Capgemini engineering

Data Center Network Operating System

Upgrade for Reliable and High-performance

Introduction

The new data center network operating system

Digital content, edge computing, Internet of Things (IoT), expanding 5G broadband access and the ever-growing volume of data are driving double-digit growth in the data center market. To cope, data centers are upgrading their networks, increasing port speeds, and building capacity and complexity.

However, traditional business models no longer deliver a satisfactory return on investment. The shortened lifetime of equipment means the product development cycle for network upgrades is compressed, and the window has narrowed to recover investments viably.

The new network architecture requires a new business model built on disaggregated, open infrastructure that increases agility, choice, efficiency, and innovation. The open compute project (OCP) is at the forefront of addressing these needs with open-hardware platform specifications. In step with the OCP, the Capgemini Engineering Data Center Network Operating System (DC NOS) is reliable, interoperable, and easy-to-use software that enables operators to leverage open-hardware platforms and create agile, scalable data centers while reducing Capex and Opex.

The Capgemini Engineering DC NOS

Our DC NOS is rich and mature enough to address the demanding requirements of agile, highly scalable data center networks. Key features include:

- OpenFlow
- Ethernet switching
- Data center bridging
- Data center interconnect
- IPv4 and IPv6 routing
- Multiprotocol label switching (MPLS)
- Segment routing
- Connectivity monitoring
- System monitoring
- Quality of service
- Security
- Redundancy
- High-availability capabilities

Innovators can create products for different deployments by enabling only the appropriate feature set. Alternatively, you can choose from a wide variety of hardware form factors ranging from single-board pizza-box devices to advanced multi-card systems built around a single flexible software base. The framework is available and integrated on white-box hardware platforms from industry-leading original design manufacturers, including:

Celestica
Questone2 (D3030)
Seastone2 (DX030)
Haliburton (E1031)
Silverstone (DX400)

Delta Networks
AG9032V2[1]
AGV848V1[2]
AG7648V2[3]

EdgeCore Networks
AS7712-32X[4]
AS7726-32X
AS7326-56X
AS5835-54T
AS5835-54X

Inventec
D7032Q28B[5]

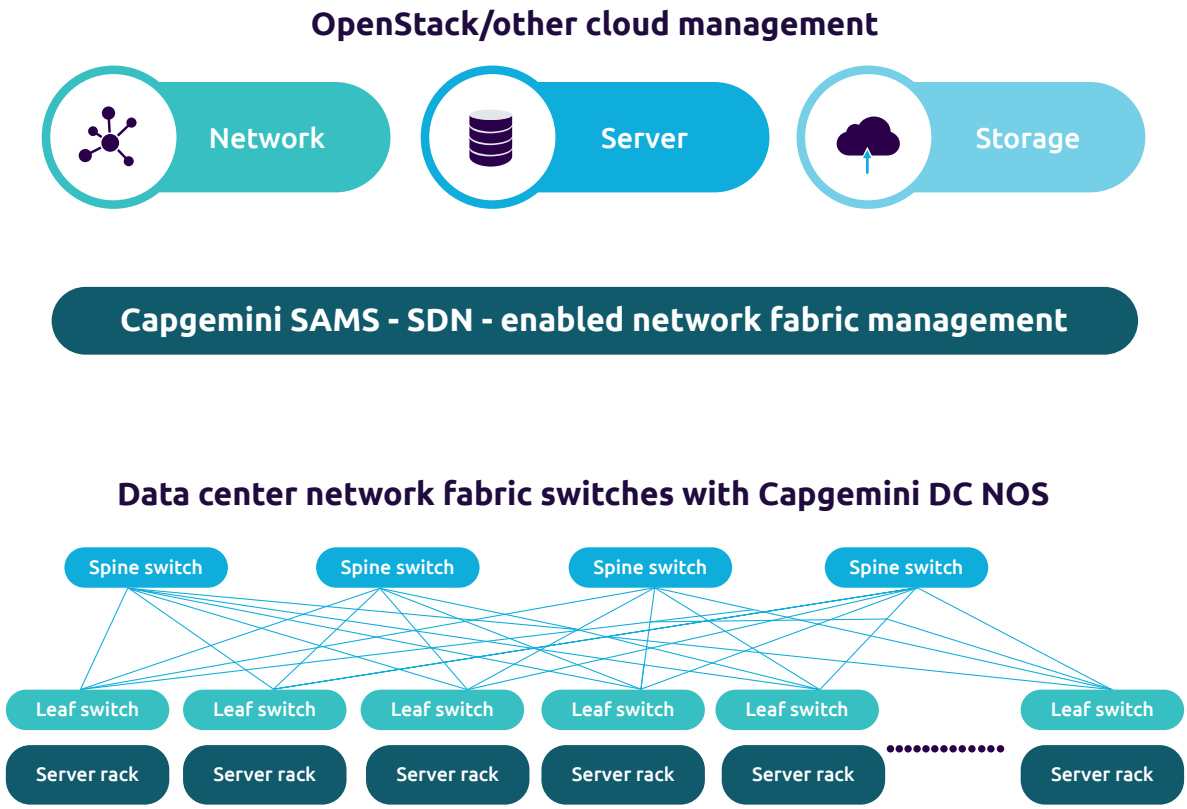
Using the software on the white-box platforms, you can accelerate time-to-market and improve return on investment. The disaggregated architecture allows the software to be integrated on other ASIC- and FPGA-based platforms. Network equipment providers and original equipment manufacturers can choose custom designs or the white-box hardware solution. These options ensure product design is optimized for deployment and can evolve with reduced cost overheads. Management support is available through traditional CLI/SNMP schemes as well as modern Netconf/Yang/OpenFlow models.

[1] webpage, Data Center AG9032V2, Delta Products Corp https://agema.deltaww.com/product-info.php?id=70
[2]webpage, Data Center AG848V1, Delta Products Corp https://agema.deltaww.com/product-info.php?id=76
[3]webpage, Data Center AG7648V2, Delta Products Corp https://agema.deltaww.com/product-info.php?id=80
[4]webpage, AS7712-32X 100GBE Data Center Switch, Edgecore https://www.edge-core.com/ productsInfo.php?cls=1&cls2=&cls3=15&id=1
[5]webpage, D7032Q28B, Inventec http://productline.inventec.com/switch/D7032Q28B.aspx

Solution for Agility and Scalability

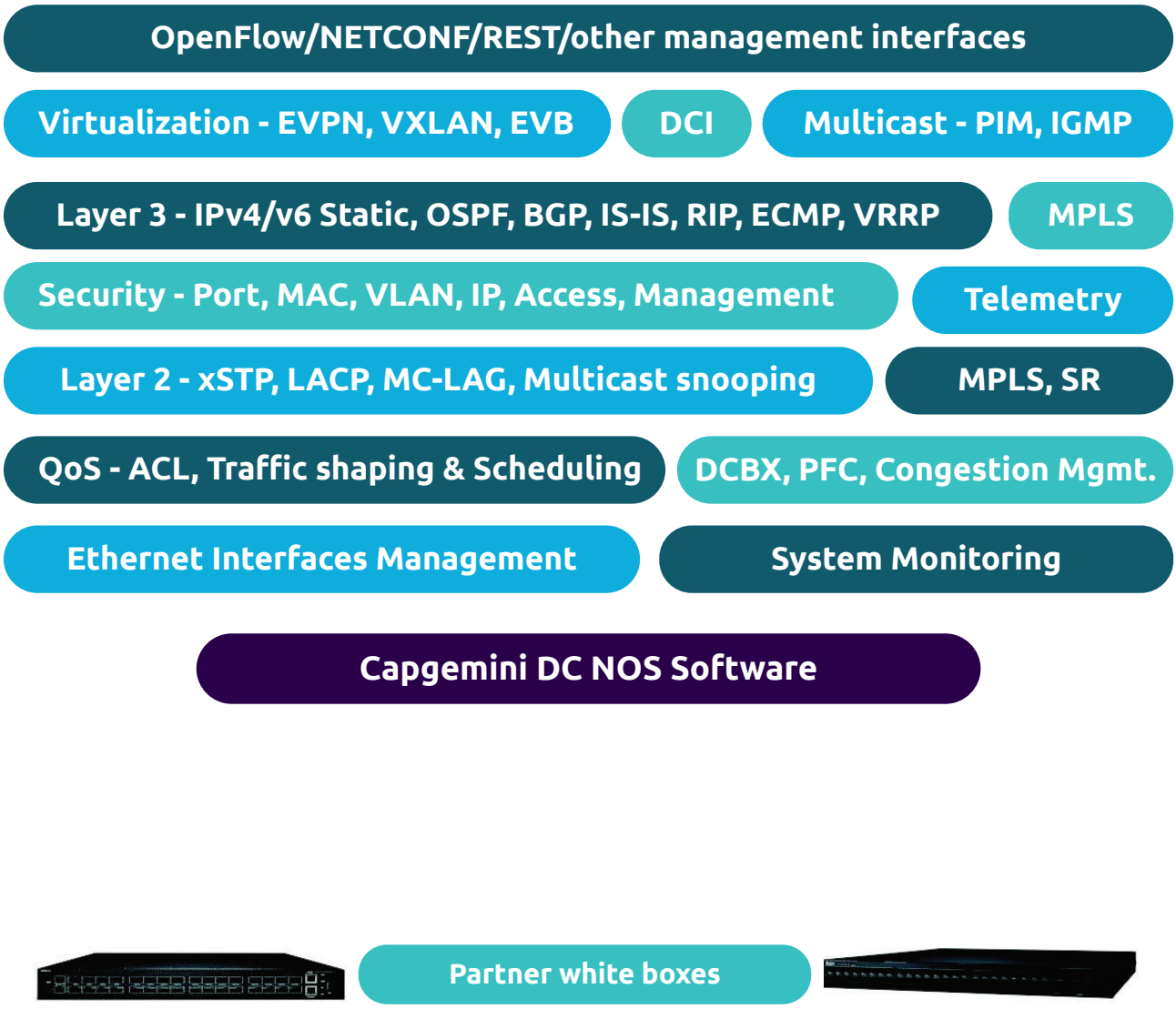
The Capgemini Engineering DC NOS software – together with the right hardware platforms – can significantly reduce the cost, time and number of R&D cycles required to assemble and introduce top-of-rack (ToR) leaf and spine switches within budget. Complemented by the Capgemini Engineering SDvAS access management solution (SAMS), our DC NOS enables SDN enabled network management and control to deliver a high level of automation and optimized operations. What's more, the Capgemini Engineering DC NOS has a modular architecture, so features can be phased in. (See Figures 1 and 2.)

Figure 1. The Capgemini Engineering DC NOS Architecture



Source: Capgemini

Figure 2. The software features of the Capgemini Engineering DC NOS



Why Capgemini Engineering?

The Capgemini DC NOS leverages the new business model of open infrastructure to improve agility and efficiency, lower costs, and optimize operations. The benefits of engaging with Capgemini include:

- Software frameworks proven in networks around the world
- Modular, extensible architecture for optimal deployments
- Elegant, flexible architecture for easy maintenance and seamless evolution
- Robust quality software and documentation that reduce product development and testing cycles
- Our SDN-enabled network management and control system delivers more deployment benefits
- World-class professional services that deliver complex products and demanding results.

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Capgemini Engineering combines, under one brand, a unique set of strengths from across the Capgemini Group: the world leading engineering and R&D services of Altran - acquired by Capgemini in 2020 - and Capgemini's digital manufacturing expertise. With broad industry knowledge and cutting edge technologies in digital and software, Capgemini Engineering supports the convergence of the physical and digital worlds. It helps its clients unleash the potential of R&D, a key component of accelerating their journey towards Intelligent Industry. Capgemini Engineering has more than 52,000 engineer and scientist team members in over 30 countries across sectors including aeronautics, space and defense, automotive, railway, communications, energy, life sciences, semiconductors, software & internet and consumer products.

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About Capgemini

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