**Generation of mobile network**

The five generations of mobile networks are 1G, 2G, 3G, 4G, and 5G, where G stands for Generation and the number signifies the generation number. 5G is the most recent iteration, while 1G networks are no longer in use. GSM, UMTS, LTE, and NR are cellular technologies that enable 2G, 3G, 4G, and 5G, respectively.

Step 2: 4G and 5G

After 3G and before 5G, 4G is the fourth generation of broadband cellular network technology. A 4G system must support the ITU's IMT Advanced capabilities. Modified mobile online access, IP telephony, gaming services, high-definition mobile TV, video conferencing, and 3D television are some of the potential and present applications.

Fifth-generation wireless (5G) is the most recent iteration of cellular technology, designed to boost the speed and responsiveness of wireless networks dramatically.

Step 3: Packet switching technology

The transfer of small chunks of data across many networks is known as packet switching. These data chunks, or "packets," make data transfer faster and more efficient. When a user transfers a file across a network, it is frequently sent in smaller data packets rather than all at once.

Step 4:

Circuit-switching enables voice calls and text messages using dedicated circuits in 2G and 3G mobile networks; packet-switching is more efficient and uses shared circuits to enable IP-based mobile data in all mobile networks, as well as IP voice calls and texts in 4G LTE and 5G NR networks.

Step 6:

The whole network of LTE (4G) is packet switched, with no support for circuit switched networks. As a result, when using the LTE (4G) network, voice and SMS services must be moved to a packet switched network.

To satisfy users, the voice service in 5G is also packet-switched, and the service should be of equal or better quality than in 4G. Voice capability is required for a 5G smartphone to connect to a mobile network.

Step 7:

 4G LTE and 5G NR networks lack circuit-switched nodes, they are data-only networks.

Packet-switching is used to provide voice, text, and data services. Voice over LTE (VoLTE) is a technology that uses the packet-switched component of the network to offer voice calls and SMS in 4G LTE networks.

Voice over New Radio (VoNR), a comparable technology for 5G networks, works on the same premise as VoLTE to provide voice and text services across the packet-switched portion of the network.

The type of 5G network implementation, i.e. non-standalone or standalone, determines whether a mobile network uses VoLTE or VoNR. Whether a mobile network uses an LTE core network (EPC) or a 5G core network affects VoLTE and VoNR technologies.

Packet-Switching (PS) is a technique that allows mobile networks to send and receive data without using the radio network resources for each user on a permanent basis.

PS provides data bursts in packets at various intervals, sharing the available channel capacity with several users.

These packets have a 'header' that carries the packet's destination information and a payload that contains the actual data or information being transferred.

These headers are used by switching nodes to detect the source and destination of packets, allowing data packets to be delivered to the desired subscribers (devices) through the most efficient route.

Step 8: Conclusion

Mobile networks use circuit-switching and packet-switching as two essential communication techniques to provide voice, SMS, and data services to their consumers.

The older of the two approaches used in 2G and 3G networks for making and receiving voice calls and sending and receiving text messages is circuit-switched.

Hence, Circuit-switched voice (voice and SMS over 2G and 3G networks) and packet-switched voice services in 4G and 5G networks are the major technological network migration steps.

This transformation enables service providers to give consumers, businesses, and industries with more useful and advanced voice and communication services.