Capgemini engineering

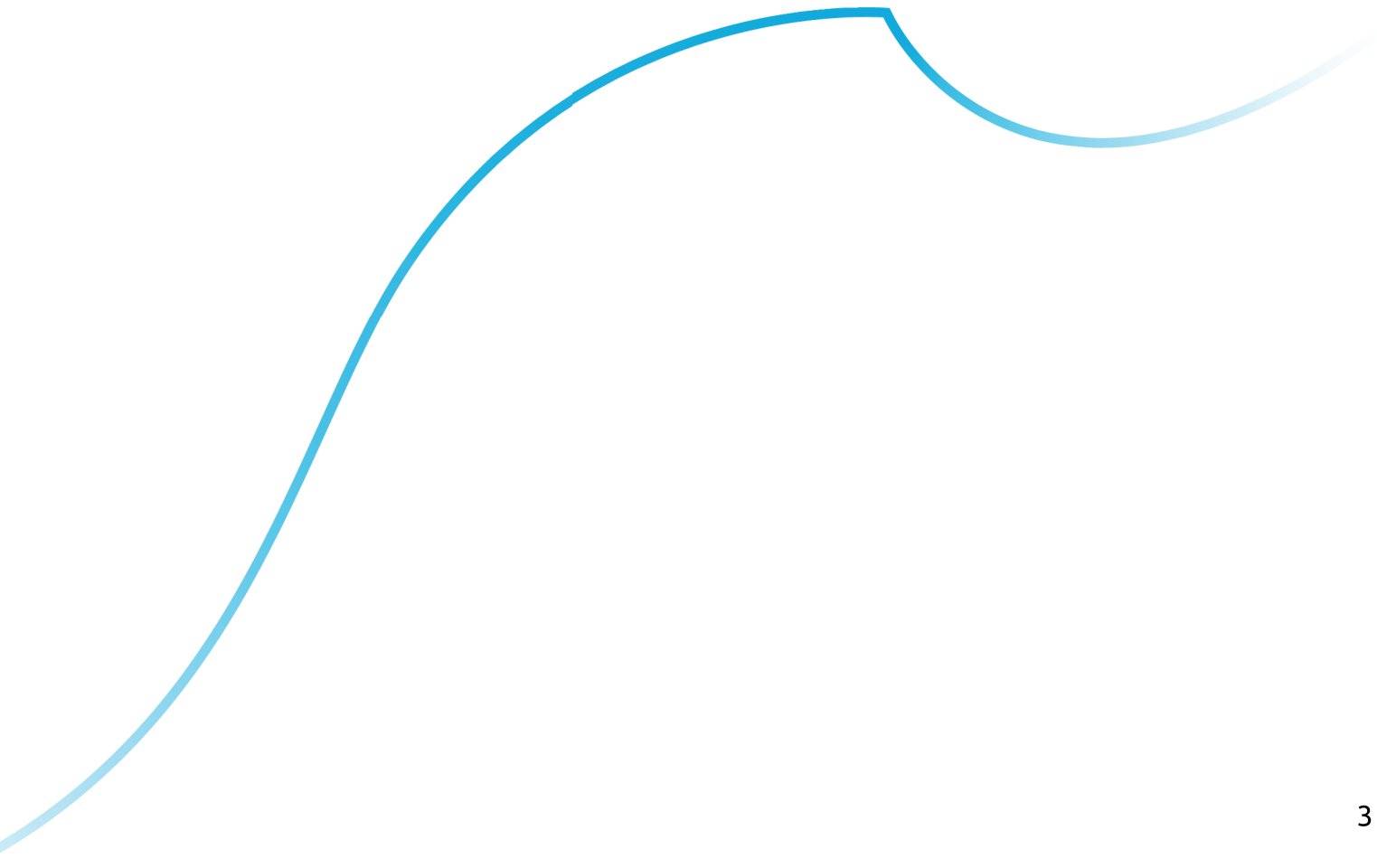
MOBILE FRONTHAUL SWITCHING SOFTWARE FRAMEWORK

Overview

5G technology is driving growth in the mobile fronthaul network with the need to massively increase the number of radios, number of connected clients, and the average bandwidth per client. Ethernet is the choice across the operator community to drive down the cost of the mobile fronthaul network. However, Ethernet natively cannot meet the stringent timing and latency guarantee requirements of the fronthaul network. This is solved by a series of extensions to Ethernet covered under the banner of Time-Sensitive Networking (TSN). The technology can be complicated, the time window to deliver products is short, and the time to recover the investment in network upgrades is shrinking. OEMs and NEPs are challenged to get up-to-date with technology and build products within the short time windows and shrinking budgets available.

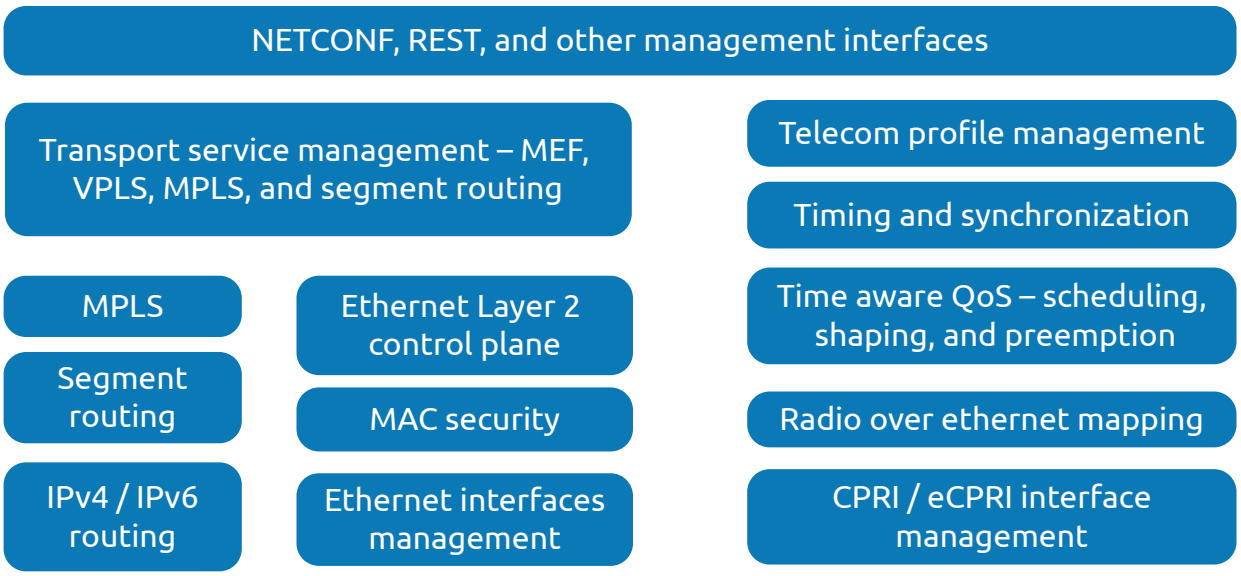
Representative expertise: the Capgemini Engineering software framework

Capgemini Engineering's long experience with Ethernet, IP, and mobile networking, in addition to the time spent in understanding fronthaul network evolution and the development of TSN extensions to Ethernet, has been channeled into building the software framework by addressing all the standard aspects and the possible choices for different network deployments. Leveraging a partner ecosystem nurtured over the years, Capgemini Engineering provides the software framework integrated on the appropriate hardware platforms so that the NEP/OEM R&D cycles are significantly reduced for hardware and software. This significantly reduces the cost and time required to build fronthaul switching equipment and introduce them into the market quickly, within optimal budgets. Further, clients can leverage Capgemini Engineering's extensive experience of several decades in the industry to significantly reduce the staff skilling requirements associated with building and introducing new networking products.

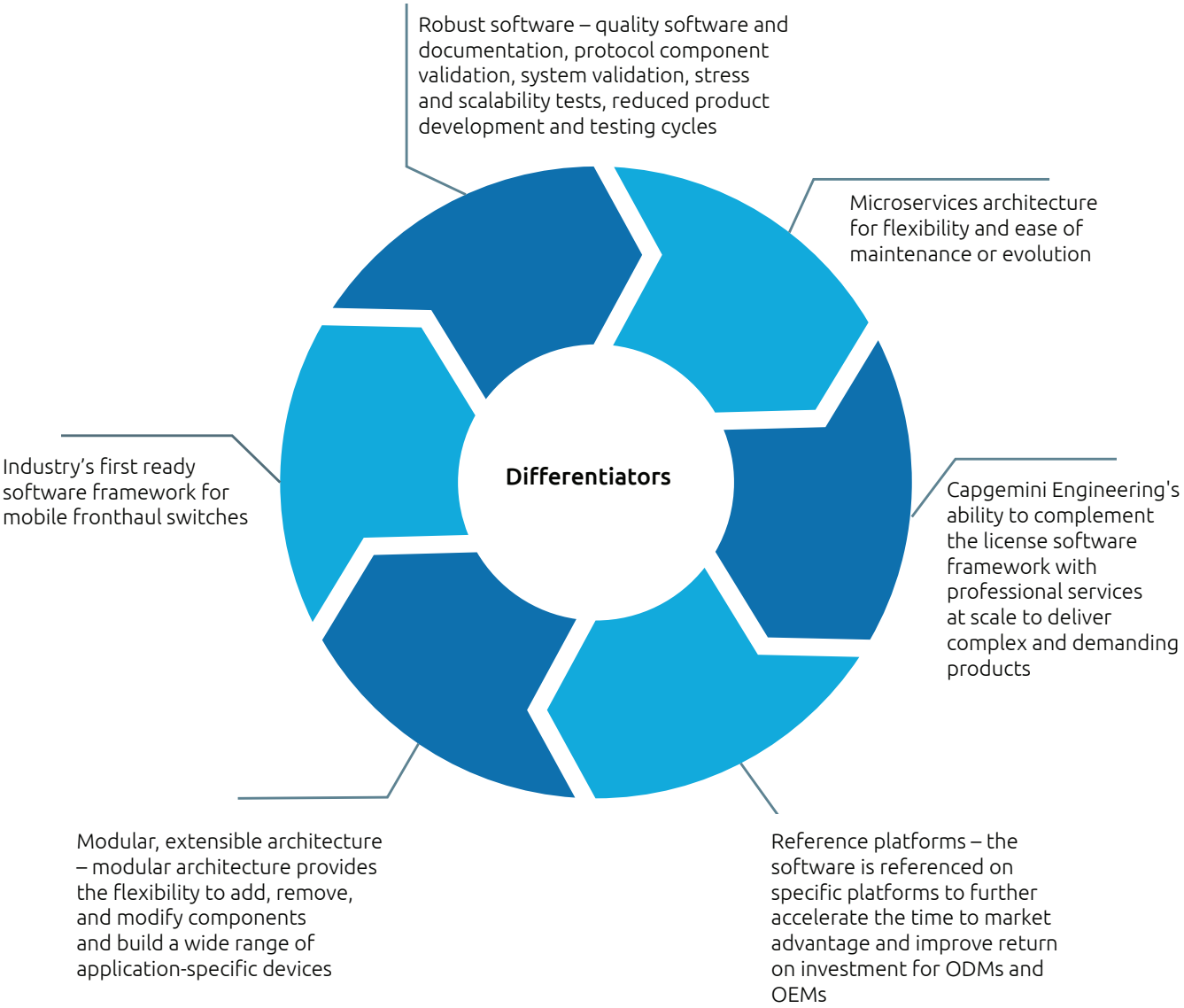


Capgemini Engineering's mobile fronthaul switching software framework

Capgemini Engineering's mobile fronthaul switching software framework is the industry's first independent software framework for mobile fronthaul switches. The framework provides support for CPRI, eCPRI, and Ethernet interfaces to allow CPRI and eCPRI frames to be encapsulated in Ethernet frames for transport over a switched Ethernet network. The software implements TSN technology to meet the stringent demands to carry signals between radio heads and baseband units. Fronthaul networks can thus be engineered to carry diverse real-time and non-real-time applications over the same shared Ethernet network. Switch designers can build switches over a variety of form factors. Manufacturers can build simple devices that provide radio encapsulation over Ethernet along with the necessary quality of service, timing, and synchronization support, using the software. At the other extreme, manufacturers can build complex switches that combine radio encapsulation, quality of service, timing, and synchronization support, with the most advanced Layer 2 or Layer 3 transport technology choices including segment routing and MPLS based virtual circuits. The framework will be available integrated on industry-leading hardware platforms, including Broadcom's Monterey Radio Over Ethernet switching device and other ASICs or FPGAs. NEPs and OEMs have a choice of using reference designs to base their hardware design on or to choose a whitebox hardware solution from Capgemini Engineering's partners since the software is available on both reference designs and whitebox models. Management support is available through traditional CLI and SNMP schemes as well as modern NETCONF and YANG models. The framework's microservices architecture allows customers to pick and choose the most appropriate software components across multiple vendor choices. It also opens source components and allows a variety of deployment choices including processes, VMs, and VNFs.



Why Capgemini Engineering?



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About Capgemini Engineering

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. We help 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, and internet and consumer products.

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