

Radio Access Network Market Forecasts to 2034 – Global Analysis By Architecture (Traditional RAN, Cloud RAN (C-RAN), Virtualized RAN (vRAN), and Open RAN (O-RAN)), Component, Technology, Frequency Band, End User, and By Geography

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Abstracts

According to Statistics MRC, the Global Radio Access Network Market is accounted for \$18.9 billion in 2026 and is expected to reach \$37.5 billion by 2034 growing at a CAGR of 8.9% during the forecast period. Radio Access Network (RAN) is the critical infrastructure component connecting mobile devices to the core network, encompassing base stations, antennas, and associated control software. RAN evolution is central to telecommunications advancement, with architectures transitioning from traditional integrated systems to cloud-based, virtualized, and open interfaces. The market is driven by 5G rollouts, increasing mobile data traffic, and the need for network flexibility, low latency, and cost efficiency. As operators modernize networks and deploy new spectrum bands, RAN investments remain a top priority for communication service providers globally.

Market Dynamics:

Driver:

Accelerating global deployment of 5G networks

This factor is significantly driving RAN market growth as mobile operators worldwide invest in new radio access infrastructure to deliver enhanced mobile broadband, ultra-reliable low-latency communications, and massive machine-type connectivity. 5G requires higher frequency bands, denser small cell deployments, and massive MIMO

antennas, increasing the number of radio units and necessitating architectural evolution. Network slicing capabilities require flexible, software-defined RAN platforms that traditional architectures cannot efficiently provide. Government spectrum auctions and national broadband initiatives accelerate deployment timelines. As 5G coverage expands from major cities to suburban and rural areas, and as enterprise private 5G networks emerge, sustained RAN investment continues throughout the forecast period.

Restraint:

High deployment costs and infrastructure complexity

This factor significantly restrains RAN market growth, particularly for smaller operators and developing regions facing capital constraints. Building new 5G RAN requires dense cell site installations, fiber backhaul, and edge computing nodes, with costs substantially higher than previous generations. Site acquisition, zoning approvals, and power upgrades add time and expense. Transitioning to cloud RAN or open RAN requires new skill sets, integration expertise, and software competencies that many operators lack. Legacy infrastructure replacement creates stranded asset concerns. Operating expenses for energy consumption and tower leases increase with densification. These financial and operational hurdles slow deployment velocity, especially in price-sensitive markets with lower average revenue per user, limiting the pace of RAN modernization.

Opportunity:

Open RAN adoption driving vendor diversification and cost reduction

This factor presents substantial opportunities for RAN market restructuring as operators seek to reduce vendor lock-in and lower total cost of ownership. Open RAN architectures disaggregate hardware and software, enabling multi-vendor interoperability and allowing operators to mix and match best-in-class components. This creates opportunities for new suppliers, including software specialists and smaller hardware manufacturers, to enter the traditionally consolidated RAN market. Cost competition among vendors drives price reductions. Open interfaces facilitate innovation in RAN Intelligent Controllers (RIC) and xApps for network optimization. Government initiatives promoting open RAN for security and resilience reasons, such as national policies and funding programs, accelerate adoption. As open RAN matures from early trials to commercial deployments, growth rates exceed traditional RAN segments.

Threat:

Geopolitical tensions and supply chain restrictions

This factor poses a significant threat to the globally integrated RAN market as trade restrictions, national security concerns, and equipment bans disrupt established supplier relationships. Major market exclusions of certain vendors force operators to undertake expensive replacement programs and re-engineer existing networks, increasing costs and delaying 5G deployment timelines. Technology decoupling between major economies leads to diverging standards and component ecosystems, fragmenting the global market and reducing economies of scale. Semiconductor export controls affect the availability of advanced chips for radio units and baseband processing. Tariffs and trade barriers increase equipment costs. Uncertainty over long-term vendor viability influences operator purchasing decisions. These geopolitical pressures raise RAN deployment costs and slow the pace of global network modernization.

Covid-19 Impact:

The COVID-19 pandemic created short-term disruptions followed by accelerated RAN investment in many regions. Initial lockdowns delayed site access for tower deployments, factory shutdowns constrained equipment supply, and supply chain logistics faced congestion. Infrastructure projects were temporarily paused as operators prioritized network maintenance and capacity upgrades for surging home broadband traffic. However, the pandemic underscored the criticality of reliable mobile connectivity, with governments designating telecommunications as essential infrastructure. Stimulus packages in several countries included broadband and 5G funding, accelerating long-term RAN investment plans. Post-pandemic, supply chain normalization and increased digital adoption have created positive momentum, with operators resuming and often accelerating modernization programs, resulting in a net positive market impact.

The Traditional RAN segment is expected to be the largest during the forecast period

The Traditional RAN segment is expected to account for the largest market share during the forecast period, driven by the vast installed base of legacy networks and continued deployments in price-sensitive markets and rural areas. Traditional RAN integrates baseband processing and radio functions within the same enclosure or cabinet, offering proven reliability, simplified operations, and lower initial capital expenditure for smaller-scale deployments. Many operators, particularly in developing regions, continue expanding 4G coverage using traditional architectures due to lower total cost of ownership compared to cloud or virtualized alternatives. The technology is mature, with

well-established supply chains and extensive field engineering expertise available globally. While growth rates in developed markets decline as operators shift to newer architectures, the sheer scale of existing infrastructure and continued deployment in emerging economies ensures Traditional RAN remains the largest segment throughout the forecast period.

The RAN Software segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the RAN Software segment is predicted to witness the highest growth rate, fueled by the shift toward virtualized, cloud-native, and open RAN architectures where software functionality separates from proprietary hardware. RAN software includes baseband processing algorithms, protocol stack implementations, orchestration and automation platforms, RAN Intelligent Controllers (RIC), and xApps/rApps for network optimization. As operators adopt software-defined approaches, value shifts from hardware appliances to software licenses and subscriptions. The ability to upgrade features over-the-air, deploy new services rapidly, and leverage cloud infrastructure economics drives software investment. Open RAN proliferation increases demand for multi-vendor software integration and testing services. As network intelligence moves to software layers enabling AI-driven optimization and self-healing capabilities, RAN software spending grows substantially faster than hardware components, delivering the highest CAGR within the component segment.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, driven by early and aggressive 5G deployment, strong capital spending by major operators, and the presence of leading RAN technology developers. The United States has led global 5G rollout in terms of investment scale, with operators rapidly deploying mid-band and millimeter wave infrastructure. Government initiatives to promote open RAN and diversify supply chains, including substantial funding programs, further stimulate market activity. The region's high mobile data consumption per user necessitates continuous network capacity upgrades. Strong enterprise demand for private 5G networks across manufacturing, logistics, and healthcare sectors adds additional RAN investment. With leading operators maintaining robust capital expenditure programs, North America sustains its market leadership throughout the forecast period.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, driven by massive mobile subscriber bases, aggressive 5G deployment across multiple countries, and ongoing 4G expansion in emerging markets. China's rapid 5G buildout represents the world's largest single RAN investment program, with hundreds of thousands of base stations deployed annually. India's expanding 4G coverage and early 5G rollouts add substantial volume, while Japan and South Korea maintain advanced network leadership. The region's high population density and rapid data traffic growth necessitate continuous network capacity upgrades. Government policies promoting telecommunications infrastructure development and domestic manufacturing further accelerate RAN investment. As Asia Pacific accounts for over half of global mobile connections, its combination of early adopter and emerging market dynamics delivers the highest growth rate.

Key players in the market

Some of the key players in Radio Access Network Market include Telefonaktiebolaget LM Ericsson, Nokia Corporation, Huawei Technologies Co., Ltd., Samsung Electronics Co., Ltd., ZTE Corporation, Fujitsu Limited, NEC Corporation, Mavenir Systems, Inc., Airspan Networks Holdings Inc., Cisco Systems, Inc., Juniper Networks, Inc., Radisys Corporation, Parallel Wireless, Inc., Comba Telecom Systems Holdings Ltd., Ceragon Networks Ltd., Viavi Solutions Inc., Keysight Technologies, Inc., and Ciena Corporation.

Key Developments:

In November 2025, Nokia, in a joint research effort with Rohde & Schwarz (R&S), successfully developed and tested an AI-powered 6G radio receiver prototype. The validation targeted the coverage limitations of high-frequency 6G spectrum bands by utilizing machine learning to expand uplink performance and allow easier reuse of existing 5G base station footprints.

In October 2025, Malaysia's national 5G network operator, Digital Nasional Berhad (DNB), achieved TM Forum Level 4 autonomy validation for its service assurance systems using Ericsson's intent-based AI operations platform. This deployment demonstrated autonomous network adjustments and predictive fault resolutions to ensure network quality during heavy traffic periods.

In October 2025, SoftBank signed a memorandum of understanding with Samsung Electronics to advance and introduce artificial intelligence-driven Radio Access Network

(AI-RAN) architectures. This partnership paved the way for flexible, multi-vendor commercial network deployments targeted for rollout starting in early 2026.

Architectures Covered:

Traditional RAN

Cloud RAN (C-RAN)

Virtualized RAN (vRAN)

Open RAN (O-RAN)

Components Covered:

Radio Units (RU)

Distributed Units (DU)

Centralized Units (CU)

RAN Intelligent Controllers (RIC)

RAN Software

Technologies Covered:

4G LTE RAN

5G RAN

Private RAN Networks

Frequency Bands Covered:

Low Band

Mid Band

High Band (mmWave)

End Users Covered:

Mobile Network Operators

Enterprises

Government & Defense

Industrial Campuses

Utilities

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

Radio Access Network Market Forecasts to 2034 – Global Analysis By Architecture (Traditional RAN, Cloud RAN (C...

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical

presence, and strategic alliances

Contents

1 EXECUTIVE SUMMARY

- 1.1 Market Snapshot and Key Highlights
- 1.2 Growth Drivers, Challenges, and Opportunities
- 1.3 Competitive Landscape Overview
- 1.4 Strategic Insights and Recommendations

2 RESEARCH FRAMEWORK

- 2.1 Study Objectives and Scope
- 2.2 Stakeholder Analysis
- 2.3 Research Assumptions and Limitations
- 2.4 Research Methodology
 - 2.4.1 Data Collection (Primary and Secondary)
 - 2.4.2 Data Modeling and Estimation Techniques
 - 2.4.3 Data Validation and Triangulation
 - 2.4.4 Analytical and Forecasting Approach

3 MARKET DYNAMICS AND TREND ANALYSIS

- 3.1 Market Definition and Structure
- 3.2 Key Market Drivers
- 3.3 Market Restraints and Challenges
- 3.4 Growth Opportunities and Investment Hotspots
- 3.5 Industry Threats and Risk Assessment
- 3.6 Technology and Innovation Landscape
- 3.7 Emerging and High-Growth Markets
- 3.8 Regulatory and Policy Environment
- 3.9 Impact of COVID-19 and Recovery Outlook

4 COMPETITIVE AND STRATEGIC ASSESSMENT

- 4.1 Porter's Five Forces Analysis
 - 4.1.1 Supplier Bargaining Power
 - 4.1.2 Buyer Bargaining Power
 - 4.1.3 Threat of Substitutes
 - 4.1.4 Threat of New Entrants

- 4.1.5 Competitive Rivalry
- 4.2 Market Share Analysis of Key Players
- 4.3 Product Benchmarking and Performance Comparison

5 GLOBAL RADIO ACCESS NETWORK MARKET, BY ARCHITECTURE

- 5.1 Traditional RAN
- 5.2 Cloud RAN (C-RAN)
- 5.3 Virtualized RAN (vRAN)
- 5.4 Open RAN (O-RAN)

6 GLOBAL RADIO ACCESS NETWORK MARKET, BY COMPONENT

- 6.1 Radio Units (RU)
- 6.2 Distributed Units (DU)
- 6.3 Centralized Units (CU)
- 6.4 RAN Intelligent Controllers (RIC)
- 6.5 RAN Software

7 GLOBAL RADIO ACCESS NETWORK MARKET, BY TECHNOLOGY

- 7.1 4G LTE RAN
- 7.2 5G RAN
- 7.3 Private RAN Networks

8 GLOBAL RADIO ACCESS NETWORK MARKET, BY FREQUENCY BAND

- 8.1 Low Band
- 8.2 Mid Band
- 8.3 High Band (mmWave)

9 GLOBAL RADIO ACCESS NETWORK MARKET, BY END USER

- 9.1 Mobile Network Operators
- 9.2 Enterprises
- 9.3 Government & Defense
- 9.4 Industrial Campuses
- 9.5 Utilities

10 GLOBAL RADIO ACCESS NETWORK MARKET, BY GEOGRAPHY

10.1 North America

10.1.1 United States

10.1.2 Canada

10.1.3 Mexico

10.2 Europe

10.2.1 United Kingdom

10.2.2 Germany

10.2.3 France

10.2.4 Italy

10.2.5 Spain

10.2.6 Netherlands

10.2.7 Belgium

10.2.8 Sweden

10.2.9 Switzerland

10.2.10 Poland

10.2.11 Rest of Europe

10.3 Asia Pacific

10.3.1 China

10.3.2 Japan

10.3.3 India

10.3.4 South Korea

10.3.5 Australia

10.3.6 Indonesia

10.3.7 Thailand

10.3.8 Malaysia

10.3.9 Singapore

10.3.10 Vietnam

10.3.11 Rest of Asia Pacific

10.4 South America

10.4.1 Brazil

10.4.2 Argentina

10.4.3 Colombia

10.4.4 Chile

10.4.5 Peru

10.4.6 Rest of South America

10.5 Rest of the World (RoW)

10.5.1 Middle East

- 10.5.1.1 Saudi Arabia
- 10.5.1.2 United Arab Emirates
- 10.5.1.3 Qatar
- 10.5.1.4 Israel
- 10.5.1.5 Rest of Middle East
- 10.5.2 Africa
 - 10.5.2.1 South Africa
 - 10.5.2.2 Egypt
 - 10.5.2.3 Morocco
 - 10.5.2.4 Rest of Africa

11 STRATEGIC MARKET INTELLIGENCE

- 11.1 Industry Value Network and Supply Chain Assessment
- 11.2 White-Space and Opportunity Mapping
- 11.3 Product Evolution and Market Life Cycle Analysis
- 11.4 Channel, Distributor, and Go-to-Market Assessment

12 INDUSTRY DEVELOPMENTS AND STRATEGIC INITIATIVES

- 12.1 Mergers and Acquisitions
- 12.2 Partnerships, Alliances, and Joint Ventures
- 12.3 New Product Launches and Certifications
- 12.4 Capacity Expansion and Investments
- 12.5 Other Strategic Initiatives

13 COMPANY PROFILES

- 13.1 Telefonaktiebolaget LM Ericsson
- 13.2 Nokia Corporation
- 13.3 Huawei Technologies Co., Ltd.
- 13.4 Samsung Electronics Co., Ltd.
- 13.5 ZTE Corporation
- 13.6 Fujitsu Limited
- 13.7 NEC Corporation
- 13.8 Mavenir Systems, Inc.
- 13.9 Airspan Networks Holdings Inc.
- 13.10 Cisco Systems, Inc.
- 13.11 Juniper Networks, Inc.

- 13.12 Radisys Corporation
- 13.13 Parallel Wireless, Inc.
- 13.14 Comba Telecom Systems Holdings Ltd.
- 13.15 Ceragon Networks Ltd.
- 13.16 Viavi Solutions Inc.
- 13.17 Keysight Technologies, Inc.
- 13.18 Ciena Corporation

List Of Tables

LIST OF TABLES

Table 1 Global Radio Access Network Market Outlook, By Region (2023–2034) (\$MN)
Table 2 Global Radio Access Network Market Outlook, By Architecture (2023–2034) (\$MN)
Table 3 Global Radio Access Network Market Outlook, By Traditional RAN (2023–2034) (\$MN)
Table 4 Global Radio Access Network Market Outlook, By Cloud RAN (C-RAN) (2023–2034) (\$MN)
Table 5 Global Radio Access Network Market Outlook, By Virtualized RAN (vRAN) (2023–2034) (\$MN)
Table 6 Global Radio Access Network Market Outlook, By Open RAN (O-RAN) (2023–2034) (\$MN)
Table 7 Global Radio Access Network Market Outlook, By Component (2023–2034) (\$MN)
Table 8 Global Radio Access Network Market Outlook, By Radio Units (RU) (2023–2034) (\$MN)
Table 9 Global Radio Access Network Market Outlook, By Distributed Units (DU) (2023–2034) (\$MN)
Table 10 Global Radio Access Network Market Outlook, By Centralized Units (CU) (2023–2034) (\$MN)
Table 11 Global Radio Access Network Market Outlook, By RAN Intelligent Controllers (RIC) (2023–2034) (\$MN)
Table 12 Global Radio Access Network Market Outlook, By RAN Software (2023–2034) (\$MN)
Table 13 Global Radio Access Network Market Outlook, By Technology (2023–2034) (\$MN)
Table 14 Global Radio Access Network Market Outlook, By 4G LTE RAN (2023–2034) (\$MN)
Table 15 Global Radio Access Network Market Outlook, By 5G RAN (2023–2034) (\$MN)
Table 16 Global Radio Access Network Market Outlook, By Private RAN Networks (2023–2034) (\$MN)
Table 17 Global Radio Access Network Market Outlook, By Frequency Band (2023–2034) (\$MN)
Table 18 Global Radio Access Network Market Outlook, By Low Band (2023–2034) (\$MN)

Table 19 Global Radio Access Network Market Outlook, By Mid Band (2023–2034)
(\$MN)

Table 20 Global Radio Access Network Market Outlook, By High Band (mmWave)
(2023–2034) (\$MN)

Table 21 Global Radio Access Network Market Outlook, By End User (2023–2034)
(\$MN)

Table 22 Global Radio Access Network Market Outlook, By Mobile Network Operators
(2023–2034) (\$MN)

Table 23 Global Radio Access Network Market Outlook, By Enterprises (2023–2034)
(\$MN)

Table 24 Global Radio Access Network Market Outlook, By Government & Defense
(2023–2034) (\$MN)

Table 25 Global Radio Access Network Market Outlook, By Industrial Campuses
(2023–2034) (\$MN)

Table 26 Global Radio Access Network Market Outlook, By Utilities (2023–2034) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Rest of the World
(RoW) Regions are also represented in the same manner as above.

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