

An aerial, high-angle photograph of a massive rail yard. The yard is filled with hundreds of freight trains, each composed of multiple colorful railcars in shades of blue, red, yellow, and white. The tracks are densely packed and run in various directions, creating a complex grid of lines. In the upper right corner, there is a small area with green trees and some industrial structures. The overall scene is one of intense industrial activity and scale.

SAMSUNG

Maximize Network Flexibility through Open and Centralized Network Management

Powered by Samsung's SDN

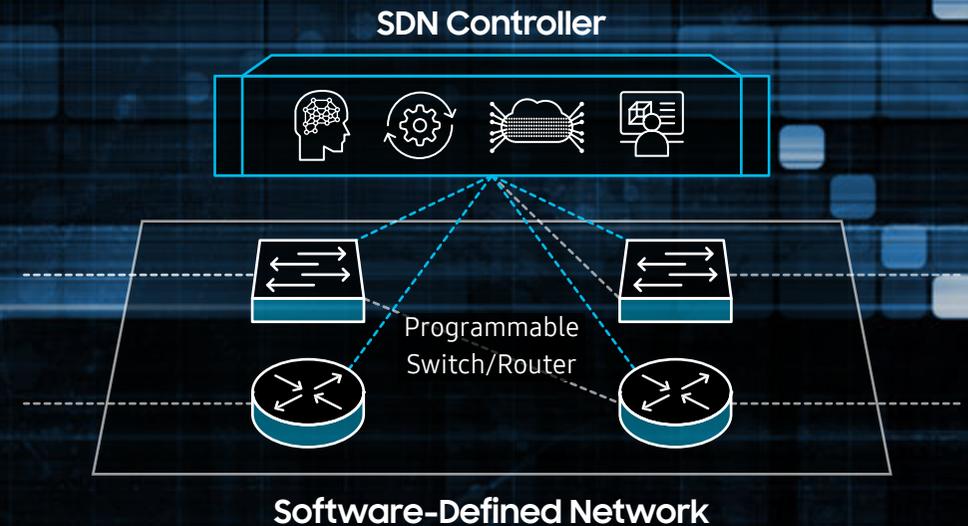
Extend Network Boundaries with Software-Defined Networking

SDN

- Control plane is data plane decoupling for centralized architecture
- Open platform based programmability
- Network automation and optimization
- Sustainable network customization for new services

Traditional telecom networks have run on hardware-centric switches and routers, which have been unable to keep up with the demands from current wireless networks. Software-defined networking (SDN) has been developed to help with the new requirements and simplify network operations.

SDN is a software-based solution running on commercial off-the-shelf (COTS) hardware platforms. It is free from vendor lock-in as it uses standardized interfaces and open platforms. SDN integrates easily with third-party hardware and decouples the network functionality from the hardware performing the operation, simplifying network management and maintenance. SDN enables software-based optimization, allowing the network to be programmed remotely according to service scenarios. A centralized SDN enables automation and agility; it optimizes networks; gives operators the flexibility to customize network services to meet customer needs; and provides operators the ability to introduce new services swiftly.

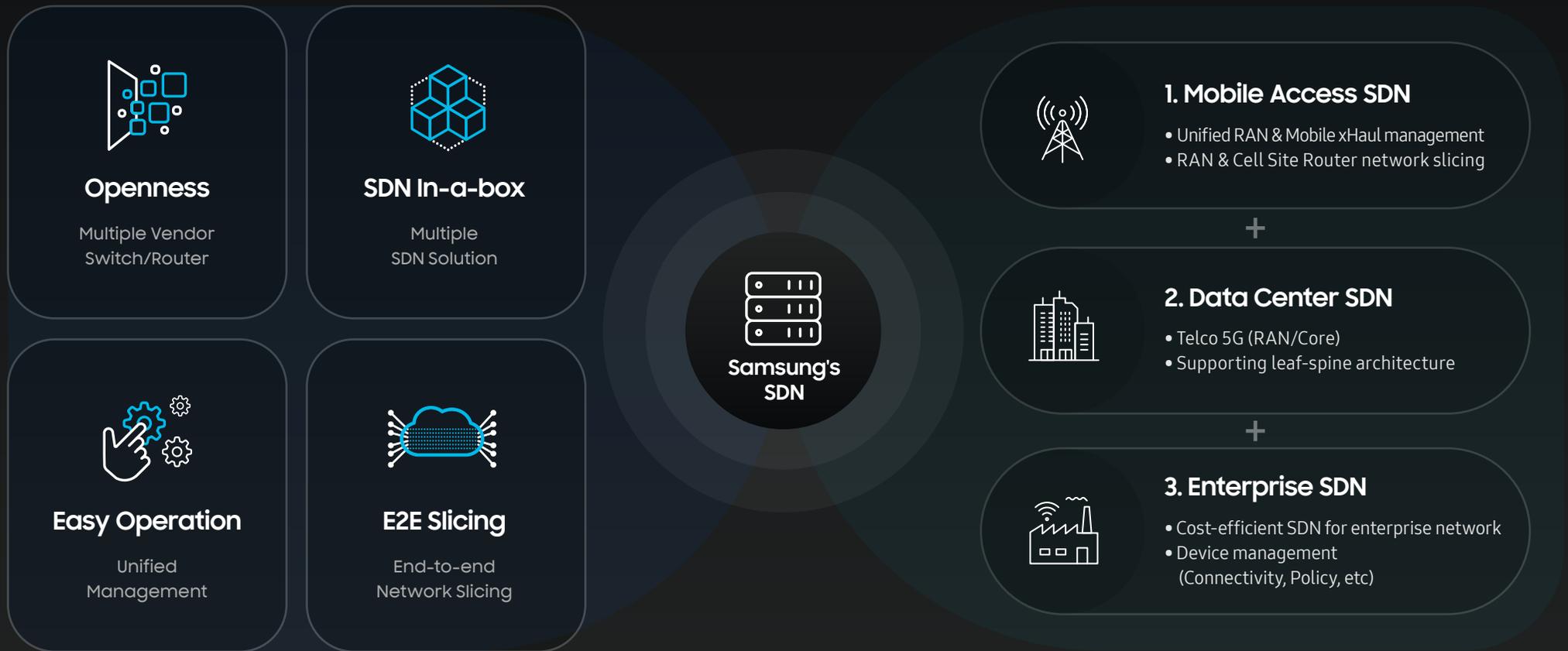


Samsung's SDN at a Glance

Samsung's SDN supports the standardized open interface to control and manage switches and routers of multiple vendors with a SDN in-a-box approach. By offering various management functions and an award-winning, 3D-based, user-friendly experience, Samsung's SDN helps operators easily manage their networks. It also enables end-to-end network slicing, a key 5G SA architecture technology from Samsung's mobile network solutions.

Samsung's SDN consists of three solutions and acts as an all-in-one SDN for diverse scenarios:

- Mobile Access
- Data Center
- Enterprise



1

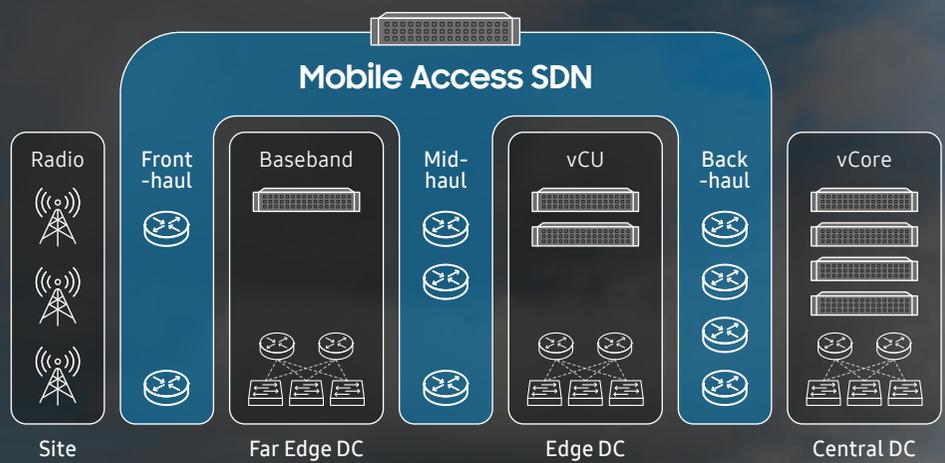
Samsung's SDN Solutions:

Unified Network Management with Mobile Access SDN

Mobile access SDN covers network equipment installed as fronthaul, midhaul, and backhaul – collectively known as xHaul. It primarily consists of the administration and management of virtual defined networks that are a part of the fronthaul gateway and cell site routers.

Samsung's SDN provides root cause analysis easily and quickly through unified management and with Mobile Access SDN, the Radio Access Network (RAN) is optimized with the Network Slice Subnet Management Function (NSSMF), a network slice of the RAN domain.

Mobile Access SDN also provides segment routing per slice and contributes to help the operator reduce OPEX through plug and play functions and fast fault detection for troubleshooting.



2

Samsung's SDN Solutions:

Modernization and Network Flexibility with Data Center SDN

Virtualized SDN



Cost-effective



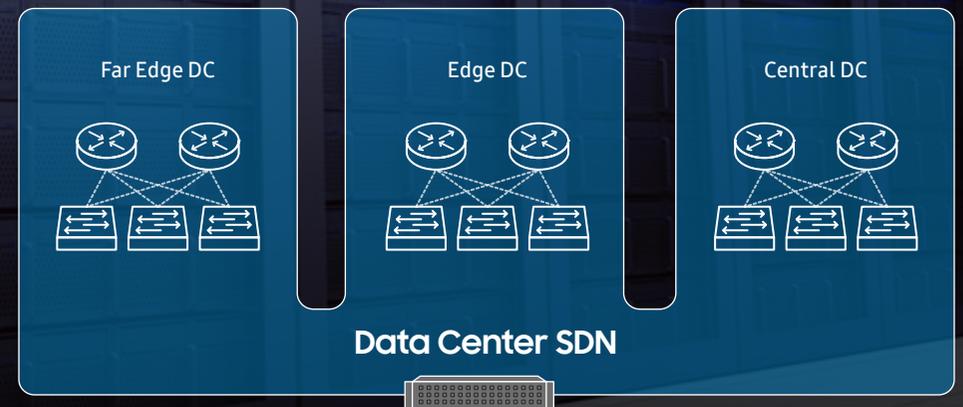
Openness



Various servers and equipment are installed in a data center, essentially deploying multiple switches and routers. However, a traditional data center doesn't provide network flexibility and operational efficiency. Data Center SDN is Samsung's solution to modernize the data center with virtualization technology and efficient management of the resources.

Samsung's SDN is based on the Open Network Operating System (ONOS) and supports various virtualization technologies such as OpenStack, OVS, and DPDK. In addition, it can centralize both virtual networks (the overlay) and physical networks (the underlay), providing practical solutions.

Standardized control interfaces of Samsung's SDN such as OpenFlow and MP-BGP help operators adapt switches and routers from multiple vendors promoting interoperability.



3

Samsung's SDN Solutions:

Easy and Efficient Operations with Enterprise SDN

Enterprise SDN covers the enterprise's network infrastructure, including wireline and private 5G networks. It provides efficient operability by offering visibility from aggregation and edge networks.

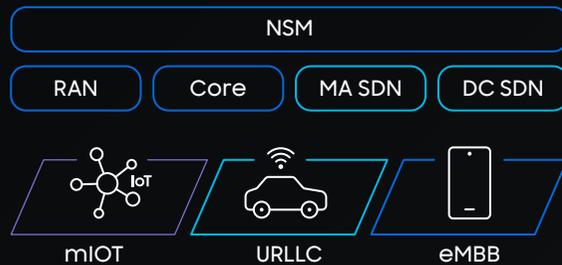
SDN can manage authentication of Wi-Fi Access Points (APs) and devices so unregistered devices cannot access the enterprise network without authentication.

The Enterprise SDN allows for an easy evolution to a private 5G network with Samsung's RAN and Core offerings. With a private 5G network, an operator or enterprise can take advantage of end-to-end network slicing to separate resources and traffic between branch offices, according to service scenarios.



Expanding Converged Solutions with Samsung's Network Portfolio

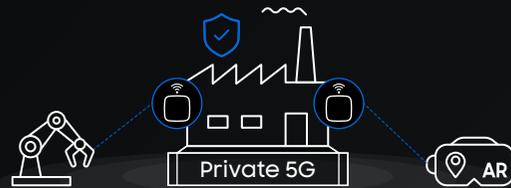
E2E Network Slicing with SDN



Mobile Access SDN (FHG,CSR) & Data Center SDN (Leaf/Spine switch)

- + Network Slice Manager
- + Mobile Network (RAN/Core)

Private 5G with SDN

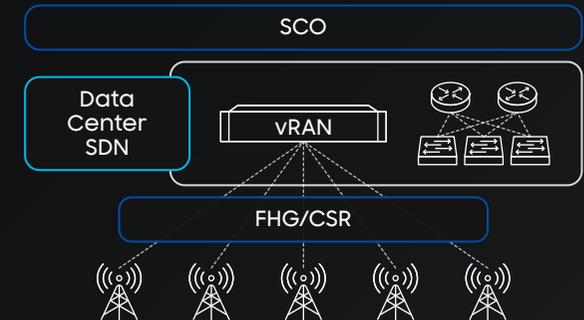


Enterprise SDN

Enterprise SDN

- (Enterprise switch, Device, WiFi AP)
- + Private 5G Solution (RAN/Core/Application)

vRAN with SDN



Mobile Access SDN (FHG,CSR) & Data Center SDN (Leaf/Spine switch)

- + Virtualized RAN
- + Samsung's Cloud Orchestrator

Samsung's SDN provides a converged solution with the network slice management, private 5G, and vRAN.

Samsung's SDN provides end-to-end network slicing with 5G RAN, Core, and network slice manager. This slicing helps telecom and enterprises to create and differentiate services such as enhanced Mobile Broadband (eMBB), Ultra-Reliable Low Latency Communications (URLLC), and massive Internet of Things (mIoT) - allowing operators to reach new markets while monetizing new services.

Enterprise SDN provides fully converged 5G solutions by unifying wireline networks of enterprises and 5G wireless networks.

Samsung's vRAN market-leading solution, Samsung's Cloud Orchestrator and Samsung's SDN solution enables operators to maximize operational efficiencies, see OPEX reductions, and have a fully converged network automation solution.

Networks are becoming more agile with SDN technology in the 5G era. Samsung is proud to contribute to this network evolution by offering a full lineup of SDN solutions, including controllers, orchestrators, switches, and routers, and bringing additional operational flexibility to 5G network management.

Samsung is expanding its portfolio of SDN solutions with new capabilities designed to help mobile operators and enterprises manage networks more efficiently.

Samsung's SDN will help operators and enterprises rapidly introduce new 5G applications, services, and solutions, **enabling faster time to market.**

Press release:



· Samsung Expands Its Lineup of SDN Solutions

<https://www.samsung.com/global/business/networks/insights/press-release/0721-samsung-expands-its-lineup-of-sdn-solutions/>

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Samsung inspires the world and shapes the future with transformative ideas and technologies. The company is redefining the worlds of TVs, smartphones, wearable devices, tablets, digital appliances, network systems, and memory, system LSI, foundry and LED solutions.

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