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BRINGING GLOBAL AUTOMATION TO CSPS IN THE AGE OF 5G

by *Don Alusha*

ORCHESTRATION AND AUTOMATION IN A SILOED OPERATIONAL ENVIRONMENT

Communications Service Providers (CSPs) are seeking to transform their network infrastructure, operational processes, and internal mindset in a bid to capture new growth. The transformation is, in part, being driven by a growth of user data demand, a massive increase in connected devices, an overly complex network, and the adoption of 5G. 5G natively introduces increased digitization, in turn creating more business processes and interfaces. The automation gaps that characterize the industry's vertical technology stacks do not lend themselves to Internet-like scalability and agility. This is particularly relevant for 5G and on-demand network slicing, both of which call for two significant changes in CSPs' operations: first, automation should be extended to the transport network, which is as important as the access and core network for network slicing capabilities, and second, rapid service provisioning and End-to-End (E2E) lifecycle management warrant multi-domain monitoring and automation capabilities.

Automation is not new for hyperscale players, such as Amazon Web Services (AWS) and Microsoft Azure, which have a cloud data center and a platform layer that serves as the springboard for new services. But the ability to automate a multi-layered, multi-domain technology stack remains a challenging endeavor in telecoms. Therefore, the question for CSPs is how to kickstart a transition toward networks that are more automated to achieve operational efficiency and rapid service onboarding.

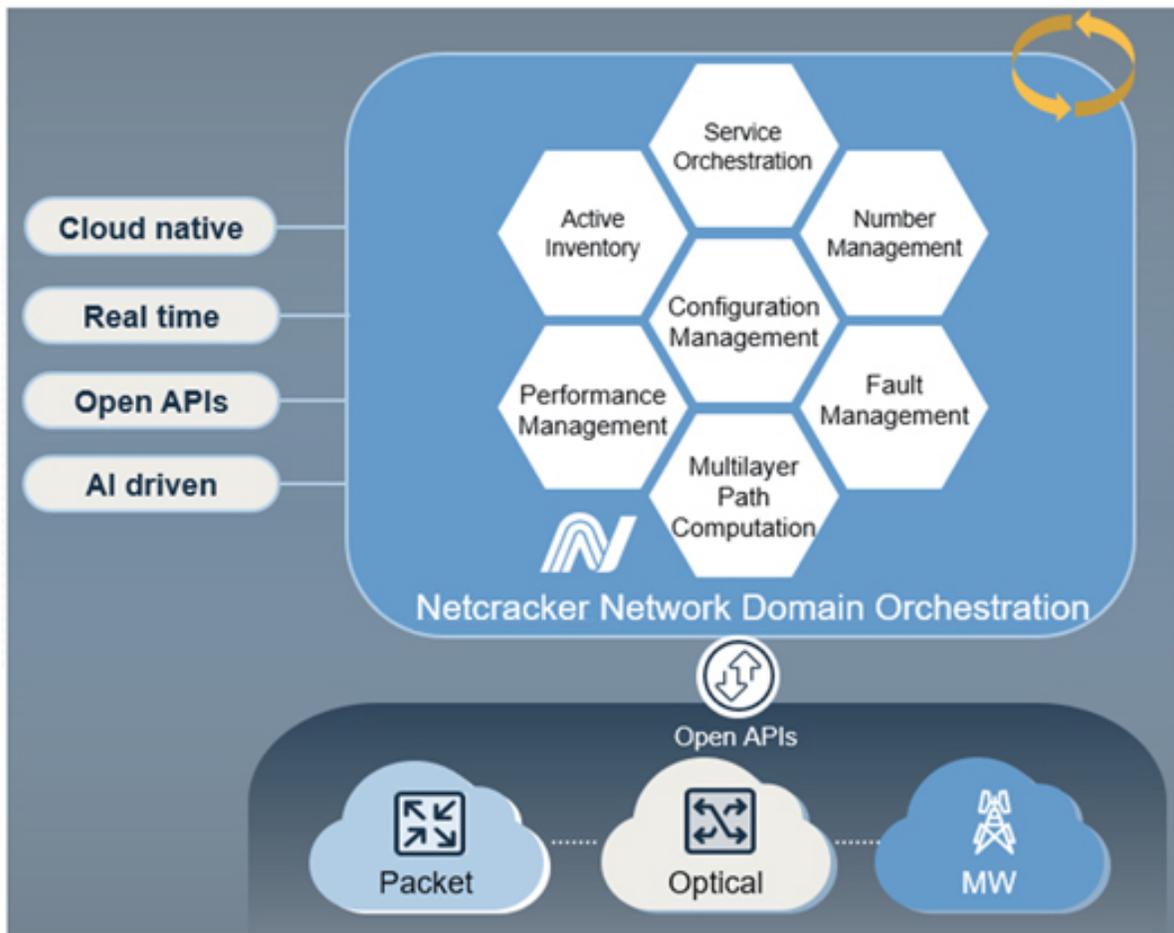
NETCRACKER'S NETWORK DOMAIN ORCHESTRATION

Netcracker's Network Domain Orchestration (NDO) provides automation capability in brownfield multi-layered deployments for both Internet Protocol (IP), optical and microwave mediums, thus giving CSPs E2E visibility deep into their backbone networks. The notion of a perfectly automated network presents CSPs with many dimensions. One of these dimensions is the wide range of transport technologies from multiple vendors—e.g., IP/Multiprotocol Label Switching, optical, etc.— in existence, all of which are pegged to underlying proprietary infrastructure operated by script-based routines. Netcracker's NDO value proposition is to remove the back doors associated with such specialized and proprietary networks. The solution leverages a declarative (model-like) DevOps approach using YANG models, which are more suitable for cloud-native implementations than the "old" imperative (script-like) model. This bodes well for lifecycle management of multiple functions in a network service chain as a single service-level entity through which traffic will pass.

Downloaded by anita.karve@netcracker.com

Figure 1: Netcracker Network Domain Orchestration Solution

(Source: Netcracker)



A truly E2E automated arrangement of connectivity, compute resources, and applications that surface on top is not a trivial matter for CSPs' operations, characterized by stringent performance and isolation requirements. With its NDO solution, Netcracker is competing with an architecture approach that optimizes for performance. Specifically, its solution combines SND and OSS functions--e.g., service orchestration, configuration management, Artificial Intelligence (AI), assurance, etc.--into a self-sufficient autonomous transport domain. Netcracker is pushing the frontier of what is technologically possible with an eye to provide CSPs with the best performance possible out of the technology they have available. This is a plausible vision and one that may yield results in the existing value chain, but the degrees of success will vary in line with new telco business models that have yet to crystallize.

Still, what is technologically possible is one facet of a multi-dimensional discussion and one that Netcracker is probing effectively. A reengineering of internal processes may well be what marks a real watershed in CSPs' quest to become digitally-oriented entities. Netcracker's NDO is one solution--among others in the market--that paves the way for closed-loop maintenance predicated on model-driven, real-time intelligence and predictive analytics. CSPs will seek to position Netcracker NDO against alternative solutions,

particularly on evaluation dimensions such as degree of "cloud-nativeness," adoption of agile DevOps methodologies, and potential to scale. CSPs are asking two questions before a new product adoption: one, does it change existing processes, and two, does it change workflows to pave the way for an internal transformation that could not otherwise be pursued.

PURSUE AN INTERNAL TRANSFORMATION

The supply side in telecoms is introducing new products that provide model-based, cloud-native capabilities for CSPs to automate service provisioning for transport networks. To unlock the full commercial benefit of these solutions, however, wholesale changes in underlying processes are required. This is particularly relevant as the industry pursues new growth avenues, especially in the enterprise domain. CSPs' readiness to adopt such model-based tooling varies with some operators (e.g., AT&T, Telefonica, Orange) making great strides toward "fluid" operations whereas others are in the early stages. For example, Deutsche Telekom (DT) is advancing towards automated network operations by collaborating in a DevOps manner with Netcracker to automate its multilayer IP and optical backbone networks and obtain E2E visibility of service and resource inventories through a single pane of glass. With Netcracker's NDO, DT aims to integrate and automate a large number of IP devices and Software-Defined Networking (SDN) controllers supplied from more than five vendors, an effort expected to provide a 50% reduction in service provisioning according to the vendor.

A nimble way of transacting business will be a key aspect for CSPs' push into new revenue streams. Therefore, automation of the sort pursued by DT—i.e., that reaches deep into the transport network to break down network silos—is essential to unlock the speed and convenience that 5G promises. 5G brings about a paradigm shift that is more conducive to cloud-native methodologies and one step toward a distributed, decentralized, full packet network. This is a key piece in instituting a manageable and automated network in an increasingly digitalized economy. Specifically, in addition to the actual product, by virtue of working in a joint agile fashion, DT is set to acquire the necessary human capital that will be key for an internal change toward global software-centric operations.

Indeed, change is one of the few things that remains constant in this period of transition for the industry. There is no big winner yet in terms of telco-grade automation and orchestration tools. The vendors that are likely to dominate are those that help CSPs revisit the skills and talents that helped build a winning position anchored to hard-to-duplicate network infrastructure in light of the impending challenge of building one based on cloud tools, software, and DevOps methodologies.

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