CORD and VCO: Paths to the Next Generation Central Office

EXECUTIVE SUMMARY

Operators face intensifying competition from webscale over-the-top (OTT) companies that threaten operators' sustainability. At the same time, data demands from new technologies and services, including the Internet of Things (IoT), artificial intelligence (AI), high-definition (HD) video, and augmented reality (AR)/virtual reality (VR), promise to explode, straining their own limited network resources.

Part of the answer to making operators' costs and agility more competitive with OTTs is virtualization of network hardware into software. A particularly crucial location for this will be the central office (CO), usually composed of hundreds of separate and proprietary purpose-built boxes that are costly to maintain, hard to manage, and collectively non-programmable.

The emerging next-generation central office (NGCO) concept combines the strengths of network function virtualization (NFV), software-defined networking (SDN), and the cloud to virtualize these boxes into software running on commodity equipment for reduced cost and radically increased flexibility. The NGCO recreates the CO in a new and efficient digital form, more like a data center, helping operators save money, flexibly introduce and modify services, and compete more effectively in the digital age.

The first well-known open-source NGCO model was Central Office Re-Architected as a Data Center (CORD). promoted by the Open Networking Foundation (ONF), which proposed a defined set of open-source software and commodity hardware and a recipe for integrating them. This was analyzed in a 2017 Heavy Reading report, CORD and the Future of CSP Automation. More recently, the Open Platform for NFV (OPNFV), another open-source organization, launched an alternative model called Virtual Central Office (VCO).

A majority of major carriers worldwide have implemented some version of NGCO architecture, often without public notice in a handful of COs and sometimes more – whether using CORD or VCO models or, more commonly, an amalgamation of them and other elements. They have modified these models in line with operators' existing internal systems and technology preferences, mixing and matching what works best with their own network management, business/operation support systems (B/OSS), and technology predilections. Currently, only a relative handful of COs are NGCOs, but Heavy Reading projects that NGCOs will serve close to half of all U.S.-based end-customers by sometime in 2022.

VCO has not displaced CORD as the leading NGCO model. The two are not so different, and the operator end-result is likely to be something that resembles both but follows neither's

reference design in detail. Operators will experiment, replacing current network hardware with different combinations of software stacks and virtual network functions (VNFs), sourcing from various options and curating individualized service configurations.

The CORD AND VCO Report examines the NGCO phenomenon, prominently including the progress of CORD and the emergence of VCO as operator open-source reference designs. It examines and compares both models', highlighting strengths contributing to their growing acceptance and projecting their outlook and overall NGCO adoption against the backdrop of contrasting operator and vendor perspectives on virtualization.

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