

Operators' decisions to shut down legacy 2G/3G networks need to be commercially driven

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Mobile network operators (MNOs) across the globe have already started to decommission legacy 2G/3G networks. Some of these network shutdowns have been initiated by regulators in consultation with the industry, but most have been operator-led, and have largely been due to the need to commit additional spectrum to 4G in order to cater to the strong 4G data traffic growth (although opex savings have also been a factor). Earlier network shutdowns were primarily 2G-focused, but 3G network shutdowns have been gaining traction in recent years (Figure 1).

Figure 1: Network shutdowns, by country

Country	Operator	Network	Shutdown date ¹
Australia	Telstra	2G	2016
USA	AT&T	2G	2017
Singapore	Government led	2G	2017
Taiwan	Government led	2G	2017
Norway	Telia/Telenor	3G	2018
India	Airtel	3G	2019
USA	AT&T	3G	2022
UK	Vodafone	3G	2022
Australia	Telstra	3G	2024

Source: News articles and operator press announcements

Decisions on legacy network shutdowns need to be commercially driven and must balance the benefits and risks

There are trade-offs to be made when decommissioning legacy 2G/3G networks, and it is important for operators to quantify the benefits and the risks involved in order to make an informed decision. There are two key benefits resulting from the shutdown of legacy networks.

- Increased spectrum available for 4G.** 4G network traffic worldwide has been growing at a very fast pace, and it is expected to continue growing at a CAGR of 42% over the next 5 years.² Congestion levels on 4G sites are increasing, and if additional spectrum is not made available by regulators, operators may need to re-farm 2G and 3G spectrum to help address the increased capacity requirements for 4G sites. Increased 4G

¹ Note that planned shutdown dates are based on past announcements by operators and may change.

² For more information, see Analysis Mason's [DataHub](#).

capacity will result in an improvement in customer experience, which will aid both the acquisition and retention of subscribers. This may ultimately contribute to revenue and margin growth.

- **Network cost savings.** Operators stand to gain opex savings by decommissioning legacy networks. The magnitude of these opex savings varies by operator, and depends on factors including the extent of equipment modernisation and how contracts with vendors (such as network maintenance contracts and tower leases) are structured. Decommissioning 2G and 3G networks may also reduce future capital expenditure, particularly if the 2G and 3G networks are reaching the end of their lives and require a capex refresh. The incremental costs for deploying re-farmed spectrum for 4G will also need to be considered in order to derive a net benefit from the legacy network shutdown.

The incremental benefits above will need to be balanced against the risks involved for operators. There are two key risks from shutting down legacy networks.

- **Losing subscribers that only use legacy 2G/3G networks.** Decommissioning 2G/3G networks may lead to a decrease in revenue and margin due to the loss of subscribers that are solely using legacy networks. In the case of a 2G network shutdown, subscribers using 2G-only devices will lose access to mobile services. Subscribers on 2G-capable 3G devices could still fall-back onto a 2G network for voice services in the event of a 3G network shutdown, but the data experience will be severely downgraded and thus these customers might churn to a competitor that still has a 3G network (unless they can be converted to 4G devices).
- **Losing subscribers that have a heavy reliance on 2G/3G networks.** Ideally, subscribers that own a 4G-capable device should spend most of their time on a 4G network. However, some subscribers may be heavily reliant on legacy networks (2G/3G), for either voice or data usage. Subscribers may be forced to rely on 2G or 3G networks where 4G coverage is limited or patchy. Operators need to identify and address the root cause for the reliance on these legacy networks. Decommissioning legacy networks and considering only the direct risk of losing subscribers on 2G/3G devices may materially underestimate the total risk involved in the shutdown.

Given the complexities and trade-offs that are required to reach a shutdown decision, we expect that the main decision taker will play a central role within the operator (such as being a member of the strategy or marketing team), and that the network team will provide the necessary advice and support. Both the marketing and network teams will need to develop mitigation strategies in order to address the risks from any network shutdown. These risks and mitigations may include those in Figure 2.

Figure 2: Examples of mitigations to manage risks from network shutdowns

Department	Issue	Examples of mitigations
Marketing	Subscribers with 2G/3G-only devices	Design device swap/subsidy programmes for high value subscribers Design suitable tariff plans to assist low-end users to obtain access to 4G-capable devices
Marketing	Usage of legacy SIM card that does not support a connection to 4G	Launch campaigns to encourage subscribers to visit retail outlets to swap out SIM cards
Network	Coverage gap leading to a fall-back on the legacy network	Improve 4G network coverage and, in particular, the usage of low-frequency spectrum for in-building penetration
Network	Circuit-switched fall-back for voice leading to a loss of 4G connectivity	Tighten network parameters for faster reconnection to 4G; VoLTE expansion

Source: Analysys Mason, 2019

Analysys Mason advises mobile operators around the world on a range of commercial and technical issues, including 5G. We have experience in helping MNOs in both developing and developed markets to evaluate whether to shut down legacy networks. We can also help MNOs to design campaigns to migrate subscribers to new technologies. For further information, please contact [Dion Teo](#), Principal.