

# Deutsche Telekom's workshop on future network and service management seeks to build a broad consensus

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Leading operators believe that neither the business benefits associated with network virtualisation nor promising 5G opportunities will be realised unless they radically change both the management of their networks and the services that run across them. Operators have launched internal initiatives to address this issue, but Deutsche Telekom believes an industry-wide effort is needed to overcome the many challenges involved. Deutsche Telekom and many of the participants at its Bonn workshop in December 2016 suggested that a consensus and common approaches could prevent a wasteful fragmentation of effort and accelerate the achievement of a new operational paradigm.

## Operators need significantly better than “stone age” tools to manage the networks of the future

Kim Kylesbech Larsen (SVP Technology Architecture and Innovation, Group Technology at Deutsche Telekom) bluntly described operators as managing their physical networks with “stone age” tools and approaches at the Bonn workshop on Network and Service Management of Future Networks. Deutsche Telekom and its fellow operators have realised that the implementation of software-defined networking (SDN) and network function virtualisation (NFV) presents a once-in-a-generation opportunity to change this. However, they have been struggling to identify the form this transition should take since the formation of ETSI NFV, 4 years ago. Established organisations and vendors are anxious to see a gradual evolution towards a golden age of operational efficiency. In contrast, newer industry groups and some operators believe that a revolution in technologies is the answer. The result is a chaotic, fragmented mix of ideas, strategies and developments that is confusing the industry and potentially paralysing investment in more-advanced forms of network virtualisation. Deutsche Telekom's workshop aimed to identify what improvements in network and service management are necessary in an era of cloud, 5G and IoT and the steps that should be taken towards building a new generation of management tools.

## A new urgency to deliver on old requirements

The workshop participants came from more than 30 operator and vendor companies, standards organisations and open source projects and had a variety of perspectives on this important topic. The key requirements identified for future network and service management were not surprising: automation, a common information model (CIM) and greater modularity are themes that have been discussed for years. However, the workshop highlighted the necessity of agreeing on a common set of approaches and technologies to achieve these goals. This is particularly important now, when ‘cloudification’ is producing new concepts and tools to choose from and 5G will push the limits of current operational practices.

## Extreme automation is the basis of future management capability

The workshop presentations addressed the drivers, domains of responsibility and paths towards the vision of extreme operational automation. Orange presented the evolution of its operating model from an organisational

perspective, with the end goal of having discrete horizontal teams that are responsible for the management of data centre and cloud infrastructure, virtual network functions (VNFs) and security, with formal contracts and APIs between them. NTT Docomo outlined its path towards closed-loop control and analytics-driven management automation in the future. China Mobile's OPEN-O talk highlighted key capabilities that are required to support extreme automation. There was broad agreement that individual device element management systems complicate automation and should be removed. There was also agreement that automation will need to encompass a spectrum of execution speeds, from microseconds to months.

## **End-to-end service management requires a harmonised information model**

A CIM is key to management automation. This was the subject of a separate, Deutsche-Telekom-hosted workshop, immediately following the main workshop, that continued a cross-party discussion begun at CableLabs in January 2016. Nevertheless, presenters at the main workshop also referred to the need for a common understanding of management data from end-to-end, across network domains, processes, vendor devices and tools. Cross-domain information management is a contentious area, where the conflict between open-source approaches to information modelling and formal telecoms standardisation efforts is most acute. A work item defined in the second workshop will attempt to create a common taxonomy across the multiplicity of models and modelling approaches that exist in the network and service management domain, including those from 3GPP, IEEE, IETF, OIF, ON.Lab, ONF, OpenStack and TMF. This would be a good step towards achieving the model-driven network and service management of the future that workshop attendees agreed they want.

## **Future management systems are modular, not monolithic**

The workshop confirmed leading operators' interest in 'composable' management functions that can be orchestrated as modular pieces of software alongside VNFs, which are simultaneously being rearchitected as modular, cloud-native software components. Deutsche Telekom and others believe that modularity is key to future-proofing network and service management. However, the granularity to which management functions will be decomposed (potentially into 'microservices') and how they can be recombined by a heterogeneous vendor ecosystem has yet to be fully understood. The workshop highlighted the need for more industry collaboration in this area.

## **Identifying key problems will help scope the solution**

Workshop participants concluded that the industry needs a clear and consensual statement of the problems that future network and service management must address. Only then can the market define a common set of capabilities and guidelines for a new management architecture, which operators and vendors can start to populate. There are still plenty of open questions, such as whether these capabilities can evolve from existing systems or should (for simplicity's sake) be built from the ground up, how much standardisation is needed and where, and what role open source initiatives can play in quickly prototyping new management functionality. Ciena, Dell EMC, Deutsche Telekom, Ericsson, HPE, Huawei, Intel, Netcracker, Nokia, Orchestral Networks, Telefónica and Viavi have agreed to undertake a 3-month project to produce such a problem statement and to outline a possible solution. The aim is admirable and different industry interests are well-represented, but the consortium must show that it can advance industry thinking around network and service management and suggest concrete, practical steps to achieve its solution.