

IONX



The evolution of

5G

STANDALONE

Virgin Media O2 and IONX Networks have successfully completed the end-to-end integration of a neutral host small cell into their live 5G SA core network.

This industry-first achievement underscores Virgin Media O2's commitment to pioneering future-ready technologies that meet the UK's growing demand for reliable, high-performance connectivity.

Virgin Media O2 recently announced that its next generation 5G SA network is now live in 500 towns and cities across the UK, covering over 70% of the population.

Virgin Media O2, [Press Release](#), 2025

Growing customer demand

The growing demand for higher capacity and lower-latency experiences, powering streaming, gaming, and real-time communications is driving mobile network operators to move aggressively toward 5G Standalone (SA) architectures.

Supporting this extensive national rollout is the growing need to infill and densify coverage in challenging indoor and outdoor environments. Deploying operator-specific small cells is both costly and inefficient.

For Virgin Media O2, partnering with neutral host providers enables access to shared spectrum designated by [Ofcom](#), greatly supporting their ability to meet growing customer demand. A key market innovation has been IONX's development of small cell technologies capable of managing and broadcasting both shared and licensed spectrum simultaneously. This provides operators with a clear, scalable, and cost-effective path to enhance connectivity and capacity - precisely what 5G densification demands.

Small cells play a critical role and it is through neutral host small cells that 5G SA service delivery will truly showcase their impact.

Small Cell Forum, [Industry Report](#) 2025

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An industry milestone

This end-to-end integration of neutral host small cells in a commercial 5G SA core network lays the foundation for the promise of future connectivity, providing key proof points for the industry to build upon.



Efficiency and cost savings:

Neutral-host deployments enhance network economics by streamlining deployment, site acquisition, maintenance and backhaul provisioning.



Acceleration of urban densification:

Supporting VMO2's urban densification efforts, particularly in locations where macro coverage is difficult or small cell deployment is constrained.



Future-proofed infrastructure:

Tightly integrated with SA core means the full benefit of 5G SA (e.g. low latency, network slicing potential) can be leveraged.



Regulatory & spectrum policy alignment:

Makes concrete use of Ofcom's shared access spectrum to deliver policy intent.



Showing leadership

For IONX, this integration of a neutral host small cell into an operator's 5G SA core demonstrates their continued technical innovation, leadership and readiness to support operators in expanding 5G SA services to their end customers.

We are excited that IONX has completed this industry-first integration of our multi-carrier small cell with Virgin Media O2's 5G Standalone core. By leveraging Ofcom's shared access spectrum, we are enabling an efficient neutral host model that will help drive urban network densification and deliver superior 5G performance in places that matter most.

Jim Estes, CEO, IONX Networks

At Virgin Media O2, we have the largest 5GSA of any operator and are focused on bringing it to more locations through our £700m Mobile Transformation Plan. This neutral host approach supports our mission to densify 5G in a scalable, cost-effective way — bringing the power of 5GSA to more people

Rob Joyce, Director of Mobile Access Engineering, Virgin Media O2

Performance and flexibility

This demonstration, showcasing live traffic and end-to-end connectivity, was carried out using off-the-shelf 5G handsets connected to VMO2’s live 5G SA core via 5G small cells in Marlow.

Using MORAN and MOCN architectures IONX was able to demonstrate the flexibility small cells can provide across a range of performance use cases.

Specific characteristics, such as latency, throughput, capacity, exceeded expectations, delivering improved user experience and demonstrating the positive effect such an architecture can have.



Shown here is the 5G SA user experience delivered through an IONX neutral host small cell using VMO2 spectrum:

The theoretical Max. with a 40MHz channel in Band n78 is 300mbps DL and 30mbps UL.



Shown here is the 5G SA user experience delivered through an IONX neutral host small cell using shared spectrum:

The theoretical Max. with a 100MHz channel in Band n77 is 800mbps DL and 80mbps UL.

Neutral Host Use Cases

Single Operator

Where operators face capacity issues, IONX enables an operator to simultaneously use different frequencies across both **shared spectrum** and **licensed spectrum**.

IONX Neutral Host Small Cell (RU)



n78

VMO2 Licensed Spectrum

n77

Shared Spectrum utilized by VMO2 (via IONX) can serve public users and/or dedicated to private network users

n77



VMO2 User

(VMO2 PLMN)



VMO2 User

(VMO2 PLMN)



VMO2 Private Network

(VMO2 Private PLMN)

MORAN

Where multiple operators face increased demand, IONX enables a single small cell infrastructure to **broadcast multiple licenced frequencies**.

IONX Neutral Host Small Cell (RU)



n78

n78

n78



MNO 1

(MNO 1 PLMN)



MNO 2

(MNO 2 PLMN)



MNO 3

(MNO 3 PLMN)

MOCN

Where operators licensed spectrum is restricted, IONX enables multiple operators to **broadcast over the same shared spectrum band**.

IONX Neutral Host Small Cell (RU)



n77



MNO 1

(MNO 1 PLMN)



MNO 2

(MNO 2 PLMN)



MNO 3

(MNO 3 PLMN)

MORAN Architecture - Multi-Operator Radio Access Network

Mobile Network
Operator 5G SA Core

The interconnect between each Operator and IONX is managed via the JOTS defined B-Interface.

This provides secure and resilient connectivity which can be used for both 4G and 5G solutions.

Neutral Host
Operator Platform

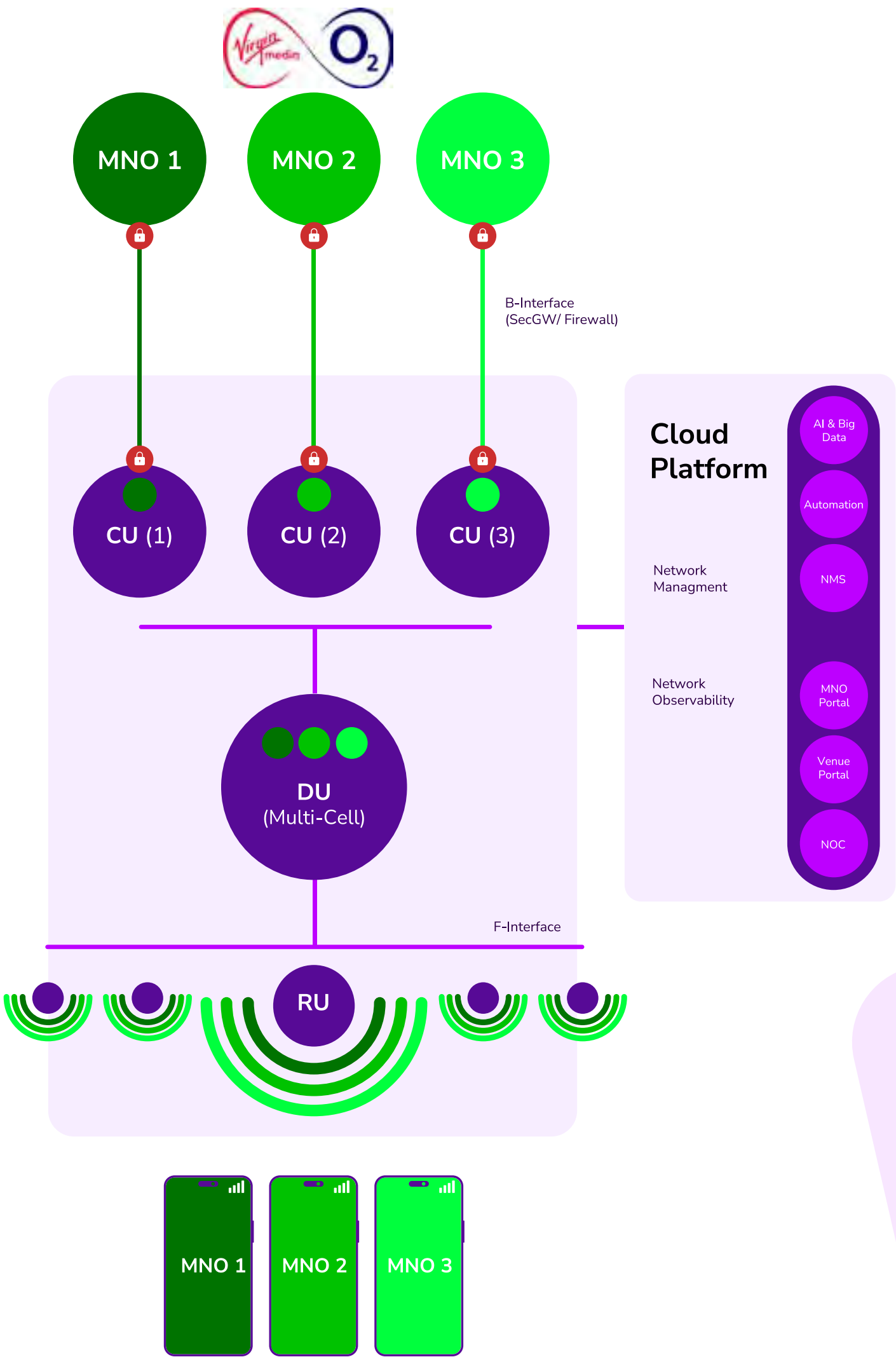
Based on Open RAN frameworks and interfaces, IONX provide independent MNO control through proprietary, patented Neutral Host technologies.

These architectures are aligned to the published **ORAN Alliance** Work Group 1 Use Case and Architecture Specifications.

Neutral Host
Small Cells

Each cell can manage multiple bands and frequencies across both licensed and share spectrum simultaneously.

User Experience
User Device



MOCN Architecture - Multi-Operator Core Network

Mobile Network
Operator 5G SA Core

If a MOCN architecture is required, IONX can configure this while maintaining the same MNO and user experience.

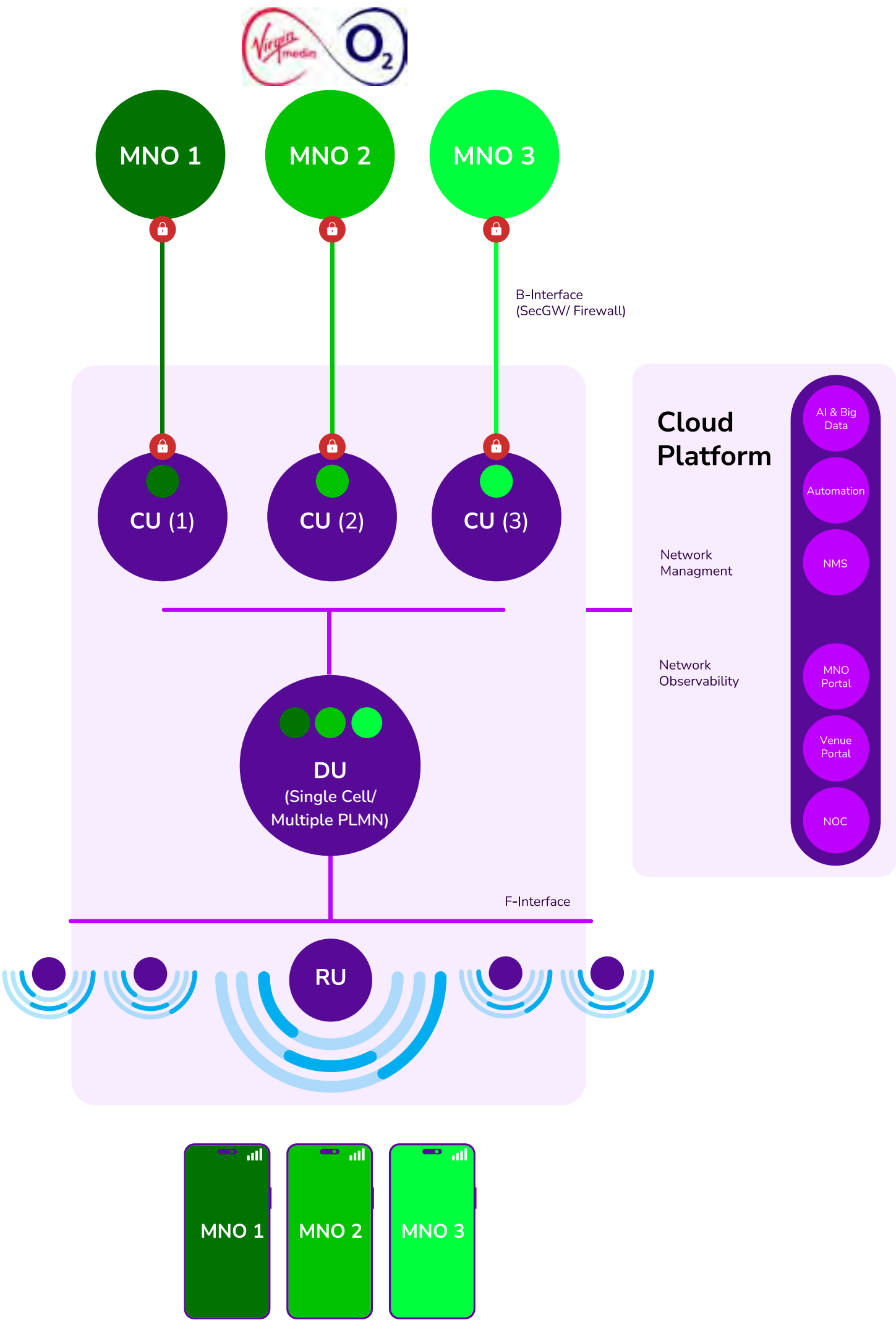
Neutral Host
Operator Platform

Using IONX’s flexible software defined platform, architecture variations are enabled through configuration changes with no impact to the hardware or software.

Neutral Host
Small Cells

Using the flexibility of shared spectrum, IONX can enable each small cell to broadcast multiple PLMNs on a common frequency.

User Experience
User Device



Future outlook

Through this collaboration and innovative approach, customers, operators, and the broader industry gain a scalable framework for accelerating 5G SA network densification.

For Virgin Media O2, this integration underscores its position at the forefront of 5G SA deployment and technology adoption, validating neutral-host small cells as a practical means to:



Deliver 5G SA Capabilities:

Showcasing that neutral host small cells can deliver the 5G SA capabilities, which when aligned to the JOTS framework provide a secure and scalable 4G and 5G interconnect framework.



Support 5G SA Use Cases:

Deliver the feature promise of 5G SA for specific use-cases, such as: Ultra-Reliable Low-Latency Communications, Enhanced Mobile Broadband, Massive Machine-Type Communications, Fixed Wireless Access and Network Slicing.



Accelerate Future Rollout:

Accelerate the rollout and densification of VMO2's 5G SA network by reducing CAPEX/OPEX spend compared to deploying single operator small cell networks.



STANDALONE

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IONX

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