



# 5G Specifications in 3GPP: North American Needs for the 5G Future

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## Abstract

The first full set of 5G specifications was completed in 3Q 2019 in the 3rd Generation Partnership Project (3GPP) Release 15. 3GPP then directed its attention to future releases to further define and enhance the newly established 5G system. The 5G system is intended to enable a complete mobile communications platform. As such, it will support all 4G capabilities except ones related to legacy technology interworking. In addition, 3GPP will continue to enhance 5G to support new markets, improved performance and additional management capabilities. This document reviews the technology and societal drivers to lay out a vision of the 5G technology and market landscape (post Release 16) and identifies areas that will need more in-depth study going forward. Specifically, the report:

- Reviews the global landscape related to future technology innovation.
- Reviews progress on R17 itself and identifies North American priority areas going forward.
- Previews a number of potential future network-related applications and services.

3GPP specifications will continue to evolve 5G networks to become more distributed and customizable. They will support many new applications and usage models with software-driven, dynamic and elastic network functions enabled through virtualization and cloud-based implementations.

## Foreword

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# 1 Executive Summary

## 1.1 Introduction

Release 15 represents the first full set of 5G specifications. After initial delivery in late 2017 of Non-Stand-Alone (NSA) NR (New Radio) specifications, 3GPP focused on the completion of Release 15, as well as the 3GPP submission toward IMT-2020. With the completion of Release 15 in 3Q 2019, 3GPP directed its attention to future releases to further define and enhance the newly established 5G system.

The 5G system is intended to enable a complete mobile communications platform. As such, it will support all 4G capabilities except ones related to legacy technology interworking. In addition, 3GPP will continue to enhance 5G to support new markets, improved performance and additional management capabilities. This represents a very large body of work that will play out over many 3GPP releases. As 3GPP work on Release 16 is completed during the first half of 2020, the focus will shift to Release 17 and beyond to address the need for continued network evolution.

There are many drivers behind this continual network evolution, including the increasing diversity of connected devices, a multitude of demanding applications and the unprecedented growth in data traffic since the dawn of Internet Protocol (IP) networking over 20 years ago. These factors will in turn drive networks to become more distributed and customizable. They will support many new applications and usage models with software-driven, dynamic and elastic network functions enabled through virtualization and cloud-based implementations. The network will also leverage data-powered, artificial intelligence (AI) driven network automation to support management and monitoring at scale. These network enhancements, along with increased spectrum availability, will enable the 5G NR to meet the needs associated with new high-end applications, ultimately leading to a greatly enhanced user experience.

## 1.2 Industry and Regional Context

North America, with the U.S. as the largest percentage of that market, will play a leading role in the initial and near-term deployments of 5G. According to GSMA Intelligence forecasts, the U.S. will experience one of the fastest customer migrations to 5G in the