



Blog

Persistence pays off for Samsung Networks in becoming a major 5G radio access network vendor

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Samsung Networks has done well in raising its profile with several high-profile 5G network deployments. This success did not come overnight, nor did it start with just 5G. Samsung has been working for many years - investing in 5G technology and use case development along with building operator relationships - to get to where it is today. Today's 5G success is built on more than 40 years' effort by Samsung Networks in delivering cellular networks and building operator relations.

One way to measure a vendor's commitment to a market or technology is the resource it allocates to that market through research and development (R&D). Vendors only allocate long-term R&D funds to areas they think are important and will generate market needs. For Samsung, 5G has been one of those areas.

Samsung has one of the largest R&D budgets globally. The company's total R&D budget for 2018 was approximately \$16.3bn, a 12.2% increase over the 2017 R&D budget. Of course, not all that budget went on 5G development. In August 2018, the company committed to spending \$22billion over the next three years on R&D and capital expenses related to emerging technologies such as 5G and AI.

In early 2016, the company created its Next Generation Business Team. The mandate of the new team was to give Samsung a coordinated company-wide position on developing commercial 5G network solutions and devices. The group included R&D members from its wide-business portfolio including its semiconductor, device, consumer electronics, and networks business units. This work has paid off for the company. Samsung can now provide end-to-end 5G solutions with devices (smartphone and CPE), 5G new radio (5G NR) in both mmWave and sub 6GHz, virtualized 5G core, and network automation and optimization tools. The company has worked with HARMAN to create the first 5G-ready telematics control unit (TCU); TCU is the foundation of the connected car. With Verizon, Samsung had the first FCC-certified, end-to-end 5G offering. Its 5G investment results do not stop there.

The company manufactures its own semiconductors for use in its radio kit. In February 2019, the company announced its second-generation 5G chipsets that will

help reduce base station power consumption and allow for a smaller base station footprint. These chipsets will also help operators reduce their network total cost of ownership; an important trend to address as 5G will require more network sites than 4G. The multiplication of existing sites, without reducing the cost of each site, will make 5G profitability difficult.

Another part of Samsung Networks' commitment to 5G can be found at its Digital City Headquarters in Suwon, South Korea. Here, Samsung has built a "5G City." The city consists of three 5G demonstrations: a 5G stadium, 5G kiosk, and 5G connectivity node. These demonstrations provide Samsung Networks with an opportunity to show operators, press, and other technology partners different use cases for 5G. It also helps Samsung Networks position itself as a thought leader in the 5G market.

Technology investments are not the only part of Samsung Networks' success. The other part has been building trust with operators, which it can then use to evolve a successful network solution using the latest network technologies to best manage ongoing data traffic growth. Selecting a base station vendor can be a big bet for a mobile operator. If they bet wrong, the network may underperform or not be built at all. To reach its current position in terms of 5G, Samsung spent years building the confidence of mobile operators that its solutions would work and be delivered. This included providing mobile operators with 3G and 4G network solutions. Some notable wins include providing LTE to its three domestic mobile operators along with supporting Sprint and Verizon (LTE small cell) in the US and Reliance Jio in India. Thanks to this hard work, Samsung Networks has slowly built up its global market share of annual radio access network (RAN) sales revenue.

Samsung Networks had the highest percent increase in revenue growth of the five major RAN vendors in 2018. Ovum estimates Samsung's RAN revenue grew by 33% during the 12-month period of 2018 versus 2017.

With 5G, Samsung Networks has seen its market position rise even further. In 2018, Verizon selected Samsung Networks as a 4G macro and 5G partner and it was also selected by AT&T for 5G.

Samsung Networks has been instrumental in making 5G a commercial reality by helping launch the first networks. The company is the key radio supplier to all three South Korean mobile operators. In April 2019, the company claimed it had deployed over 64% of all 5G base stations in its home market. Overall, the company now claims to have deployed over 100,000 base stations globally. Each base station is carrying commercial traffic. In the first half of 2019, the company helped both Verizon and Sprint launch 5G in the US.

The company now claims a number of commercial 5G NR contracts including KT, SK Telecom, LGU+, AT&T, Sprint, Verizon, and KDDI. The company has also engaged with over 20 mobile operators on 5G development partnerships, trials, and demonstrations.

When looking at Samsung Networks' portfolio strengths the following points stand out:

- Development of massive MIMO solutions, similar to Sprint's deployments in its 2.5GHz band and some Korean operators' deployments in 3.5GHz band
- Experience working with TDD spectrum for both mid-band and mmWave bands

- Expertise in mobile core, device, and RAN solutions for 5G and its firsthand experience in knowing what it takes to make these different elements work together
- Support for multivendor 5G eCPRI and cloud native 4G and 5G base stations.

Samsung stands out in the RAN market. The company has patiently and deliberately grown itself from being a niche RAN player to one of the five major market suppliers. Patience, smart investments, and delivering sound network solutions have all helped play a role in this success.

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Sustainable 5G

5G RAN
Massive MiMO Radio
Radio
Baseband
Compact Macro
Indoor Solutions
Chipsets

5G Business

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Fixed Wireless Access
Smart Factory
Mission Critical Networks
Compact Core
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