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OPEN NETWORKS WILL REQUIRE TIGHTER OSS VERTICAL INTEGRATION

by Dimitris Mavrakis

THE INEVITABLE MARCH OF OPEN NETWORKS AND VRAN

The 5G industry is now experiencing an evolutionary phase, one in which custom silicon and proprietary architectures will ultimately be replaced with open, flexible, and modular architectures. Open Radio Access Network (RAN) is an example of this, where proprietary interfaces and equipment are replaced with open interfaces and interoperable network elements that lead to truly multi-vendor networks. Virtualized RAN (vRAN) is another more important trend, where traditional cellular infrastructure is split into a Centralized Unit (CU), a Distributed Unit (DU), and a Radio Unit (RU). The first two can be powered by common processors. Even incumbent infrastructure vendors Ericsson and Nokia are now starting to discuss openness and commoditized processing in their infrastructure, highlighting that, in the future, processing will neither be a barrier nor a unique selling point for any vendor.

This translates to an open supply chain, where the barrier of entry for new vendors is significantly lower. This will also translate to a higher number of vendors in any future 5G network deployment, which will complicate network deployments if current maintenance and deployment tools are used. At the same time, future cellular networks will be powered by a mix of private and public cloud computing platforms, meaning that software management tools are needed to operate across these two domains for multiple vendors, potentially bridging this new domain with the legacy network operating through physical network elements.

ORCHESTRATION, SMO, AND OSS

The multi-vendor nature and cloudification of these new networks will require tighter integration and more sophisticated management systems that can automate services and resources across multiple domains, technologies, and platforms. Network orchestration has progressed from Network Functions Virtualization (NFV) environments to include Cloud-native Network Functions (CNFs) and Multi-access Edge Computing (MEC) applications. Service Management and Orchestration (SMO) is the new operational framework, incorporating modern OSSs and Artificial Intelligence (AI)/analytics that tie together the complex layers of platforms and software with open Application Programming Interfaces (APIs) for deploying and managing disaggregated RANs. SMO is responsible for automating all aspects of the cellular network from planning and design to deployment, optimization, and assurance.

While these systems must be open and cloud-native, the tight integration between all components is necessary to achieve closed-loop automation and a greater level of autonomy in cellular networks. The ongoing evolution of devices, services, network infrastructure, and the multi-vendor future of these networks necessitates comprehensive platforms and modern OSS software.

INDEPENDENT, MULTI-VENDOR OSS VENDORS WILL DRIVE EVOLUTION

ABI Research expects that full-stack and platform vendor-agnostic companies will likely dominate in the next years, as networks progress to become open. Vertical integration will likely be necessary, where SMO, the NFV Orchestrator (NFVO), and the Radio Intelligent Controller (RIC) will need to be tightly integrated to fully automate networks. Full-stack vendors like Netcracker stand to play a key role gluing together these heterogeneous, multi-vendor future networks, and their expertise in OSS will likely be a unique selling point that progresses top-down from OSS, to network orchestration, to SMO and RIC. Platform vendors like VMware stand to benefit from the transition to cloud-native networks running between private and public deployments, because their expertise lies in creating and maintaining the platforms that network operators will need to enable next-generation networks and services.

The success of open, multi-vendor networks will likely depend on these key vendors that have adapted their product offerings to match these requirements. These product offerings are now becoming completely digital, automated, and vendor agnostic, and even offer digital twin capabilities to model the telco network without affecting its real-world operation.