

SOLUTION BRIEF

Trusted network performance with Nokia Wavence portfolio

Future-ready connectivity
with advanced microwave
transport solutions

NOKIA



Unlocking business opportunities and enabling trusted performance with advanced microwave portfolio

The telecommunications industry is rapidly evolving to meet growing demands for high-capacity, flexible networks that enable Advanced 5G densification, rural connectivity and bridge the digital divide. Advanced microwave technology offers a powerful alternative to traditional fiber with its fast deployment, low latency, flexibility and lower total cost of ownership (TCO). These solutions are essential for addressing diverse needs, from **urban hotspots and rural broadband expansion to high availability enterprise routes and critical infrastructure**.

Modern microwave systems excel in delivering secure and resilient networks, even in challenging environments. They provide the performance and capacity required for ultra dense urban areas, temporary connectivity while awaiting fiber readiness, and reliable redundancy for existing fiber networks. Industries such as energy, transportation, public safety, and oil and gas rely on these solutions to ensure scalable and efficient connectivity across remote or difficult terrains where fiber deployment is impractical or cost-prohibitive.

Supporting emerging features with innovative technology

With features like multi-band links, high-power radios and energy-efficient designs, microwave technology supports emerging use cases, including ultra-dense networks, high data-rate transmission and readiness for Advanced 5G. As spectrum demands grow, ongoing innovations in microwave technology ensure readiness for future applications, enabling adaptable and cost-effective solutions for an ever-changing digital landscape.

Nokia's Wavence microwave solutions set the standard for **performance, security and resilience**, providing the most comprehensive portfolio for critical networks and wireless infrastructure. Our cutting-edge Wavence lineup includes Ultra-Broadband Transceiver (UBT) radios, Microwave Service Switches (MSS), and advanced SteadEband antennas—designed to optimize coverage, efficiency and sustainability. High-power radios extend reach while enabling the use of smaller antennas, reducing both logistics costs and emissions. Meanwhile, our advanced MSS platform ensures exceptional performance, robust security and unparalleled flexibility for modern network demands.



Urban boost with versatile E-Band portfolio

The rapid advancement of 5G and emerging wireless services demands greater transport capacity. Globally, more than half of cell sites lack fiber access, and in many cases, fiber deployment is either impractical or too costly. E-Band wireless transport provides an **ideal high-capacity solution for urban cell sites** where fiber is unavailable, ensuring seamless connectivity and network expansion.

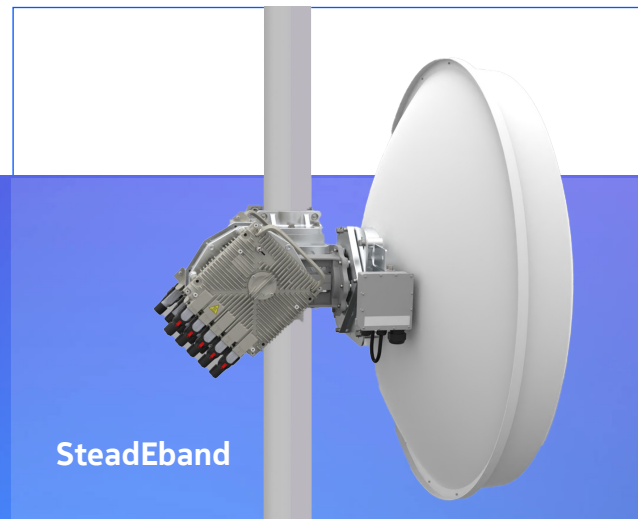
Nokia's Wavence E-Band microwave portfolio is built to meet a wide range of urban network demands, delivering up to **20 Gbps** of high-performance backhaul for 5G cell sites, enterprises, and critical services. With E-Band radios, advanced antenna technology, flexible deployment options, and energy-efficient features, Wavence ensures reliable, high-throughput, and energy-conscious connectivity.

Nokia's Wavence portfolio is designed for dense urban environments, enabling faster and cost-efficient 5G rollouts with unmatched efficiency and ease of deployment.

UBT-m XP: High-power radio for performance and urban density. Provides extended wireless backhauling connectivity for the high-capacity 5G cell sites.

Advanced **SteadEband** antenna, optional with UBT-m XP: Self adjusting technology for optimized connectivity. Nokia E-Band provides +50% more hop length compared to industry standard

Nokia's smallest, fully integrated microwave **UBT-mU** radio delivering unparalleled efficiency and streamlined deployment. Optimal for small cells sites without fiber backhauling.





Extending rural reach with the high-power and efficient microwave radios

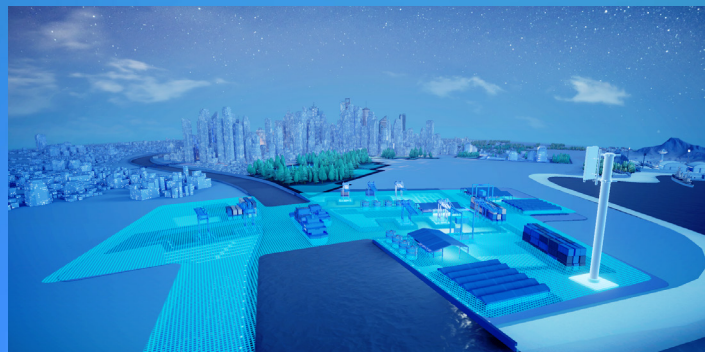
The demand for advanced communication networks is rapidly growing beyond urban areas, as mobile operators, enterprises, utilities and private networks seek to **expand coverage and capacity in rural** and remote regions, all while maintaining cost efficiency.

Microwave transport networks provide an ideal solution for extending 5G reach and enabling fast, scalable deployments in hard-to-reach terrains, offshore locations, and rural areas where fiber is either impractical or too costly to deploy. Nokia's Wavence UBT-T XP portfolio delivers high transmission power and spectrum flexibility, supporting up to 10 Gbps over very high capacity long distances. With our triple-band antenna, operators can maximize capacity and performance without needing a separate antenna for each band.

Additionally, multi-band links enhance spectral efficiency, ensuring optimized backhaul performance over long-distance links, making it a powerful solution for expanding connectivity where it's needed most.



UBT-T XP: flagship radio tailored for high-capacity rural networks



High
power

Outdoor
integration

Energy
efficient

Advanced 5G

Very high
capacity Long
distances

Redundant
nodal
topology

Multi-gigabit reliable wireless transport everywhere

Customers are looking to enhance the overall performance of wireless transport, driven by the rapid evolution of 5G technology and its expanding use cases. A key requirement in their decision-making is the need for **future-ready platforms** that support the transition towards 6G. In this landscape, security and resilience play a critical role, as wireless networks not only complement but also extend fiber infrastructure to support mission-critical services and high-demand end user experiences.

To meet the growing demands of modern networks, Nokia's Microwave Service Switch

product family is designed to scale seamlessly, from compact microwave nodes to large, **high-performance** configurations requiring ultra-high throughput, multi-band and robust connectivity.

Built on an advanced architecture, MSS-400 ensures maximum **availability, security and resilience**, backed by industry-leading hardware and software capabilities. This makes it the ideal solution for operators, public safety networks, utilities, enterprises and defense organizations, delivering reliable, high-capacity connectivity where it matters most.

- **Microwave Service Switch 400 (MSS-400):** Ensures scalability, seamless integration and extended network reach
- **Multi-band links:** Combines E-band and traditional bands to achieve up to 25 Gbps transport capacity, supporting 5G expansion in areas lacking alternative infrastructure



Unmatched performance with
Microwave Service Switch 400



400 Gbps switching capacity
Evolution to 6G



25 Gbps interfaces
Future proof performance



N x 25 Gbps Multi-band groups
High-capacity links



36 radio support
Flexibility



Hardened security and resilience
Most critical use cases

Flexibility for any wireless transport service, size and deployment option

Nokia's Wavence solutions are adaptable to various deployment scenarios. The portfolio includes **wide range of products** for any customer needs, including:

- Urban boost with E-Band
- Advanced antennas for extended E-Band reach
- Rural reach with high-power radios
- Short distances with short-haul products
- Portfolio for full outdoor, split-mount and indoor
- Microwave Services Switch family scaling from small deployments to extreme large configurations
- SW features for maximized performance, security and energy efficiency

Urban boost with E-Band – 20 Gbps



UBT-m Urban
Compact
Embedded
antenna



UBT-m/X/XP
Various power
options



SteadEband
self-aligning
stabilized
antenna

Short-Haul – 10 Gbps



UBT-S - Single carrier
UBT-S2 - Compact dual carrier
UBT-T - Dual carrier

Long reach with spectrum flexibility – 10 Gbps



UBT-T XP - Dual carrier, dual-band
UBT-S XP - Single carrier
Extreme power



UBT-I
Full indoor
radio



**Channel
aggregation units**
for high capacity

Microwave aware aggregation units - N x up to 25 Gbps multi-band links



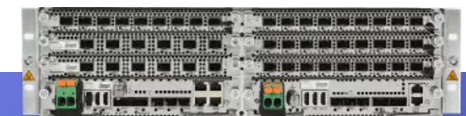
Microwave Service Switch E, HE, XE



Microwave Service Switch
4 & 8



Microwave Service Switch
400



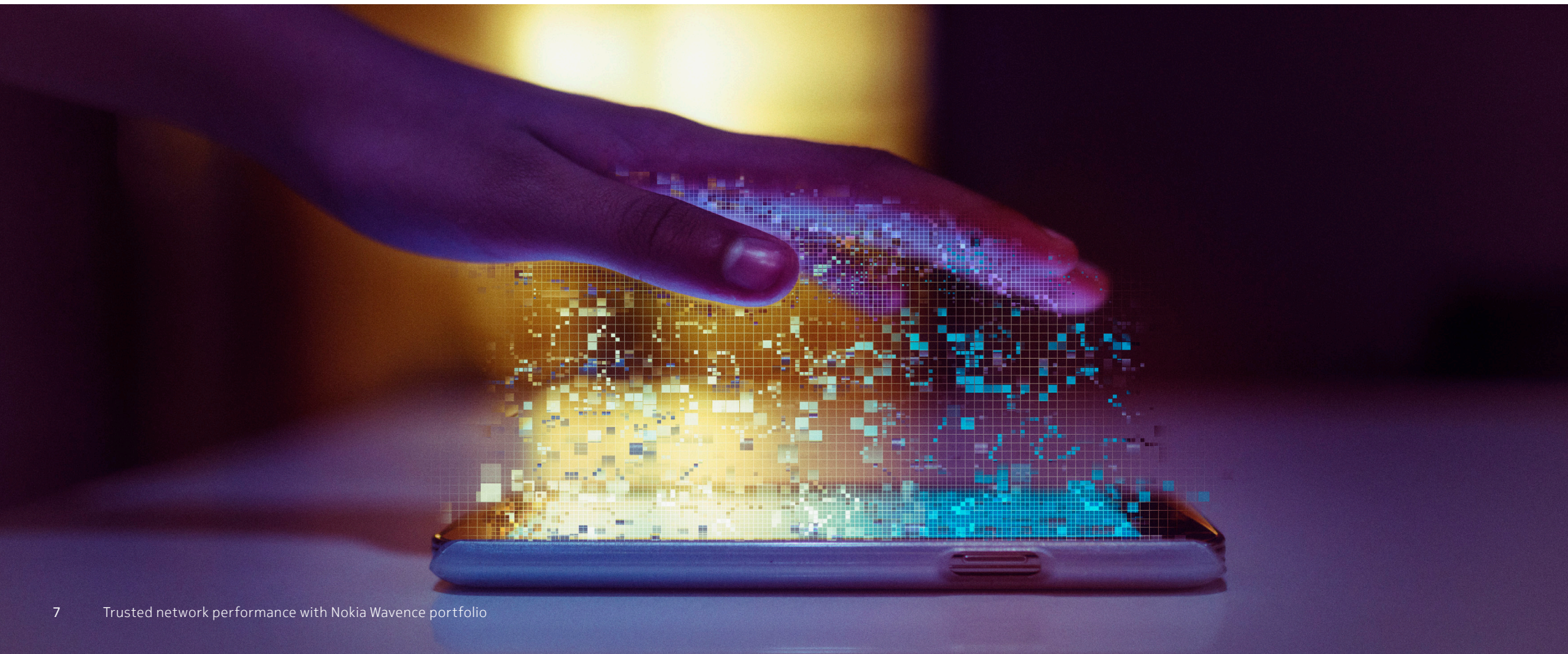
AirScale Baseband
Simplified RAN Transport

Future-ready microwave solutions for 5G and beyond

Nokia ensures preparedness for **Advanced 5G and adaptability for 6G**, driven by pioneering innovations. Our flexible Wavence portfolio support operators with optimized TCO solutions, including both compact and high-power products for dense urban 5G rollouts and rural broadband expansions.

Nokia's Microwave Services Switch family is future-proof, ready to meet increasing connectivity, performance and security requirements of Advanced 5G, 6G and critical service needs beyond mobile operators. Nokia is focusing on operators to deliver secure, reliable and scalable connectivity with confidence.

Nokia is also exploring new spectrum options. D-Band technology is expected to enable new use cases, such as ultra-dense meshed wireless networks, wireless fronthaul, 6G small cells and enterprise short-range connectivity.



Success stories with Nokia Wavence solutions (1/2)

Nokia's microwave solutions are enabling connectivity worldwide, ensuring reliable, high-performance networks in diverse and challenging environments. Some of our most notable customer success stories include:

Neutral hosting operator, Peru: Bridging the digital divide

In Peru, a neutral hosting operator partnered with Nokia to expand connectivity to underserved rural areas. Using high-power microwave radios and multi-band configurations, the deployment enabled scalable, long-distance broadband services. This effort significantly **improved internet access in remote regions**, closing the digital divide and supporting economic and social development.

Mobile operator, Middle East: Rapid connectivity for urban densification

operator utilized Nokia's microwave technology to address the demands of

urban network densification. With compact, high-capacity solutions like the UBT-m XP, Nokia enabled operator to **deploy rapid and efficient backhaul** and fronthaul links, supporting the rollout of advanced mobile services in one of the world's most dynamic cities.

Mobile operator, United Arab Emirates: Connecting island communities

Operator collaborated with Nokia to deliver high-performance connectivity to remote island communities, overcoming challenges posed by humid environments and reflective water surfaces. Using the UBT-T XP microwave radio, the deployment achieved a **2Gbps throughput over a 26km link**, maintaining nearly 100% availability. This solution provided reliable, cost-effective connectivity where fiber was impractical, enabling essential communication and bridging the digital divide for island residents and businesses.



Success stories with Nokia Wavence solutions (2/2)

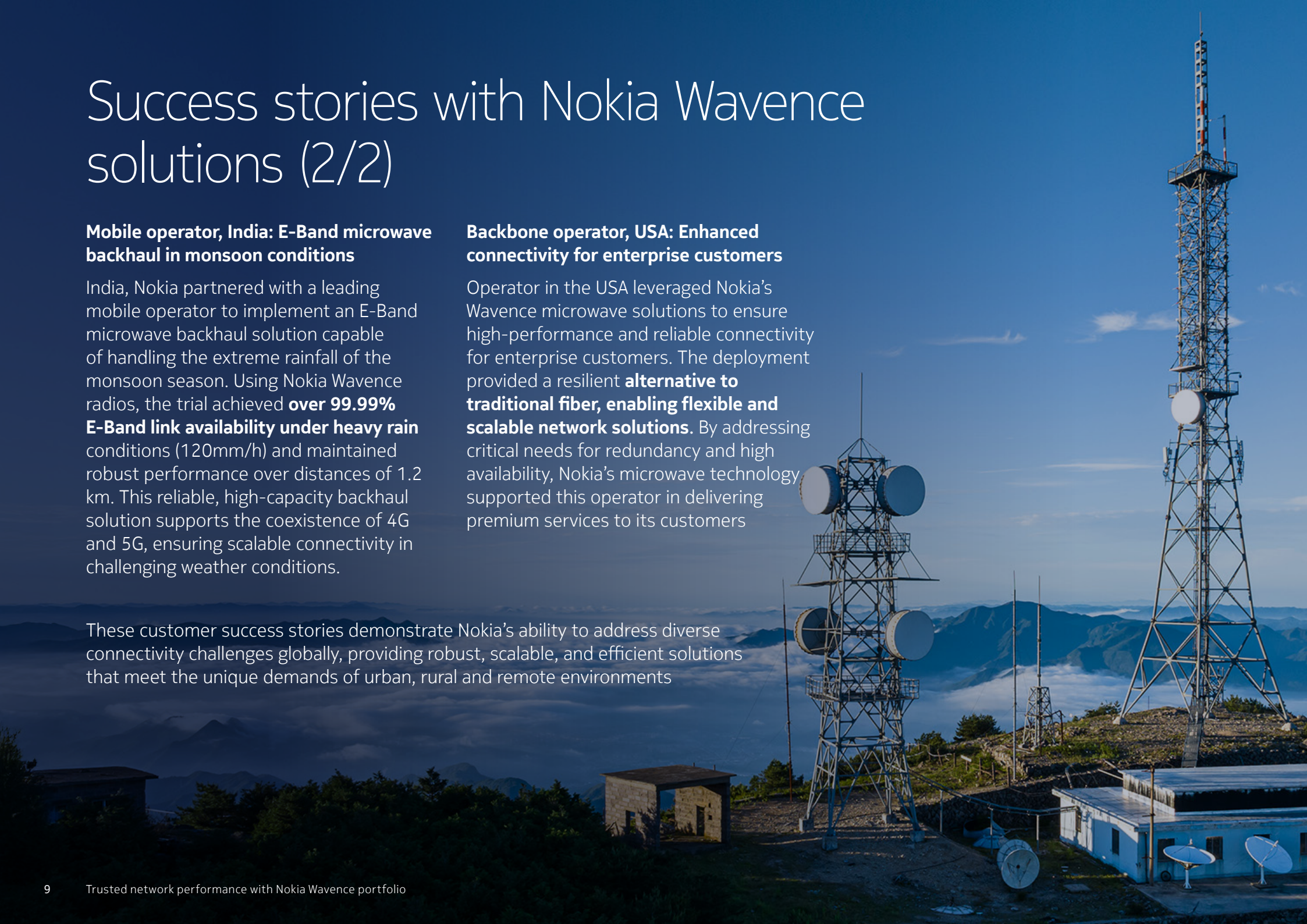
Mobile operator, India: E-Band microwave backhaul in monsoon conditions

India, Nokia partnered with a leading mobile operator to implement an E-Band microwave backhaul solution capable of handling the extreme rainfall of the monsoon season. Using Nokia Wavence radios, the trial achieved **over 99.99% E-Band link availability under heavy rain** conditions (120mm/h) and maintained robust performance over distances of 1.2 km. This reliable, high-capacity backhaul solution supports the coexistence of 4G and 5G, ensuring scalable connectivity in challenging weather conditions.

Backbone operator, USA: Enhanced connectivity for enterprise customers

Operator in the USA leveraged Nokia's Wavence microwave solutions to ensure high-performance and reliable connectivity for enterprise customers. The deployment provided a resilient **alternative to traditional fiber, enabling flexible and scalable network solutions**. By addressing critical needs for redundancy and high availability, Nokia's microwave technology supported this operator in delivering premium services to its customers

These customer success stories demonstrate Nokia's ability to address diverse connectivity challenges globally, providing robust, scalable, and efficient solutions that meet the unique demands of urban, rural and remote environments



Why Nokia?

Our Wavence portfolio is designed to meet the demands of modern networks with advanced security, unparalleled resiliency, energy efficiency and future-ready technology. With a global presence spanning over 650 microwave customers and deployments in more than 100 countries, Nokia sets itself apart as a leader in microwave innovation, driven by unparalleled technology leadership. Continuously pushing the boundaries of connectivity, Nokia pioneers advancements in spectrum and technology exploration, including full-duplex D-band radios, advanced algorithms, multi-band and cutting-edge product development initiatives.

Some of our key differentiators include:

- **Comprehensive portfolio:** Nokia Wavence is the perfect solution for a wide range of use cases, from extending connectivity in remote rural areas to powering dense urban deployments. With UBT-m XP and UBT-T XP high-power radios, cutting-edge antenna technology and exceptional multi-band capabilities with MSS family, it delivers unmatched performance and versatility.
- **Security:** Nokia ensures critical network protection through advanced encryption, robust authentication mechanisms and compliance with leading cybersecurity standards like FIPS 140-2 and OWASP.
- **Resiliency:** Hardened products withstand extreme environments, from -40°C to +65°C, water intrusion (IP67-rated), and high corrosion and vibration conditions, ensuring uninterrupted service in any location.
- **Energy Efficiency:** Up to 25% power savings and optimized full-outdoor configurations reduce operational costs and environmental impact while enhancing network performance.

Nokia's future-ready approach ensures readiness for Advanced 5G, adaptability for 6G and beyond through pioneering work in full-duplex transmission and spectrum exploration. With a flexible portfolio supporting all deployment scenarios, operators benefit from optimized TCO solutions, including compact, high-power products for dense urban 5G rollouts. Nokia's proven performance in diverse deployments ensures operators can deliver secure, reliable, and scalable connectivity with confidence.

To read the case studies mentioned in this solution brief, please follow the links below:

- **HeyTu Telecomunicaciones** Peru reduces digital divide with Nokia Wavence microwave transport.
- **du extends** high-capacity microwave backhaul over long distance to Dubai World Islands.
- **Service provider in India**, Nokia partnered with a leading mobile operator to implement an E-Band microwave backhaul solution capable of handling the extreme rainfall of the monsoon season.
- **North American service provider** deploys next-generation microwave transport network for mission-critical connectivity.

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At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs, which is celebrating 100 years of innovation.

With truly open architectures that seamlessly integrate into any ecosystem, our high-performance networks create new opportunities for monetization and scale. Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.

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