

# Navigating a smooth transition to 5G NTN ●●

The satellite communications industry stands on the brink of transformation with the impending shift to 5G Non-Terrestrial Networks (NTN). This evolution promises standard ubiquitous connectivity across terrestrial and non-terrestrial networks, a multi-vendor open ecosystem for the satcom industry, new revenue streams from new use cases, and reduced total cost of ownership (TCO) for satellite operators.

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**5G** NTN brings forth a wide range of advantages that contribute to the progression and enhancement of global satellite communication systems. Some of these advantages include:

- **Ubiquitous Connectivity:** 5G NTN can provide ubiquitous connectivity, extending text, voice, video, and broadband 5G services to remote and underserved areas globally. This contributes to bridging the digital divide and ensuring that people in diverse geographical locations have access to advanced communication services.
- **Service Monetization:** By moving to standard 5G NTN solution, satellite operators can adapt 5G terrestrial network monetization systems that allow them to onboard new customers and provide new services quickly and easily, as well as expand to new use-cases and revenue streams.
- **Operational Efficiency:** Satellite operators can adapt 5G terrestrial network functions and operation systems that allow them to reduce their current Opex and Capex, as well as increase customer experience.
- **High Reliability and Availability:** 5G NTN platforms, such as satellite constellations, can provide high reliability and availability, reducing the risk of service disruptions. This is crucial for mission-critical applications, emergency services, and other scenarios where uninterrupted connectivity is imperative.
- **Flexibility for Diverse Use Cases:** 5G NTN is designed to accommodate diverse use cases, ranging from direct-to-device and IoT to mobility, cellular backhaul, private networks, and military services. This flexibility makes it suitable for a wide array of applications, driving innovation across industries.
- **Future-Proof Design:** 5G NTN standards are developed with a forward-looking approach, allowing for easy integration of future technologies and standards. This ensures that the network remains relevant and adaptable to emerging trends and requirements.

However, as we embark on this exciting journey, it's crucial to focus on efficiency, adaptability, and strategic evolution. Here at Gilat, we have analyzed the key considerations for a seamless evolution to 5G NTN, ensuring a harmonious integration without sacrificing current investments and business continuity.



## TRANSITIONING TO A VIRTUALIZED ALL-SOFTWARE PLATFORM

The foundation of a successful transition to 5G NTN is the adoption of a virtualized all-software platform that operates efficiently on standard, off-the-shelf hardware. This shift towards virtualization empowers network operators with flexibility, scalability, and cost-effectiveness. By decoupling software from dedicated hardware, operators can harness the power of commodity hardware, significantly reducing capital expenditures and operational costs.

A virtualized platform also facilitates the efficient allocation of resources, ensuring optimal performance based on demand. This approach not only enhances operational efficiency but also paves the way for a dynamic, software-defined network architecture that can easily adapt to evolving requirements and new technologies.



## FUTURE-READY PLATFORM

To future-proof your infrastructure, it's essential to choose a platform designed to apply future standards, ensuring adaptability and integration across multiple waveforms.

The 5G NTN landscape is dynamic and characterized by new standards and technologies. A forward-thinking platform should be capable of seamlessly incorporating these changes without necessitating extensive hardware upgrades.

Flexibility is paramount, and a platform that supports various waveforms ensures compatibility with diverse satellite communication technologies. This adaptability is crucial as the industry continues to explore different frequency bands, modulation schemes, and satellite constellations to meet the growing demand for ubiquitous connectivity.

### STRATEGIC EVOLUTION AND PHASED APPROACH

Evolution should be strategic, preserving current investments in technologies like DVB-S2X while maintaining business continuity. The transition to 5G NTN is not a one-size-fits-all process. A phased approach allows operators to incrementally upgrade their infrastructure, mitigating risks and ensuring a smooth transition without disrupting ongoing operations.

Preserving investments in current technologies is essential for a cost-effective transition. By strategically integrating 5G NTN elements (5G Core, gNBs, Terminals) alongside existing systems, operators can leverage the benefits of both technologies while minimizing disruptions to ongoing operations. This phased approach also allows for thorough testing and validation, ensuring that each stage of the transition is successful before moving to the next.



### MULTI-ORBIT OPERATION AND VHTS

Ensure your platform supports multi-orbit operation and Very High Throughput Satellite (VHTS) capabilities with an architecture that enables steady evolution to the Cloud and 5G NTN. Multi-orbit operation is crucial for optimizing coverage and ensuring seamless connectivity across diverse geographical regions.

VHTS capabilities play a pivotal role in meeting the escalating demand for data-intensive applications. An architecture designed for steady evolution to the Cloud and 5G NTN ensures that your network remains agile and future ready. This forward-looking approach positions operators to harness the full potential of emerging technologies and market trends, providing a competitive edge in the rapidly evolving telecommunications landscape.

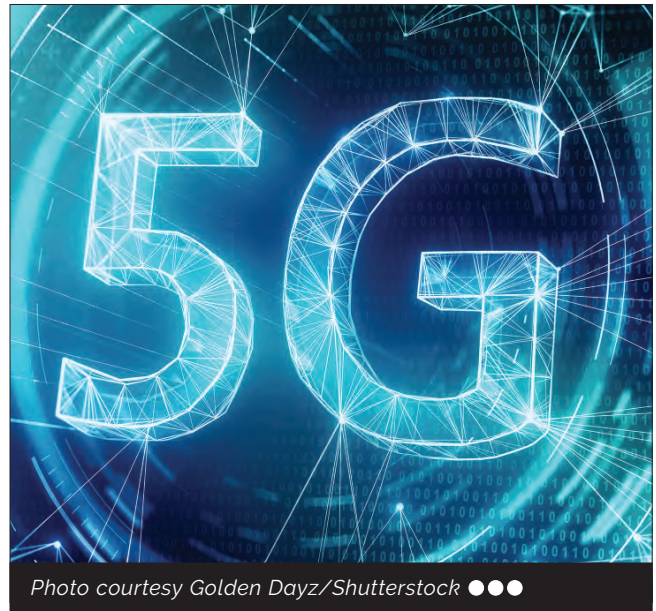


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### NETWORK MANAGEMENT SYSTEM (NMS) FOR BOTH CURRENT DVB-S2X AND 5G NTN PLATFORMS

The NMS serves as the central nervous system of your network, providing real-time monitoring, configuration, and optimization capabilities. Invest in a robust NMS designed to handle the intricacies of both current DVB-S2X and 5G NTN platforms.

A unified NMS that seamlessly integrates with both legacy and future platforms simplifies operations and reduces the learning curve for network administrators. This unified approach enhances overall efficiency, allowing operators to manage and monitor their entire hybrid network ecosystem from a single interface.

### CONCLUSION

The transition to 5G NTN represents a significant leap forward for the satellite communications industry. By embracing a virtualized all-software platform, incorporating future standards, adopting a phased evolution strategy, supporting multi-orbit operation and VHTS, and investing in a versatile NMS, operators can ensure a smooth and future-ready transition.

As we navigate the complexities of this transformation, it's imperative to keep in mind that the journey to 5G NTN is not just about embracing the latest technologies but also about leveraging them strategically to enhance connectivity, efficiency, and business continuity. With careful planning and a forward-thinking approach, the industry is poised to unlock new possibilities and redefine the landscape of satellite communications. The successful implementation of these tips will not only position operators as leaders in the 5G NTN era but also ensure that they are well-prepared for the evolving demands of the digital age.

Since the invention of cellular networks, their focus has been only on terrestrial infrastructures. For the first time in history, 5G technology is about to expand to non-terrestrial networks, allowing the creation of ubiquitous coverage and connectivity around the world.

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