

Wireless Infrastructure Transformation: 5G and Mobile Edge Computing 2017 - 2025

https://marketpublishers.com/r/WDD09AE7CECEN.html

Date: April 2017 Pages: 441 Price: US\$ 1,995.00 (Single User License) ID: WDD09AE7CECEN

Abstracts

OVERVIEW:

Fifth Generation (5G) cellular represents a gaming changing wireless infrastructure transformation for Communication Service Providers (CSP). Next generation equipment will support millimeter wave length radio frequency as well as evolution of LTE, which will be considered by many to be part of 5G heterogeneous networks. In addition, CSPs will deploy next generation equipment at Base Transceiver Stations (BTS) for Mobile Edge Computing (MEC), which will provide distributed computing and effectively transform BTS into distributed datacenters.

The combination of 5G and MEC will transform wireless carrier operations and facilitate enhanced services, new applications, and completely new business models for mobile network operators

This research provides an in-depth assessment of both technical issues (enabling technologies, 5G standardization and research initiatives, spectrum bands, etc.) and business areas (market drivers, challenges, use cases, vertical market applications, regulatory issues, trial commitments, introduction strategies, and impact to CSPs), as well as analysis of the emerging 5G ecosystem. The report includes specific ecosystem constituent recommendations and forecasts for both 5G investments, subscriptions, and more for the period of 2017 – 2025.

This research also evaluates MEC technology, architecture and building clocks, ecosystem, market drivers, applications, solutions, and deployment challenges. The report also analyzes MEC industry initiatives, leading companies, and solutions. The report includes a market assessment and forecast for MEC users and MEC revenue



globally, regionally, and within the enterprise market for years 2017 to 2021. Forecasts include MEC infrastructure (equipment, platforms, software, APIs, and services).

KEY FINDINGS:

Large-scale commercial 5G trials to increase 5X by 2021

MEC will enable new data-focused carrier revenue streams

Manufacturing to be leading IoT 5G industrial application area

MEC will be a key component to the success of 5G for new apps

MEC enables many new cloud-based apps to leverage real-time data

Leading 5G apps include IoT, Haptic Internet, Virtual Reality, and Robotics

REPORT BENEFITS:

Understand MEC technology

Understand the MEC ecosystem

Understand 5G tech and solutions

Identify MEC market opportunities

Identify company R&D strategies and plans/li> Learn how MEC will impact industry verticals

Identify significant MEC players and offerings

Identify 5G investment targets and allocations

TARGET AUDIENCE:



Wireless service providers

5G infrastructure suppliers

Wireless device manufacturers

Big Data and analytics companies

Internet of Things (IoT) companies

Robotics and Virtual Reality suppliers

Software, Application, and Content Providers



Contents

5G MARKET ASSESSMENT: VENDOR STRATEGIES, TECHNOLOGY AND INFRASTRUCTURE OUTLOOK AND APPLICATION FORECASTS

1.0 INTRODUCTION

- 1.1 Background
- 1.2 Scope of the Research
- 1.3 Target Audience
- 1.4 Companies in Report

2.0 EXECUTIVE SUMMARY

- 2.1 5G Requirements
 - 2.1.1 User Driven Requirement
 - 2.1.2 Network Driven Requirement
- 2.2 Stakeholders to Benefit from Expanded Services
- 2.3 Anticipated 5G Investment

3.0 OVERVIEW

- 3.1 Market Definition of 5G
- 3.2 Evolution of Mobile Communication Standards (1G to 5G)
- 3.3 Introduction to 5G Technology
- 3.4 5G Spectrum Options and Utilization
- 3.5 What can 5G Technology Offer?
- 3.5.1 5G Network will Facilitate Faster and Less Expensive Services
- 3.6 Key Advantages and Growth Drivers of 5G
- 3.7 Challenges for 5G
 - 3.7.1 Consistent Growth in Technology Requirements and Service Characteristics
 - 3.7.2 Standardization Challenges
 - 3.7.3 Network Challenges
 - 3.7.4 Mobile Device Challenges
 - 3.7.5 Application Challenges

3.8 5G Roadmap

- 3.8.1 5G Requirements 2017 2020
- 3.8.2 5G Wireless Subsystem 2017 2020
- 3.8.3 Network Virtualization & Software Networks 2017 2020



- 3.8.4 Converged Connectivity
- 3.9 5G Use Cases
 - 3.9.1 5G in M2M and IoT
 - 3.9.2 5G in Robotics
 - 3.9.3 5G in Augmented and Virtual Reality
 - 3.9.4 5G in Home Internet
 - 3.9.5 5G in Wireless Office
 - 3.9.6 Other Use Cases
 - 3.9.6.1 High Speed Train
 - 3.9.6.2 Remote Computing
 - 3.9.6.3 Non-Stationary Hot Spots
- 3D Connectivity: Aircraft
 - 3.9.6.4 Natural Disaster
 - 3.9.6.5 Public Safety
 - 3.9.6.6 Context Aware Service
- **Business Opportunities**

4.0 5G ENABLING TECHNOLOGIES

- 4.1 OSI Layers in 5G
 - 4.1.1 Physical and Medium Access Control Layer
 - 4.1.2 Network Layer
 - 4.1.3 Application Layer
 - 4.1.4 Differences between 5G and 4G
- 4.2 5G Technology Requirements
 - 4.2.1 Disruptive Network Architecture
 - 4.2.2 Access
 - 4.2.3 One Millisecond Latency
 - 4.2.4 System Level Principles
 - 4.2.5 Right Business Model
 - 4.2.6 Stakeholder Community
 - 4.2.7 Policy and Standardization Framework
 - 4.2.8 Communication Service Providers (CSP)
- 4.3 Key 5G Enabling Technologies
 - 4.3.1 Massive MIMO
 - 4.3.2 Network Functions Virtualization (NFV)
 - 4.3.3 SDN and Virtualization
 - 4.3.4 Cognitive Radios (CRs) and Transmission Technologies
 - 4.3.5 Self-Organizing Networks (SONs)



- 4.3.6 Communication, Navigation, Sensing and Services
- 4.3.7 Cooperative Communication Functions
- 4.3.7.1 Multi-Hop
- 4.3.7.2 Caching
- 4.3.8 Automated Network Organization
- 4.3.9 Self-Configuration
- 4.3.10 Automatic Neighbor Relation (ANR)
- 4.3.11 Self-Healing
- 4.3.12 Self-Organization
- 4.3.13 Advanced traffic management
- 4.3.14 Visible Light Communications (VLCs)
- 4.3.15 Energy Efficiency
- 4.3.16 Millimeter Wave
- 4.3.17 Massive M2M Communications
- 4.3.18 C-RAN Architecture
- 4.3.19 HetNet Solutions
- 4.3.20 H-CRAN Solution
 - 4.3.20.1 Large-Scale Cooperative Spatial Signal Processing
- 4.4 Software Defined Radio
 - 4.4.1 Spectrum and Satellite
 - 4.4.2 Drones, Robots, and High Altitude Balloons
 - 4.4.3 5G New Radio
 - 4.4.3.1 Architecture Options
 - 4.4.4 Next Gen Technology
 - 4.4.4.1 Cross Layer Controller
 - 4.4.4.2 Energy Aware
 - 4.4.4.3 Security

5.0 5G RESEARCH FORECASTS AND DEVELOPMENTS

- 5.1 5G Vision 2020
- 5.2 The Evolving 5G Standardization Process
- 5.3 The IMT 2020 Initiative to Define 5G
- 5.3.1 RAN Study
- 5.4 3GPP Roadmap for 5G
- 5.5 GSMA Definition for 5G
- 5.6 NGMN Business Model and value Creation for 5G
- 5.7 TIA Helping Deployment of 5G in North America
- 5.8 METIS Consensus Building in Europe



- 5.9 5G PPP Initiated Research Projects
- 5.9.1 5G PPP Projects
- 5.10 Research on the use of Quantum Technology in 5G
- 5.11 Research on Spectrum and Coverage Implications of 5G
- 5.12 5GNow to Challenge Shortcomings of 4G while Developing 5G
- 5.13 5G Research and Development in Asia
 - 5.13.1 China IMT-2020
 - 5.13.2 Japan ARIB 20B AH
 - 5.13.3 Korea 5G Forum
 - 5.13.4 China's 863-5G Project
- 5.14 R&D Initiatives and Collaboration
- 5.14.1 SK Telecom and Ericsson
- 5.14.2 Huawei and Samsung
- 5.14.3 NTT DoCoMo and Multiple Vendors
- 5.14.4 Turkcell and Ericsson
- 5.14.5 5G NORMA (Nokia and SK Telecom)
- 5.14.6 Huawei and Ericsson
- 5.14.7 FANTASTIC-5G
- 5.14.8 5GIC
- 5.14.9 NYU WIRELESS

6.0 GLOBAL 5G MARKET FORECASTS

- 6.1 Global 5G R&D and Trial Investments
- 6.1.1 5G Investment in R & D and Trials by Category
- 6.2 Global Scenarios for 5G Networks
- 6.3 5G Considerations
 - 6.3.1 5G Arrival Depends on Specifications and Adoption
 - 6.3.2 New RAN will Improve Mobile Networks
- 6.3.3 Immediate Technological Developments
- 6.3.4 LTE May Slow Down 5G Growth
- 6.3.5 Use of Governmental Interest and Resources
- 6.3.6 More Sustainable Operator Investment Model in Terms of Capacity
- 6.4 5G Value Creation
 - 6.4.1 Better User Services with 5G
 - 6.4.2 5G will Enhance Work Processes for Enterprise
- 6.4.3 Expanded Business Opportunities for Partners
- 6.5 Global Markets for 5G 2021 2030
- 6.6 5G Adoption by 2025



- 6.7 5G Deployment by Region 2017 2025
- 6.8 5G Enhancements to Internet of Things (IoT)
 - 6.8.1.1 CAT M LTE for IoT
- 6.9 5G Fixed Wireless Solutions

7.0 5G COMPANY ANALYSIS

- 7.1 Alcatel-Lucent
 - 7.1.1 Business Overview
 - 7.1.2 5G Research and Contributions
 - 7.1.3 5G Strategy
 - 7.1.4 5G Solutions
 - 7.1.5 Recent Developments
 - 7.1.5.1 Nokia and Alcatel-Lucent
- 7.2 Broadcom
 - 7.2.1 Business Overview
- 7.2.2 5G Contribution
- 7.2.3 Recent Developments
- 7.3 China Mobile
 - 7.3.1 Business Overview
 - 7.3.2 5G Contribution
 - 7.3.2.1 5G Base Station Optimization
 - 7.3.2.2 Test and Measurement Solutions
 - 7.3.3 Recent Developments
 - 7.3.3.1 Huawei and China Mobile Join Hands
 - 7.3.3.2 Ericson and China Mobile 5G Drone Prototype Field Trial
- 7.4 Deutsche Telekom
 - 7.4.1 Business Overview
 - 7.4.2 5G Contribution
 - 7.4.3 Recent Developments
- 7.5 Ericsson
 - 7.5.1 Business Overview
 - 7.5.2 5G Collaboration and Commitment
 - 7.5.3 5G Strategy and Use Cases
 - 7.5.3.1 Broadband Experience Everywhere Anytime
 - 7.5.3.2 Smart Vehicles, Transport and Infrastructure
 - 7.5.3.3 Media Everywhere
 - 7.5.3.4 Critical Control of Remote Devices
 - 7.5.3.5 Human-IoT Interaction



- 7.5.4 5G Trial Commitment
 - 7.5.4.1 Pilot in Sweden
 - 7.5.4.2 Collaboration with Softbank for 5G Trials
- 7.5.5 Recent Developments
- 7.6 Fujitsu
 - 7.6.1 Business Overview
 - 7.6.2 5G Strategy and Solutions
 - 7.6.3 5G Contribution
 - 7.6.4 5G Trial Commitment
 - 7.6.5 Recent Developments
- 7.7 Huawei
 - 7.7.1 Business Overview
 - 7.7.2 5G Vision
 - 7.7.3 5G Strategy
- 7.7.4 5G Collaboration and Contribution
- 7.7.5 Recent Developments
- 7.8 Intel Corporation
 - 7.8.1 Business Overview
 - 7.8.2 5G Strategy
 - 7.8.3 5G Collaboration and Contribution
- 7.8.4 Recent Developments
- 7.9 LG Uplus Corp.
 - 7.9.1 Business Overview
 - 7.9.2 5G Contribution
 - 7.9.3 Recent Developments
- 7.10 NEC Corporation
 - 7.10.1 Business Overview
 - 7.10.2 5G Strategy
 - 7.10.2.1 Safer Cities and Public Services
 - 7.10.2.2 Quality of Life
 - 7.10.2.3 Industry Ecosystem
 - 7.10.3 5G Contribution
 - 7.10.3.1 iPasolink VR
 - 7.10.3.2 Virtualization of Cells
 - 7.10.3.3 Massive-Element Antenna for Small Cells
 - 7.10.4 5G Trial Commitment
 - 7.10.5 Recent Developments
- 7.11 Nokia Networks
 - 7.11.1 Business Overview



- 7.11.2 5G Vision
- 7.11.3 5G Strategy
- 7.11.3.1 More Spectrum Needed
- 7.11.3.2 Network Density Increases
- 7.11.3.3 Raising the Overall Network Performance
- 7.11.4 5G Contribution and Collaboration
- 7.11.5 5G Trial Commitment
- 7.11.6 Recent Developments
- 7.12 NTT DoCoMo
 - 7.12.1 Business Overview
 - 7.12.2 5G Contribution
 - 7.12.2.1 NTT DoCoMo and Alcatel-Lucent
 - 7.12.2.2 NTT DoCoMo and Ericsson
 - 7.12.2.3 NTT DoCoMo and Fujitsu
 - 7.12.2.4 NTT DoCoMo and NEC
 - 7.12.2.5 NTT DoCoMo and Nokia
 - 7.12.2.6 NTT DoCoMo and Samsung
 - 7.12.3 Recent Developments
- 7.13 Qualcomm
 - 7.13.1 Business Overview
 - 7.13.2 5G Strategy
 - 7.13.2.1 Scalability and Adaptability
 - 7.13.2.2 User Centric Design
 - 7.13.2.3 Unified Platform
 - 7.13.3 5G Contribution
 - 7.13.3.1 5G Timeline Standard
 - 7.13.3.2 Business and Subscription Models
 - 7.13.3.3 Simultaneous Connectivity to Leverage 4G Investments
 - 7.13.4 Recent Developments
- 7.14 Samsung
 - 7.14.1 Business Overview
 - 7.14.2 5G Strategy and Vision
 - 7.14.2.1 Internet of Things
 - 7.14.2.2 Immersive Multimedia Experience
 - 7.14.2.3 Everything on the Cloud
 - 7.14.2.4 Intuitive Remote Access
 - 7.14.3 5G Contribution
 - 7.14.3.1 Rainbow Requirement
 - 7.14.3.2 mmWave Wireless Backhaul Concept



- 7.14.3.3 Full Dimension Multiple Input Multiple Output (FD-MIMO)
- 7.14.3.4 mmWave Mobile Radio Access
- 7.14.3.5 Antennas
- 7.14.4 5G Collaboration
- 7.14.5 5G Trial Commitment
- 7.14.6 Recent Developments
- 7.15 SingTel
 - 7.15.1 Business Overview
 - 7.15.2 5G Contribution
 - 7.15.3 Recent Developments
- 7.16 SK telecom
 - 7.16.1 Business Overview
 - 7.16.2 5G Contribution
 - 7.16.3 Recent Developments
- 7.17 ZTE Corporation
 - 7.17.1 Business Overview
 - 7.17.2 5G Strategy
 - 7.17.2.1 Ubiquitous Services
 - 7.17.2.2 Massive Data Connections
 - 7.17.2.3 Energy Efficiency
 - 7.17.3 5G Contribution
 - 7.17.3.1 Pre5G Concept
 - 7.17.3.2 Massive MIMO
 - 7.17.3.3 UDN
 - 7.17.3.4 MUSA
 - 7.17.4 5G Trial Commitment
 - 7.17.5 Recent Developments
- 7.18 5G Regulatory Contributor
 - 7.18.1 GSMA
 - 7.18.2 Ofcom UK
 - 7.18.3 METIS
 - 7.18.4 5G PPP
 - 7.18.5 NGMN
 - 7.18.6 4G Americas

8.0 MOBILE OPERATOR 5G REQUIREMENTS

- 8.1 Network Level Expectations
- 8.2 Spectrum Usage Expectations



- 8.3 Service Level Expectations
- 8.4 5G Development by Region
- 8.5 5G Commercial Launch Plans
- 8.6 Data Traffic, Video, and Download Speed Projections 2020 2030
- 8.7 5G Investment Case Analysis
- 8.7.1 Huawei
- 8.7.2 South Korea
- 8.7.3 ZTE
- 8.7.4 Horizon 2020
- 8.8 End-to-End Ecosystem

9.0 APPENDIX: FORECASTS FOR LEADING 5G APPS AND SERVICES

- 9.1 5G Industrial Automation Global Forecasts 2020 2025
 - 9.1.1 IIoT 5G Automation Market Value
 - 9.1.1.1 Market by Segment
 - 9.1.1.1.1 Hardware & Equipment Market by Type of Device
 - 9.1.1.2 Market by Industry Verticals
 - 9.1.1.3 Market by Technology Application
 - 9.1.2 Wireless IIoT 5G Device Deployments
 - 9.1.2.1 Deployment by Device Type
 - 9.1.2.2 Deployment by Industry Vertical

9.2 5G Industrial Automation Regional Forecasts 2020 - 2025

- 9.2.1 Market Value by Region
- 9.2.2 Market Value by Leading Countries
- 9.2.3 Deployment by Region
- 9.2.4 Deployment by Leading Countries
- 9.2.5 Europe Market Forecasts

9.2.5.1 Market Value by Segment, Devices, Industry Vertical, & Technology Application

9.2.5.2 Deployment Base by Devices & Industry Vertical

9.2.6 North America Market Forecasts

9.2.6.1 Market Value by Segment, Devices, Industry Vertical & Technology Application

- 9.2.6.2 Deployment Base by Devices & Industry Vertical
- 9.2.7 APAC Market Forecasts

9.2.7.1 Market Value by Segment, Devices, Industry Vertical & Technology Application

9.2.7.2 Deployment Base by Devices & Industry Vertical



9.3 5G Robotics Global Market Revenue

- 9.3.1 Autonomous Robot Market
- 9.3.2 5G Enabled Autonomous Robot Market
- 9.3.3 5G Enabled Autonomous Robot Market by Categories
- 9.4 5G Robotics Regional Forecasts
- 9.4.1 5G Enabled Autonomous Robot by Region
- 9.4.2 North America 5G Enabled Autonomous Robot Market by Categories
- 9.4.3 Europe 5G Enabled Autonomous Robot Market by Categories
- 9.4.4 APAC 5G Enabled Autonomous Robot Market by Categories
- 9.5 Global 5G Enabled Virtual Reality Market
- 9.5.1 Combined Market Revenue 2021 2026
- 9.5.2 Combined Unit Shipment 2021 2026
- 9.5.3 Combined Active User 2021 2026
- 9.6 5G Accelerated VR Uptake Market
 - 9.6.1 Market by Segments 2021 2026
 - 9.6.1.1 Hardware Market
 - 9.6.1.1.1 Full Feature Device including Haptic & Eyewear Devices
 - 9.6.1.1.2 Hardware Components including Haptic Sensors & Semiconductor
- Components
 - 9.6.1.2 Software & Application Market
 - 9.6.1.3 Professional Service Market
 - 9.6.2 VR Shipment Units 2021 2026
 - 9.6.3 VR Active Users 2021 2026
 - 9.6.4 5G VR Market by Region 2021 2026
 - 9.6.4.1 North America Market
 - 9.6.4.2 APAC Market
 - 9.6.4.3 Europe Market
 - 9.6.5 5G Consumer VR Application Market 2021 2026
 - 9.6.6 Gaming
 - 9.6.6.1 Pokemon Go Market Learning
 - 9.6.7 Live Events
 - 9.6.8 Video Entertainment
- 9.7 5G VR Enterprise Application Market 2021 2026
 - 9.7.1 Retail Sector
 - 9.7.2 Real Estate
 - 9.7.3 Healthcare
 - 9.7.4 Education
- 9.8 5G VR Industrial Application Market 2021 2026
 - 9.8.1 Military



- 9.8.2 Engineering
- 9.8.3 Civil Aviation
- 9.8.4 Medical Industry
- 9.8.5 Agriculture
- 9.8.6 Government and Public Sector

MOBILE EDGE COMPUTING (MEC): MARKET ASSESSMENT AND FORECASTS

1 EXECUTIVE SUMMARY

2 INTRODUCTION

- 2.1 Understanding Mobile Edge Computing
 - 2.1.1 Edge Computing
 - 2.1.2 Edge Computing vs. Cluster Computing
 - 2.1.3 Mobile Edge Computing
- 2.2 Important Characteristics of MEC
- 2.2.1 Processing at the Edge
- 2.2.2 Low Latency
- 2.2.3 Context Based
- 2.2.4 Location and Analytics
- 2.3 MEC Benefits
 - 2.3.1 Business Benefits
 - 2.3.2 Technical Benefits
 - 2.3.3 Mobile Network Operator Benefits

3 MEC TECHNOLOGY, PLATFORMS, AND ARCHITECTURE

- 3.1 MEC Platform Architecture Building Blocks
- 3.1.1 MEC Infrastructure
- 3.1.2 MEC Application Platforms
- 3.1.3 MEC Management Framework
- 3.2 MEC Value Chain for Edge Cloud Computing
- 3.3 MEC Technology Building Blocks
 - 3.3.1 Radio Network Information Service
 - 3.3.2 Traffic Offload Function
 - 3.3.3 MEC Interfaces
 - 3.3.4 Configuration Management
 - 3.3.5 Application Lifecycle Management



- 3.3.6 VM Operations and Management
- 3.3.7 Hardware Virtualization and Infrastructure Management
- 3.3.8 Core Network Elements
- 3.3.9 Open Standards
- 3.4 MEC Technology Enablers
- 3.4.1 Mobile Computing to Mobile Cloud Computing
- 3.4.2 Cloudlet based Mobile Cloud Computing
- 3.4.3 Cloudlet to Cloud
- 3.4.4 PacketCloud Open Platform for Cloudlets
- 3.4.5 Enterprise Cloud Architecture
- 3.4.6 Akamai Cloudlet Solution
- 3.4.7 OPENi Cloudlet Storage Framework
- 3.5 MEC Deployment

4 MEC MARKET DRIVERS AND OPPORTUNITIES

- 4.1 Limitations of Cloud Convergence
- 4.2 IT and Telecom Network Convergence
- 4.3 Base Station Evolution
- 4.4 Cell Aggregation
- 4.5 Virtualization in the Cloud
- 4.6 Continually Improving Server Capacity
- 4.7 Data Center to Network Interactions
- 4.8 Open and Flexible App and Service Ecosystem
- 4.9 Fifth Generation (5G) Wireless
- 4.10 Edge Cloud and Data Transferability
- 4.11 Proximate Cloud Computing
- 4.12 Increasingly Faster Content Delivery
- 4.13 Advantages of MEC Small Cell Deployment
- 4.14 Overall Mobile Data Demand
- 4.15 Low Latency Applications
- 4.16 Integration of MEC with Cloud RAN
- 4.17 MEC Enhances Real-time Data and Analytics
- 4.17.1 Why Data at the Edge?
- 4.17.2 Convergence of Distributed Cloud and Big Data

5 MEC ECOSYSTEM

5.1 Network Ecosystem



- 5.2 MEC Ecosystem Players
 - 5.2.1 Software and ASPs
 - 5.2.2 OTT Service and Content Providers
 - 5.2.3 Network Infrastructure and Equipment Providers
 - 5.2.4 Mobile Network Operators

6 MEC APPLICATION AND SERVICE STRATEGIES

- 6.1 Optimizing the Mobile Cloud
 - 6.1.1 Mobile Network Operator Strategies
 - 6.1.2 Service Strategies and End-user Demand
- 6.2 Context Aware Services
 - 6.2.1 Commerce
 - 6.2.2 Education
 - 6.2.3 Gaming
 - 6.2.4 Healthcare
 - 6.2.5 Location-based Services
 - 6.2.6 Public Safety
 - 6.2.7 Connected Vehicles
 - 6.2.8 Wearables

7 MEC MARKET FORECASTS

- 7.1 Global Market 2017 2021
 - 7.1.1 Combined MEC Market
 - 7.1.2 MEC Market by Segment
 - 7.1.2.1 MEC Cloud Server Market
 - 7.1.2.2 MEC Equipment Market
 - 7.1.2.3 MEC Platform Market
 - 7.1.2.4 MEC Software & API Market
 - 7.1.2.5 MEC Service Market
 - 7.1.3 MEC Enterprise CAPEX & OPEX Spend
 - 7.1.4 MEC Network Migration
- 7.1.5 MEC Enterprise Adoption
- 7.2 MEC Regional Market 2017 2021
- 7.2.1 North America Market Forecast
- 7.2.2 APAC Market Forecasts
- 7.2.3 Europe Market Forecast
- 7.3 MEC Network Users 2017 2021



- 7.3.1 Global MEC Network Users
- 7.3.2 MEC Network User by Supporting Network
- 7.3.3 Regional MEC Network Users
- 7.3.3.1 North America Users
- 7.3.3.2 APAC Users
- 7.3.3.3 Europe Users

8 CONCLUSIONS AND RECOMMENDATIONS



Figures

FIGURES

5G MARKET ASSESSMENT: VENDOR STRATEGIES, TECHNOLOGY AND INFRASTRUCTURE OUTLOOK AND APPLICATION FORECASTS

- FIGURE 1: Evolution of Mobile Communication Standards (1G to 5G)
- FIGURE 2: Evolution from LTE Advanced to 5G
- FIGURE 3: Sample Specifications for 5G
- FIGURE 4: Conceptual 5G Mobile Device
- FIGURE 5: 5G Challenges: Mobile SoC Performance vs. Energy Efficiency
- FIGURE 6: Potential 5G Service Chart and Bandwidth & Latency Requirement
- FIGURE 7: New Service Capabilities in 5G Environment
- FIGURE 8: Mobile Terminal Network Layer in 5G Networks
- FIGURE 9: Core Differences between 5G and 4G
- FIGURE 10: 5G Technological Components
- FIGURE 11: Latency Comparison between LTE and 5G
- FIGURE 12: Massive MIMO Concept
- FIGURE 13: NFV in H-RAN Solution
- FIGURE 14: SDN Architecture
- FIGURE 15: SDN Supporting Layers
- FIGURE 16: Self-Organizing Networks (SONs) in H-RAN
- FIGURE 17: HetNet Topology
- FIGURE 18: H-RAN Application of 5G Systems
- FIGURE 19: Centralized and Distribution LS-CSSP in H-CRANs
- FIGURE 20: Software Defined Radio Network
- FIGURE 21: Hybrid Architecture of SDN & SDR in 5G Network
- FIGURE 22: Role of Satellite in 5G Communication System
- FIGURE 23: 3GPP Architecture Option for New Radio
- FIGURE 24: Key 5G Initiatives and Development Timeline to 2020
- FIGURE 25: 5G Exploration to Development Phases 2014 2020
- FIGURE 26: 5G Exploration to Development Phases 2014 2020
- FIGURE 27: 5G Standardization Roadmap 2014 2024
- FIGURE 28: ITU-R 5G Roadmap (IMT 2020)
- FIGURE 29: 3GPP Roadmap for 5G
- FIGURE 30: 3GPP 5G Timeline
- FIGURE 31: METIS HTs Structure
- FIGURE 32: METIS WPs Structure



FIGURE 33: National 863 5G Project Phases 2013 - 2015 FIGURE 34: 863 5G Project Promotional Framework FIGURE 35: Global 5G Investment (R&D and Trial) FIGURE 36: 5G Investments (Lab R&D, Test Beds and Large Scale) FIGURE 37: 5G Disruptive Capabilities FIGURE 38: Performance Indicators of Disruptive Capabilities in 5G Network FIGURE 39: Total Global Mobile Operator 4G CAPEX Forecast FIGURE 40: 5G Value Creation Capabilities FIGURE 41: Estimated Distribution of Mobile Subscriptions 2025 FIGURE 42: Projected 5G Subscriptions 2020 – 2025 FIGURE 43: Regional 5G Subscriptions 2020 - 2025 FIGURE 44: Alcatel-Lucent 5G Timeline FIGURE 45: Alcatel-Lucent 5G Programmable Networking Framework FIGURE 46: Alcatel-Lucent 5G Solutions FIGURE 47: Ericsson 5G Collaboration and Work FIGURE 48: Ericsson 5G Strategy Chart FIGURE 49: Ericsson 5G Vision for Broadband FIGURE 50: Ericsson 5G Vision for Smart Transport and Infrastructure FIGURE 51: Ericsson 5G Vision for Media FIGURE 52: Ericsson 5G Vision for Remote Devices FIGURE 53: Ericsson 5G Vision for IoT FIGURE 54: Fujitsu 5G Network Configurations and WLAN FIGURE 55: Huawei 5G Service and Scenario Vision FIGURE 56: Huawei 5G All-spectrum Access RAN FIGURE 57: Intel 5G Vision FIGURE 58: NEC 5G Vision FIGURE 59: NEC's Virtualization of Cell Concept FIGURE 60: Architecture of Massive-Element Antenna FIGURE 61: Nokia 5G Vision and Requirements FIGURE 62: Nokia 5G Network Design of Functional Requirement FIGURE 63: NTT DoCoMo 5G Experimental Trial FIGURE 64: Qualcomm 5G Scalability Chart FIGURE 65: Qualcomm 5G Connectivity Design FIGURE 66: Qualcomm Unified Platform Dimensions FIGURE 67: Qualcomm 5G Timeline 2015 - 2022 FIGURE 68: Qualcomm 5G Business Model FIGURE 69: Qualcomm Model to Leverage 4G Investment FIGURE 70: Samsung's 5G Service Vision

FIGURE 71: Samsung Rainbow Requirements



FIGURE 72: Samsung's FD-MIMO Concept FIGURE 73: Samsung's Reconfigurable 5G Phased-array Antenna FIGURE 74: Samsung's 5G Timeline FIGURE 75: Samsung's 5G Trial Drive 2014 FIGURE 76: ZTE's Three Dimensional 5G Vision FIGURE 77: METIS Regulatory Consortium FIGURE 78: METIS Regulatory Framework FIGURE 79: End-to-End 5G Ecosystem FIGURE 80: Global IIoT 5G Automation Market Value 2020 – 2025 FIGURE 81: Global Wireless IIoT 5G Device Deployment Base 2020 - 2025 FIGURE 82: Global Autonomous Robot Market 2018 – 2030 FIGURE 83: Global 5G Enabled Autonomous Robot Market 2022 – 2030 FIGURE 84: VR Base Market Segments, Sub-segments and Components FIGURE 85: Global VR Base Market Combined Revenue 2021 – 2026 FIGURE 86: Global VR Base Market Combined Unit Shipment 2021 – 2026 FIGURE 87: Global VR Base Market Active User 2021 - 2026 FIGURE 88: Global 5G Accelerated Uptake Market Revenue 2021 – 2026 FIGURE 89: Global 5G Accelerated VR Uptake Unit Shipment 2021 – 2026 FIGURE 90: Global 5G Accelerated VR Uptake Active Users 2021 – 2026

MOBILE EDGE COMPUTING (MEC): MARKET ASSESSMENT AND FORECASTS

- Figure 1: MEC Value Chain for Edge Cloud Computing
- Figure 2: Extreme Outdoor Server
- Figure 3: Cloudlet based PacketCloud Framework
- Figure 4: MEC and C-RAN Architecture
- Figure 5: Mobile Edge Computing Network
- Figure 6: MEC Network and Application Clients
- Figure 7: MEC enables Many Cloud-based Apps
- Figure 8: Combined MEC Market Size 2017 2021
- Figure 9: MEC Network Migration Ratio 2017 2021
- Figure 10: MEC Enterprise Adoption Ratio 2017 2021
- Figure 11: Global MEC Network User 2017 2021



Tables

TABLES

5G MARKET ASSESSMENT: VENDOR STRATEGIES, TECHNOLOGY AND INFRASTRUCTURE OUTLOOK AND APPLICATION FORECASTS

- Table 1: 5G Spectrum Band Options, Merits and Licenses
- Table 2: Roadmap for 5G Requirements 2017 2020
- Table 3: Roadmap for 5G Wireless Subsystem 2017 2020
- Table 4: Roadmap for Virtualization and Software Networks 2017 2020
- Table 5: Roadmap for Converged Connectivity 2017 2020
- Table 6: OSI Layers by Category
- Table 7: MTC features in 3GPP Standard
- Table 8: 5G PPP 19 Projects
- Table 9: Global 5G R& D Investments 2017 2021
- Table 10: 5G Investments (Lab R&D, Test Beds and Large Scale) 2017 2031
- Table 11: Projected 5G Subscriptions 2020 2025
- Table 12: 5G Subscriptions by Region 2020 2025
- Table 13: Mobile Operators' 5G Expectations
- Table 14: Mobile Operators' Expectations of 5G Spectrum
- Table 15: Mobile Operators' Expectation of 5G Service Levels
- Table 16: Mobile Operators' Expectations of 5G Deployment by Region
- Table 17: Mobile Operators' 5G Commercial Launch Expectations
- Table 18: Global IIoT 5G Automation Market by Segment 2020 2025

Table 19: Global IIoT 5G Hardware & Equipment Market by Types of Device 2020 – 2025

- Table 20: Global IIoT 5G Automation Market by Industry Vertical 2020 2025
- Table 21: Global IIoT 5G Automation Market by Technology Application 2020 2025
- Table 22: Global Wireless IIoT 5G Device Deployment by Types of Device 2020 2025
- Table 23: Global Wireless IIoT 5G Device Deployment by Industry Vertical 2020 2025
- Table 24: IIoT 5G Automation Market by Region 2020 2025
- Table 25: IIoT 5G Automation Market by Leading Countries 2020 2025
- Table 26: Wireless IIoT 5G Device Deployment by Region 2020 2025
- Table 27: Wireless IIoT 5G Device Deployment by Leading Countries 2020 2025
- Table 28: Europe IIoT 5G Automation Market by Segment 2020 2025
- Table 29: Europe IIoT 5G Hardware & Equipment Market by Types of Device 2020 2025
- Table 30: Europe IIoT 5G Automation Market by Industry Vertical 2020 2025



Table 31: Europe IIoT 5G Automation Market by Technology Application 2020 – 2025 Table 32: Europe Wireless IIoT 5G Deployment by Device Type 2020 – 2025 Table 33: Europe Wireless IIoT 5G Device Deployment by Industry Vertical 2020 – 2025 Table 34: North America IIoT 5G Automation Market by Segment 2020 – 2025 Table 35: North America IIoT 5G Hardware & Equipment Market by Types of Device 2020 - 2025Table 36: North America IIoT 5G Automation Market by Industry Vertical 2020 – 2025 Table 37: North America IIoT 5G Automation Market by Technology Application 2020 -2025 Table 38: North America Wireless IIoT 5G Deployment by Device Type 2020 – 2025 Table 39: North America Wireless IIoT 5G Device Deployment by Industry Vertical 2020 -2025Table 40: APAC IIoT 5G Automation Market by Segment 2020 – 2025 Table 41: APAC IIoT 5G Hardware & Equipment Market by Device Type 2020 – 2025 Table 42: APAC IIoT 5G Automation Market by Industry Vertical 2020 – 2025 Table 43: APAC IIoT 5G Automation Market by Technology Application 2020 – 2025 Table 44: APAC Wireless IIoT 5G Device Deployment by Device Type 2020 – 2025 Table 45: APAC Wireless IIoT 5G Device Deployment by Industry Vertical 2020 - 2025 Table 46: Global 5G Enabled Autonomous Robot Market by Category 2022 – 2030 Table 47: 5G Enabled Autonomous Robot Market by Region 2022 - 2030 Table 48: North America 5G Enabled Autonomous Robot Market by Category 2022 -2030 Table 49: Europe 5G Enabled Autonomous Robot Market by Category 2022 – 2030 Table 50: APAC 5G Enabled Autonomous Robot Market by Category 2022 – 2030 Table 51: VR 5G Accelerated Uptake Market by Segment 2021 – 2026 Table 52: VR 5G Accelerated Hardware Uptake Market by Segment 2021 – 2026 Table 53: VR 5G Accelerated Device Uptake Market by Segment 2021 - 2026 Table 54: VR 5G Accelerated Components Uptake Market by Segment 2021 – 2026 Table 55: VR 5G Accelerated Software Uptake Market by Application 2021 – 2026 Table 56: VR 5G Accelerated Uptake Unit Shipment by Segment 2021 – 2026 Table 57: VR 5G Accelerated Uptake Unit Shipment by Devices 2021 - 2026 Table 58: VR 5G Accelerated Uptake Shipments by Component 2021 - 2026 Table 59: VR 5G Accelerated Uptake Shipments by App 2021 – 2026 Table 60: VR 5G Accelerated Uptake Users by Segment 2021 – 2026 Table 61: VR 5G Accelerated Uptake User by Device 2021 - 2026 Table 62: VR 5G Accelerated Uptake Users by Application 2021 - 2026 Table 63: VR 5G Accelerated Uptake Market by Region 2021 - 2026 Table 64: VR 5G Accelerated Uptake Units by Region 2021 - 2026 Table 65: VR 5G Accelerated Uptake Users by Region 2021 – 2026



Table 66: VR 5G Accelerated Uptake Market by North America Country 2021 - 2026 Table 67: VR 5G Accelerated Uptake Units by North America Country 2021 - 2026 Table 68: VR 5G Accelerated Uptake Users by North America Country 2021 - 2026 Table 69: VR 5G Accelerated Uptake Market by APAC Country 2021 - 2026 Table 70: VR 5G Accelerated Uptake Units by APAC Country 2021 - 2026 Table 71: VR 5G Accelerated Uptake Users by APAC Country 2021 - 2026 Table 72: VR 5G Accelerated Uptake Users by APAC Country 2021 - 2026 Table 72: VR 5G Accelerated Uptake Market by Europe Country 2021 - 2026 Table 73: VR 5G Accelerated Uptake Units by Europe Country 2021 - 2026 Table 74: VR 5G Accelerated Uptake Users by Europe Country 2021 - 2026 Table 75: VR 5G Accelerated Uptake Users by Europe Country 2021 - 2026 Table 75: VR 5G Accelerated Software Uptake Market by Consumer Applications 2021 - 2026

Table 77: VR 5G Accelerated Uptake Consumer Apps User by Industry 2021 - 2026 Table 78: VR 5G Accelerated Software Uptake Market by Enterprise Applications 2021 – 2026

Table 79: VR 5G Accelerated Uptake Enterprise Apps Shipment by Industry 2021 - 2026

Table 80: VR 5G Accelerated Uptake Enterprise Apps User by Industry 2021 – 2026 Table 81: VR 5G Accelerated Software Uptake Market by Industrial Applications 2021 - 2026

Table 82: VR 5G Accelerated Uptake Industrial Apps Shipment by Industry 2021 - 2026Table 83: VR 5G Accelerated Uptake Industrial Apps User by Industry 2021 – 2026

MOBILE EDGE COMPUTING (MEC): MARKET ASSESSMENT AND FORECASTS

Table 1: MEC Market Size by Market Segment 2017 – 2021

- Table 2: MEC Cloud Server Market by Category 2017 2021
- Table 3: MEC Equipment Market by Category 2017 2021
- Table 4: MEC Platform Market by Category 2017 2021
- Table 5: MEC Software & API Market in Vertical Segment 2017 2021
- Table 6: MEC Service Market by Type 2017 2021
- Table 7: MEC Optimization CAPEX and OPEX Spend by Enterprise
- Table 8: MEC Market by Region 2017 2021
- Table 9: North America MEC Market by Segment 2017 2021
- Table 10: North America MEC Cloud Server Market by Category 2017 2021
- Table 11: North America MEC Equipment Market by Category 2017 2021
- Table 12: North America MEC Platform Market by Category 2017 2021
- Table 13: North America MEC Software & API Market in Vertical Segment 2017 2021
- Table 14: North America MEC Service Market by Type 2017 2021



Table 15: North America MEC Market by Country 2017 - 2021 Table 16: APAC MEC Market by Market Segment 2017 - 2021 Table 17: APAC MEC Cloud Server Market by Category 2017 – 2021 Table 18: APAC MEC Equipment Market by Category 2017 – 2021 Table 19: APAC MEC Platform Market by Category 2017 – 2021 Table 20: APAC MEC Software & API Market in Vertical Segment 2017 - 2021 Table 21: APAC MEC Service Market by Type 2017 – 2021 Table 22: APAC MEC Market by Country 2017 - 2021 Table 23: Europe MEC Market by Market Segment 2017 – 2021 Table 24: Europe MEC Cloud Server Market by Category 2017 – 2021 Table 25: Europe MEC Equipment Market by Category 2017 – 2021 Table 26: Europe MEC Platform Market by Category 2017 – 2021 Table 27: Europe MEC Software & API Market in Vertical Segment 2017 – 2021 Table 28: Europe MEC Service Market by Type 2017 – 2021 Table 29: Europe MEC Market by Country 2017 - 2021 Table 30: MEC User by Supporting Network 2017 – 2021 Table 31: MEC Network User by Region 2017 - 2021 Table 32: North America MEC User by Supporting Network 2017 - 2021 Table 33: APAC MEC User by Supporting Network 2017 - 2021 Table 34: Europe MEC User by Supporting Network 2017 - 2021



I would like to order

Product name: Wireless Infrastructure Transformation: 5G and Mobile Edge Computing 2017 - 2025 Product link: <u>https://marketpublishers.com/r/WDD09AE7CECEN.html</u>

Price: US\$ 1,995.00 (Single User License / Electronic Delivery) If you want to order Corporate License or Hard Copy, please, contact our Customer Service: <u>info@marketpublishers.com</u>

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <u>https://marketpublishers.com/r/WDD09AE7CECEN.html</u>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name: Last name: Email: Company: Address: City: Zip code: Country: Tel: Fax: Your message:

**All fields are required

Custumer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <u>https://marketpublishers.com/docs/terms.html</u>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970