

# Goodbye 3G: Get Ready for the 5G Sunrise with our Five-Pronged Strategy

## Abstract

The new year is going to be the year of 5G. Get ready to see a lot more of 5G deployments as companies across the US and Canada bid adieu to 2G and 3G. Companies such as Ericsson, Nokia and Qualcomm are all set to be part of the 5G brigade before 2021. Whereas countries such as South Korea, China and the United States are already at the forefront of building and deploying 5G technology.

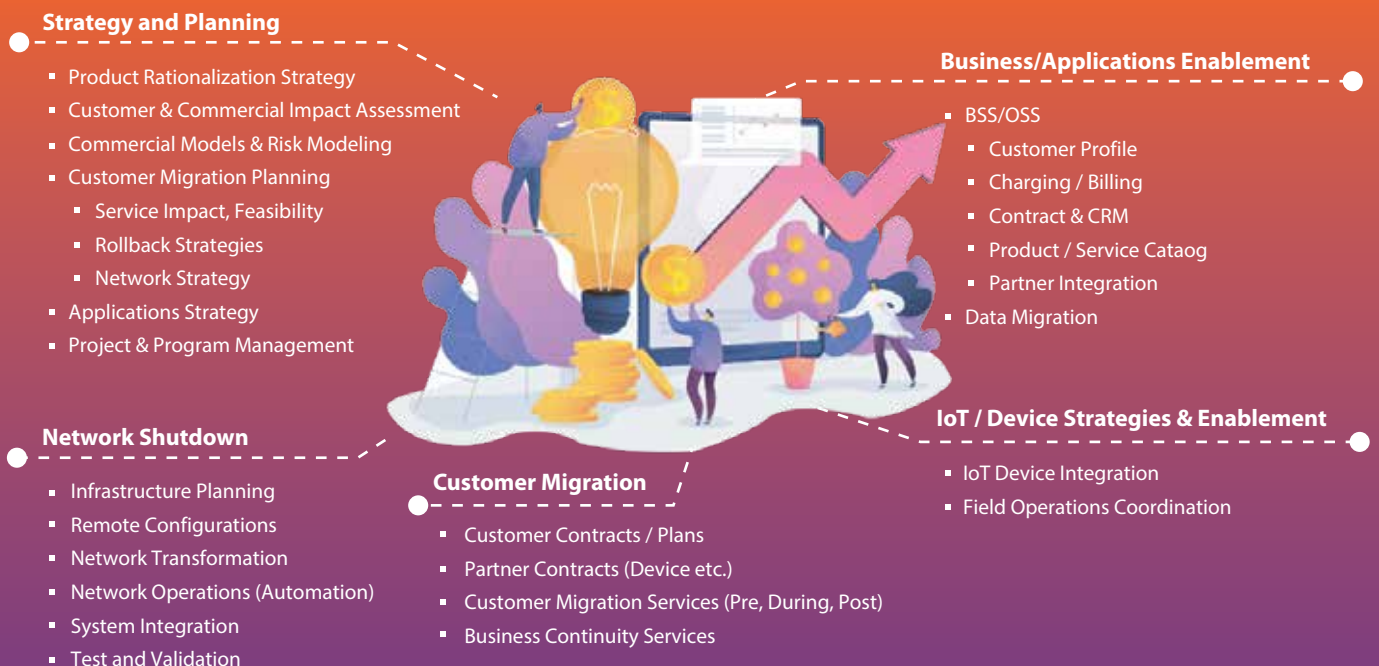
For the transition to 5G to be successful, it requires efficient utilization of existing spectrum, enabling free cash-flow and better application of resources including people capacity. If not done well, it could entail business disruption. 5G deployment requires developing a roadmap to rapidly phase out legacy 2G and 3G infrastructure, refarm spectrum for efficient allocation to newer hybrid networks and simplify IT.

This paper offers a holistic and comprehensive step-by-step guide to address the challenges faced by communications service providers (CSPs) in moving to a 5G network, while managing impact on customers, products, telecom support systems, and devices.

## How CSPs can Augment 4G and Race to 5G

The year 2020 has already seen investments in 5G infrastructure grow exponentially, whereas, the total wireless infrastructure revenue has declined. In fact, by 2023, nearly 60% of the world's mobile devices and connections will have 4G and higher capability<sup>1</sup>. In this kind of a scenario, the most efficient choice would be for CSPs to refarm valuable 3G spectrum for 4G and 5G capacity expansion<sup>2</sup>. This will help enhance customer experience as well as augment acquisition and retention of subscribers.

However, in order to commit to the additional spectrum and resources required for 4G and 5G, operators need to manage redundancy of business support systems, operations support systems, and network solutions. This is crucial as maintaining multiple spectrums and legacy networks can result in a heavy cost burden. Planning for a 3G sunset, especially in geographies accustomed to sub-4G or 5G networks, necessitates factoring in cost of SIM replacement, customer migration, and fitment of 4G and 5G products and plans, and the risk of losing customers to competitors merely because of the discomfort of change. At the same time, it is a must for operators to plan and phase out legacy connectivity technologies while ensuring seamless upgrade to internet of things (IoT) deployments using 2G and 3G networks.



**Fig. 1: Sunsetting telecom operators' 3G infrastructure**

[1] Cisco.com, Cisco Annual Internet Report (2018–2023) (March 2020), Accessed December 2020, <https://www.cisco.com/c/en/us/solutions/collateral/executive-perspectives/annual-internet-report/white-paper-c11-741490.html>

[2] Nokia.com, Nokia and Vodafone Idea complete world's largest Dynamic Spectrum Refarming deployment to improve network coverage and enhance connectivity (June 2020), Accessed 15 November, 2020, <https://www.nokia.com/about-us/news/releases/2020/06/03/nokia-and-vodafone-idea-complete-worlds-largest-dynamic-spectrum-refarming-deployment-to-improve-network-coverage-and-enhance-connectivity/>

### Stage I: Creating a business roadmap and strategy

Once organizations plan to completely shut down, reform or uplift the 3G infrastructure, they can decide on ways to manage customers and the migration to B/OSS and IoT devices. The game plan would require calculating as-is opex, capex with additional expenditure for network refarming and customer or systems migration, including commercial impact analysis and risk modeling scrutiny. Keeping the media and the customer base informed of the relevant facets of the strategy, are also important to proactively facilitate migration and device upgrades.

### Stage II: Building a network strategy

As more and more operators wisely choose to reform existing bandwidth to 4G or 5G, they need to deploy network virtualization functions and RAN upgrades in parallel. Since this can significantly increase costs, operators must tread carefully optimizing the cost impact across the entire value chain, before finalizing the strategy.

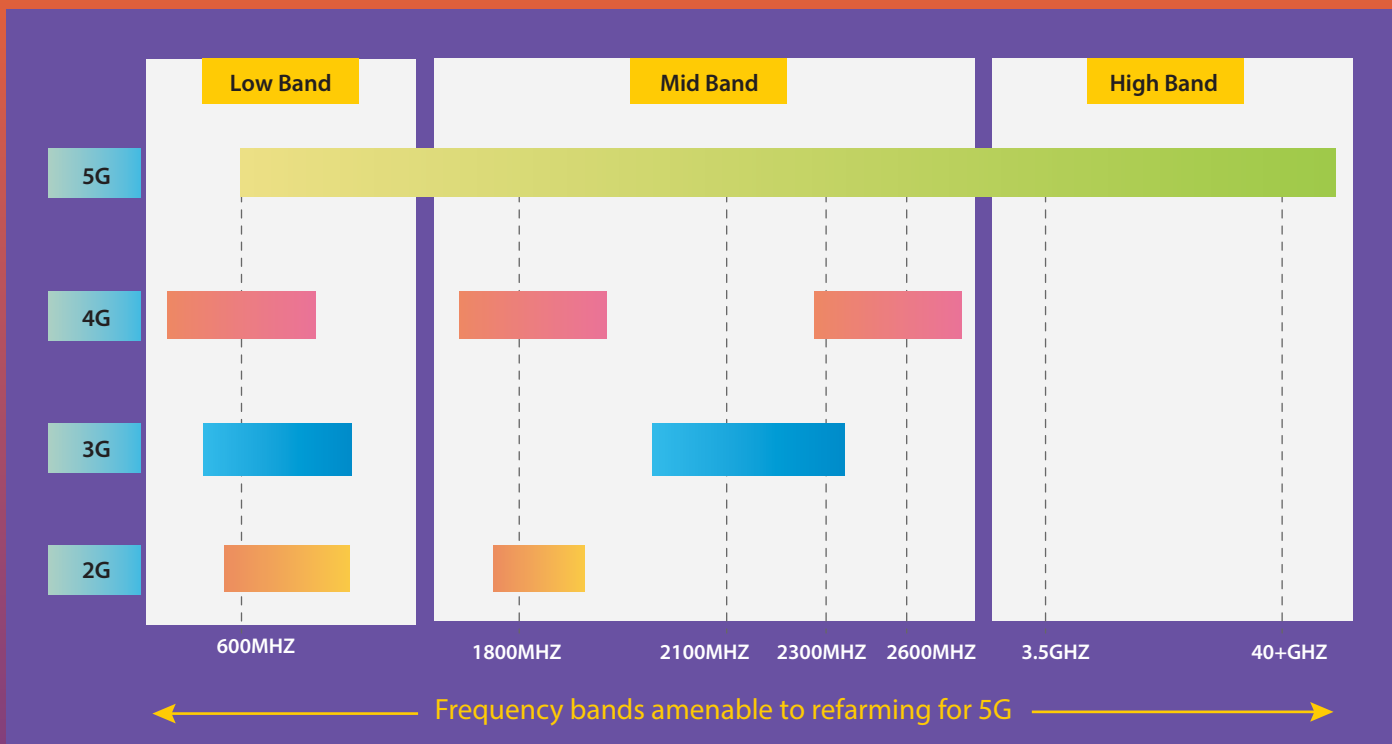


Fig. 2: Refarming options with 2/3/4G <sup>3,4</sup>

[3] GSMA.com, 5G Spectrum GSMA Public Policy Position - Page 3 (March 2020), Accessed 6 November, 2020, <https://www.gsma.com/spectrum/wp-content/uploads/2020/03/5G-Spectrum-Positions.pdf>  
 [4] Talking Pointz, The Difference Between 5G and 5G, Accessed 6 November, 2020, <https://talkingpointz.com/the-difference-between-5g-and-5g/>

One of the most important steps in 3G sunsetting is ensuring customer migration through suitable upgrades, downgrades, and contract renewals that help support 4G and 5G plans, SIM and device replacement.

For instance, to refarm for 5G in the low band spectrum, CSPs should leverage the potential of the 600-800 MHz band and 1800 MHz, 2100 MHz, 2300 MHz and 2600 MHz in the mid-band range. Similarly, high bands are needed to meet the ultra-high speeds required for 5G (see Fig. 2). At present, 26 GHz, 28 GHz and 40 GHz spectrums are gaining traction.

With network strategy in place, CSPs need to begin execution and testing of the chosen spectrum. This has multiple implications on the infrastructure, changing of networks operations equipment, systems integration and testing.

### **Stage III: Enabling customer migration**

One of the most important steps in 3G sunsetting is ensuring customer migration through suitable upgrades, downgrades, and contract renewals that help support 4G and 5G plans, SIM and device replacement. Measures to minimize churn would include migration planning, building rollback strategies, re-evaluating 3G partner, dealer and seller contracts and ensuring business continuity planning.

### **Stage IV: Ensuring B/OSS applications enablement**

The business and applications enablement stages help operators decide on the B/OSS applications deployment. This is done by rationalizing product and service catalog, identifying high-performing 3G products and determining the strategy for mapping and creation of corresponding 4G and 5G offerings. This helps drive sunset plans for redundant 3G products and applications.

Fixing customer inventory and profiling which gets impacted can also be undertaken at this juncture. The impact on order management, charging, billing, and partner integration also need careful consideration; as do impacts on data planning and archival.

### **Stage V: Facilitating IoT/device strategies and enablement**

Upgrading 3G handsets calls for upgradation of IoT devices and SIMs too. The IoT device strategy therefore needs to include upgrade/integration of IoT platforms to support 4G and 5G data transfer and aggregation, field services to upgrade/replace the IoT devices already deployed, remote upgrades/firmware change, etc.

However, when a certain fraction of IoT devices is not upgradable, those solutions must be scrapped for the larger business case. Also, testing, device integration and firmware rollouts require field operations planning for already deployed devices such as cars and home security solutions.

## Refarming 3G network to ensure efficiencies and reduce cost

An operator in the UK has rationalized 102 products and 142 applications for 3G sunsetting. Similarly, one of the CSPs in Australia-New Zealand has successfully refarmed parts of their 3G network to a 4G VoLTE core, set up network function virtualization (NFV) architecture, and piloted 5G RAN at selected sites<sup>5</sup>. With CSPs activating new 3G plans and embarking on SIM upgradation, a comprehensive templated approach to 3G shutdowns helps minimize impact for CSPs, their customers, and other stakeholders, while reducing cost and ensuring optimal efficiencies.

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[5] GSMA.com, Legacy mobile network rationalization (May 2020), Accessed December 2020, <https://www.gsma.com/spectrum/wp-content/uploads/2020/06/Legacy-mobile-network-rationalisation.pdf>

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