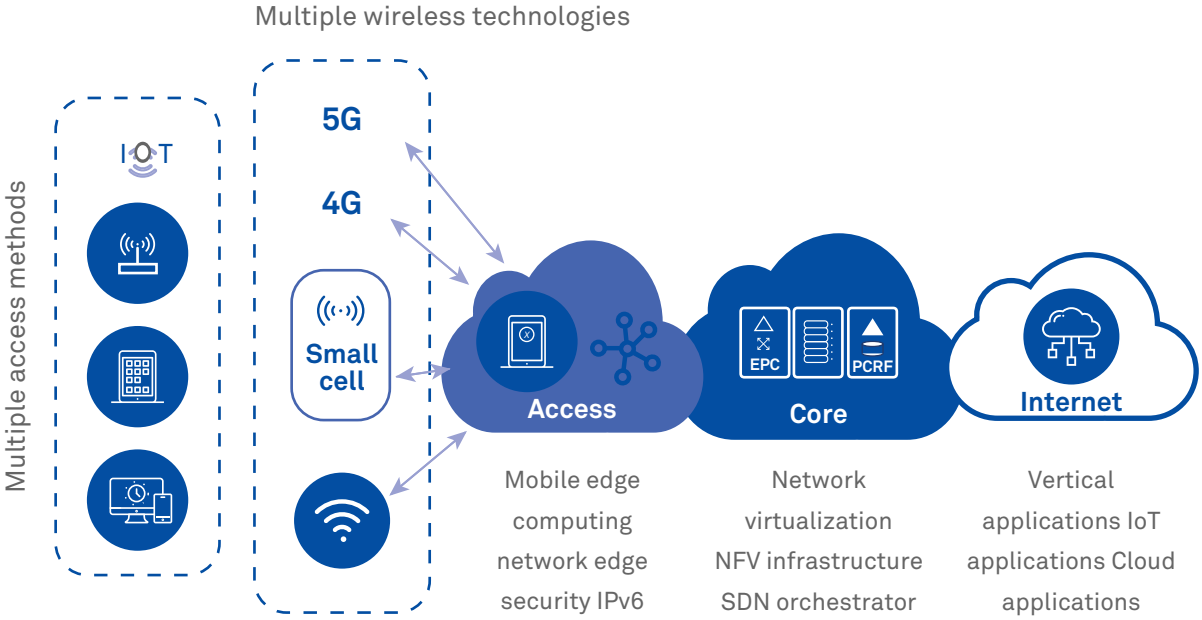
Run-up to 5G

The telecommunications industry has constantly been disrupted by the introduction of new technologies. Communications Service Providers (CSP) have to continuously adapt to changes demanded by the introduction of newer technologies. The impact of these changes could be managing customer experience, or reducing the cost of acquisition and operation, or bringing in new revenue streams to the CSP. In the recent past, we have seen disruptions such as IoT, connected everything, omni-channel customer experience, better and faster mobile phones, AI / automation, blockchain, 5G and so on. As technological advancements occur, there is also the new breed of competitors coming to the fore, who tend to disrupt by dis-intermediating the operator. Some of these changes have depleted the average revenue per customer to a great extent. This has led to the erosion of traditional voice, messaging and data revenue.

Some of the newer technological changes tend to offer an opportunity to CSPs to increase their revenue e.g., IoT services have opened up a large revenue base to operators and many have started capitalizing on the same. As IoT usage and applications are growing, the current network is running out of capacity or is unable to provide the required performance. The emergent 5G or fifth generation mobile communications standards provide new capabilities in the network by enhancing throughput, increasing device density and reducing latency. While this could be a new revenue opportunity for operators, the availability of standards and devices will bring in migration to the new 5G network by the second half of 2020.

While operators are preparing for the 5G network launch using the New Radio (NR), there are multiple areas in which some preparatory work is expected to happen. This spans across the transport network, IT applications and extending the ecosystem. The picture below depicts the readiness required for launching the 5G network.

Illustrative 5G readiness in existing network



In Wipro's view, CSPs have an opportunity now to get ready for the launch of 5G network and services. Explained below are some of the solutions that can be built while the 5G NR in SA (Standalone) or NSA (Non-Standalone) mode is being inducted.

Transport network

There are a lot of dependencies on the transport network for the launch of 5G. While backhaul and aggregation bandwidth need to be augmented using fiber or millimeter wave radio technologies, there are other areas of interventions required. All-IP transport network, migration to IPv6, software-defined network at the transport layer, optical + IP convergence etc., are some of the requirements to be implemented.

Core network

Some of the interventions are:

- Bringing in VNFs for core network components like voice platforms, EPC, PCRF etc.
- Building a converged NFV infrastructure
- Orchestration platforms for cloud, SDN and NFV
- High performance network analytics to support data from high device density
- Adoption of cognitive automation (AI/ML)
- Zero-touch network operations

Mobile Edge Computing (MEC)

To take advantage of the low latency and high performance offered by 5G Radio technology, network operators can bring in edge computing solutions. Building micro datacenters in the RAN or Cloud-RAN site and enabling edge computing with local breakout will enhance content and applications performance even in high device density scenarios. An appropriate content caching, distribution and delivery solution is required in addition to the MEC setup. Similarly, an appropriate solution for distributing, hosting and managing customer applications is needed as well.

IT Support systems

There are many areas of improvement in IT systems. High-speed real-time data rating and charging is just the beginning. Owing to the large number of applications and services expected to be launched over the 5G network, a scalable product catalog and a robust order management system are required as well. Among other things, the following are required:

- An adaptive and active inventory management system which uses a unified data model, federation of inventory databases, real-time reflection of operational network, and one that supports both physical and virtual network devices.
- A complete digital assurance solution which runs on top of a high-performance real-time network analytics platform, supporting network, service and customer assurance.
- A hybrid network management solution that supports both legacy and new-age network elements and abstracts the network using common data models and works with SDN-O using standard configuration protocols.

Security

An end-to-end security solution is needed beyond information security, which covers the security of the network all the way up to the network edge. This is because the entire network is now on TCP/IP and creates new avenues for vulnerability. In addition, the security perimeter has to extend all the way to the customer network as applications like IoT and cloud interact and create additional vulnerability with the provider network.

Partner ecosystem

5G network RoI is highly dependent on new ways of network modernization. This is possible only by extending the reach and offering services from the partner ecosystem. It is also imperative that the CSP exchanges information about various configuration parameters, network slicing and performance data with the partner, to enable zero-touch. To onboard new partners, exchange information and offer services from/to them, a suitable partner management and a good B2C/B2B/B2B2C marketplace is also essential for 5G readiness.

In conclusion, in the run-up to 5G, CSPs have to prepare themselves with many technological interventions, both big and small, while planning for large-scale deployment of the 5G NR SA or NSA network. It would be a good idea for CSPs to have a coordinated and well-orchestrated plan to manage all the readiness programs, which could cut across multiple departments and suppliers.

About the author

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Viswanathan Ramaswamy has over 3 decades of industry experience in the telecommunications field, ranging from R&D to project implementation to network operations.

Vishy handles technology solutions & global practice. In this role, he is responsible for building capabilities and working in thought leadership assignments with communications industry customers in initiatives such as digital transformation, IT/Network convergence, network modernization, SDN/NFV and so on. He also leads initiatives in 5G, network automation and network analytics for the communications business.

Before Wipro, Vishy was Senior Vice President in charge of Technology Strategy & Architecture, and CTO for B2B business at Vodafone India. Vishy has built many technology practices and has led businesses throughout the course of his industry journey spanning three decades.

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