoing operational KPI reporting.

SCALABLE

Augmenting existing infrastructure through transformative economics.

IONX has pioneered the development of neutral host technologies and helped shape their market adoption. Our approach has enabled the scaled deployment of small cells to enhance the end-user experience and transform the economics of cellular connectivity.

What is neutral host?

For more information about IONX or the services and platforms we provide please contact: **sales@IONXnetworks.com**

www.IONXnetworks.com