Enabling Technologies: Networking and Communications Infrastructure

IDC's *Enabling Technologies: Networking and Communications Infrastructure* analyzes the semiconductors and other technologies enabling major architectural shifts in networking and communications infrastructure systems. These technologies include Ethernet switches, smart NICs, communications processors, software-defined networking (SDN), artificial intelligence, and network functions virtualization (NFV) in public/private cloud, telecommunications service provider, and enterprise IT infrastructure. Analysis covers the strategies of the technology vendors as they enable 5G, wired and wireless edge infrastructure, and telco cloud transformation.

MARKETS AND SUBJECTS ANALYZED

- Ethernet switch silicon serving OEM and ODM switch and router vendors and the associated trends such as 25/50Gbps Ethernet switch silicon for top-of-rack switching, P4 programmable switch silicon, and ASIC versus merchant switch silicon approaches
- Communications processor technologies, markets, and vendors that serve the demand for network virtualization and virtualized network functions (VNFs), data plane processing, and control plane processing functions
- Smart NICs or intelligent NICs (iNICs) for packet processing and offloading the host CPU that are applicable in public/private cloud datacenters and NFV applications of telecommunications service providers
- Silicon developments and semiconductor vendor product road maps that are being influenced by carrier (service provider) strategies and 5G standards (3GPP), telco cloud transformation and their contribution to open source frameworks and projects such as the Linux Foundation projects (OPNFV, ONOS, MEC, CNCF, etc.), and the Open Compute Project's (OCP's) Telecom Infra Project (TIP)
- Other networking and communications semiconductor and enabling technologies, markets, and vendors addressing the needs of OEMs and ODMs serving enterprise, cloud, and telco/carrier markets
- Major market forces and trends that drive and influence semiconductor and enabling technologies development for networking and communications use cases, including SDN and NFV

CORE RESEARCH

- Worldwide Market Analysis Perspective: Networking and Communication Infrastructure Semiconductors
- Multi-access Edge Computing (MEC) in 5G Wireless Infrastructure
- Worldwide Network Communications Processor Market Shares, 2020
- Worldwide 5G Macrocell Base Transceiver Station Semiconductor Forecast, 2021–2025
- Worldwide Embedded and Intelligent Systems Forecast, 2021–2025
- Network Infrastructure Processing Semiconductors: Communication Processor, ASSP, and FPGA

In addition to the insight provided in this service, IDC may conduct research on specific topics or emerging market segments via research offerings that require additional IDC funding and client investment. To learn more about the analysts and published research, please visit: Enabling Technologies: Networking and Communications Infrastructure.

KEY QUESTIONS ANSWERED

1. How is adoption of software-defined networking and network functions virtualization impacting the development of semiconductors and enabling technologies?
2. How should the ongoing evolution in network infrastructure be viewed by semiconductor vendors?
3. How are open source technology developments, frameworks, and projects impacting the semiconductor market?
4. How will semiconductor vendors need to respond to the need for SDN and NFV in 5G networks?
5. How relevant are smart NICs in the emerging communications infrastructure? Will vendors of smart NICs benefit from increased demand from public cloud and ecommerce markets?

COMPANIES ANALYZED

This service reviews the strategies, market positioning, and future direction of several providers in the networking and communications infrastructure semiconductor market, including:

Advanced Micro Devices, Amazon Web Services, Arm, AT&T, Broadcom, Cisco, Google, Intel, Marvell, Meta Platforms, Microsoft, NXP, NVIDIA, Qualcomm, VMware, Verizon, and Xilinx.