M1 Limited drives scalable connectivity in offshore environments with Nokia Advanced 5G RedCap solutions

- Cut total project costs by 40% vs traditional wired surveillance

- Devices cost 35-50% less then full 5G NR options

- Slash operational expenses by ~25%

- Unlock mass-market adoption of 5G RedCap devices

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RedCap has opened up an entirely new category of 5G-enabled industrial applications for us. By combining lower device costs with reliable performance and simplified integration, it gives us the flexibility to deploy connectivity at scale, especially in demanding environments like offshore shipyards. The results speak for themselves: improved coverage, reduced operational costs and a faster path to digital transformation for our enterprise customers. With Nokia's support, we're not only delivering on today's use cases, but we're also building the foundation for future applications in wearables, health monitoring and beyond."

Mr. Andrew Cheng
Chief, Enterprise Services,
M1 Limited

M1 Limited (commonly known as M1) is one of Singapore's leading telecommunications providers, recognized for its innovation in mobile and fixed services. Established in 1997 and now operating as a subsidiary of Keppel Corporation, M1 has been at the forefront of digital transformation across the nation. Antina Pte. Ltd., M1's joint venture with StarHub Mobile Pte. Ltd., is actively delivering 5G Standalone (SA) services, enabling high-performance connectivity for a wide range of enterprise and consumer use cases.

In collaboration with Nokia, M1 has launched Southeast Asia's first publicly known 5G RedCap (Reduced Capability) service for the enterprise sector, supporting smart shipyard operations for a major offshore and marine customer. The deployment runs on Antina's 5G SA network and delivers rugged, energy-efficient connectivity for asset tracking, safety monitoring and real-time communications in demanding industrial environments. This milestone not only demonstrates M1's commitment to industrial digitalization but also paves the way for wider adoption of lightweight, cost-effective 5G devices across Singapore's enterprise landscape.

Enable reliable, cost-efficient video surveillance in offshore shipyard operations

M1 Limited was seeking to enable reliable, cost-efficient video surveillance in offshore shipyard operations, where safety, security and operational visibility are critical. The enterprise customer, operating in the offshore and marine industry, required a connectivity solution that could withstand harsh environments while supporting continuous monitoring from remote sites such as shipyards, marine vessels and oil platforms.

M1 deployed industrial-grade 5G RedCap routers with IP64 ratings, connected to HD IP cameras via Ethernet. These rugged devices offered a cost-effective alternative to full 5G NR equipment, delivering sufficient data throughput for real-time video streams without the complexity or cost of high-end 5G devices.

RedCap's simplified hardware design, featuring fewer antennas and lower bandwidth, allowed for broad deployment at scale while minimizing total cost of ownership. Its mid-tier data rates bridged the gap between low-power wide-area technologies like NB-IoT and high-performance 5G NR, making it ideal for applications such as surveillance, industrial sensors and smart routers.

Crucially, RedCap integrates into M1's 5G SA network, supporting unified device management and scalable infrastructure.

Optimized 5G RedCap deployment for offshore surveillance

To meet the operational and environmental demands of offshore video surveillance, M1 deployed a RedCap-based solution powered by our 5G technology over its 5G Standalone (SA) network infrastructure. The deployment utilizes a 20 MHz carrier bandwidth on the N1 (2100 MHz) band, with plans to expand to N78 in the near future.

RedCap routers built for harsh environments were installed across the customer's shipyard and marine operations. These routers connect directly to HD IP surveillance cameras via Ethernet, providing robust, real-time video streaming in remote and high-risk environments.

RedCap's technical profile is ideally suited for these use cases: peak downlink rates of up to 200 Mbps and uplink rates of up to 100 Mbps deliver reliable video performance. With reduced device complexity, including 2x2 MIMO antenna configuration and approximately 40% lower power consumption compared to full 5G NR, RedCap ensures efficient, wide-scale deployment.

The seamless integration with M1's 5G SA network allows enterprises to manage diverse device classes across a single infrastructure, enabling smart, connected operations at scale.

- 20 MHz bandwidth for efficient spectrum use

- Up to 200 Mbps peak downlink speed

- Up to 100 Mbps peak uplink speed

Proven cost savings, performance gains and broader adoption with RedCap

Since deploying our RedCap solution, M1 and its enterprise customer have reported significant technical, operational and financial benefits. The transition to RedCap has been met with highly positive stakeholder feedback: network teams appreciate the improved uplink coverage, IT departments highlight the simplified device and network management and business leaders recognize the strong return on investment through lower deployment and operational costs.

The use of RedCap-enabled routers has resulted in a 40% reduction in total project costs compared to traditional wired surveillance systems. Device costs alone are 35–50% lower than full 5G NR alternatives, and operational expenses have dropped by approximately 25% due to easier installation, reduced maintenance and lower power usage.

Performance metrics continue to exceed expectations, with uplink throughput ranging from 50 to 100 Mbps and downlink from 100 to 200 Mbps, sufficient to support multiple HD video streams. Additionally, the shift has encouraged broader adoption of 5G RedCap-enabled devices, including wearables, across enterprise environments.

RedCap was chosen over LTE-M, NB-IoT, Wi-Fi and fiber due to its unique blend of mid-tier throughput, superior coverage, cost-effectiveness and rapid deployment. It is now proving its value in the offshore marine sector, one of the most demanding industrial environments.

Unlocking industrial growth for enterprise with RedCap at scale

The successful deployment of RedCap with M1 in Singapore is laying the foundation for broader adoption of mid-tier 5G devices across industrial and enterprise environments. Looking ahead, M1 plans to expand its RedCap capabilities with the implementation of Enhanced RedCap (eRedCap) under 3GPP Release 18. This evolution will bring further efficiency gains, including reduced spectrum requirements and extended device battery life, key enablers of massive Machine-Type Communications (mMTC), a core pillar of the 5G vision.

There is significant potential for RedCap to scale across a diverse ecosystem of use cases, from smart wearables and health monitoring devices to smart grid sensors, industrial glasses and more. Its blend of streamlined performance, reliable coverage and deployment agility makes it a viable option in areas where traditional 5G NR may be excessive, and LTE-M or NB-IoT may fall short.

As 5G networks mature and the RedCap device ecosystem expands, the technology is expected to unlock new commercial opportunities in sectors such as healthcare, utilities, manufacturing and logistics, not just in Singapore but globally. With our RedCap solution and M1's forward-looking deployment strategy, this collaboration demonstrates how operators worldwide can use RedCap to build scalable, future-ready industrial networks.

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.