

5G

Management and Network Orchestration

Flexible virtualized network
operation and maintenance

Atos

For operators, network function virtualization (NFV) is a way to add capacity quickly and inexpensively using containerized or virtual network functions (C/VNFs). However, managing CNFs and VNFs requires capabilities that existing OSS was never intended to deliver. The solution is management and network orchestration (MANO) which is defined by ETSI and the TM Forum as “the arrangement, sequencing and automated implementation of tasks, rules and policies to coordinate logical and physical resources in order to meet a customer or on-demand

request to create, modify or remove network or service resources.” In short, MANO is intended to be an approach to orchestration of physical and virtual network resources to establish services and activate customers.

For operators to include NFV as part of a hybrid network, the MANO functionality for NFV must be integrated with OSS using a variety of standards and interfaces. Each MANO layer must be integrated with existing OSS provisioning and management layers. Some vendors provide native integration of MANO

layers with their OSS. However, even in those instances, the OSS is typically not fully integrated and operators often require an umbrella solution to seamlessly integrate MANO solutions for NFV with existing OSS.

By implementing an integrated OSS-MANO platform, zero-touch network operations become a reality, lowering operating costs, simplifying the configuration of services, and bringing the benefits of agile, flexible virtualized network operation and maintenance.

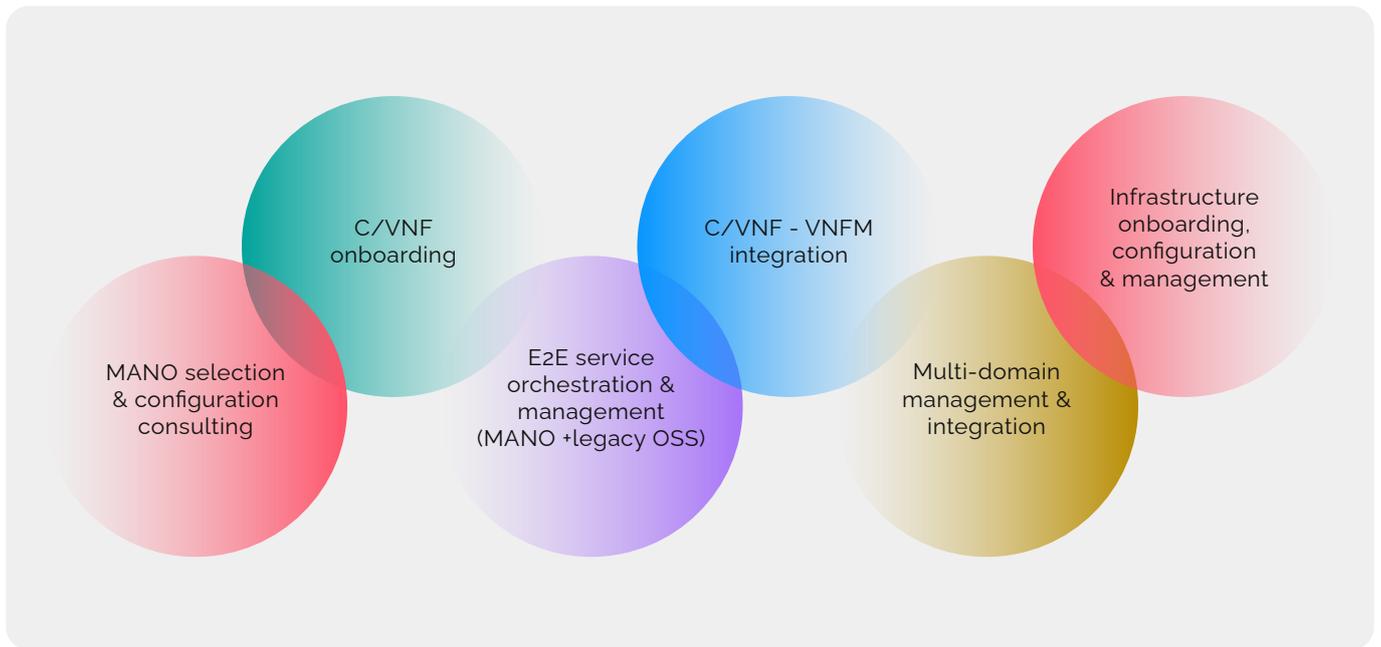


Figure 1: Atos MANO Services Portfolio

A proven approach to MANO integration

As network expansion and upgrades continue, progress is being made in integrating of OSS and MANO processes and solutions to meet the demands of new network strategies as well as expanding business strategies. In 2020, nearly 70% of operators were delivering SD-WAN services that were not possible four years earlier¹. Delivering 5G, IoT, SD-WAN and complex business services using NFV represent a significant revenue opportunity for operators.

Many of the developments in NFV and MANO are the result of efforts by IT vendors with very little experience in telecom. Operators face performance and regulatory requirements that exceed what data center and web services providers can meet. As a result, the industry has had to define specific interfaces and MANO functionality that aligns with public network regulations for performance and interoperability.

There are currently disconnects between MANO layers based on IT service standards and OSS functionality and interfaces as defined by the TM Forum. Atos understands the complexities and subtleties of a wide variety of NFV, MANO and OSS standards, interfaces and solutions. From selecting and configuring MANO solutions to integrating MANO functions with existing OSS, Atos uses a structured approach to analyzing, planning and delivering the most effective OSS-MANO integration regardless of vendor.

1. DSP 2020. A survey of digital transformation progress of 100 operators from around the world. ICT Intuition, LLC, 2020

Atos has adopted a set of OSS-MANO integration principles to provide operators with an open and flexible operations environment that seamlessly integrates management of virtual network assets with OSS. Using this vendor-agnostic integration approach, Atos can integrate OSS with multiple MANO solutions responsible for a variety of NFV assets including C/VNFs. The result is the ability to provision and manage a hybrid network end-to-end and ultimately apply automation and intelligence to further reduce operating expenses.

Atos has the deep multi-vendor experience in both IT and telecom to ensure MANO interoperability with existing OSS and network infrastructure, interfaces and data based on applicable

standards. Using that expertise, Atos has defined a multi-layered orchestration approach that accommodates emerging standards and methods for hybrid Edge, Access, Core and Transport network services and technologies.

Atos MANO services help operators evaluate, select and configure the MANO solution that best suits their specific operating environment, network and OSS transformation strategies. C/VNF and infrastructure on-boarding, C/VNF integration, network service modeling and OSS/BSS integration across platforms delivers open, agile and capable solutions for any variety of hybrid network and operating environments.

Atos OSS-MANO integration principles

- OSS domain shall consider NFV network service as specific resource type or resource-facing service
- OSS shall not directly interact with C/VNFs
- OSS shall use TM Forum Open APIs to interact with MANO artifacts
- Vendor-specific OSS architectures may use Netconf for interface with element managers

Atos OSS-MANO Services deliver

- Integration of legacy OSS using OpenAPI methods
- Implementation, deployment and support of multi-vendor MANO solutions
- Umbrella hybrid OSS integration across edge, access, core and transport network services
- End-to-end integration that delivers seamless customer and service fulfillment and provisioning for hybrid networks

The Atos vendor-agnostic approach relies on deep experience with a wide variety of network, virtual and cloud NFV/MANO and OSS technologies. Along with global industry-leading partners, Atos delivers integrated and optimized MANO integration and services to operators worldwide. Atos works with each operator and its unique network virtualization strategy to implement and integrate OSS – NFV/MANO solutions to manage hybrid network assets.

Using open, agile and proven software development and integration processes; Atos OSS transformation delivers a significant reduction in capex and opex by industrializing end-to-end network and service management with a team of more than 8,000 experienced telecom software architects, designers and developers.

Partnerships



Over 40 major OSS transformation projects in five years



Agility

Migrate toward a cloud-native architecture



Flexibility

Access multi-domain & multi-technology support



Future readiness

Protect legacy investments while preparing for the future



Openness & transparency

Leverage TM Forum Open APIs as well as 3GPP & ETSI standards

About Atos

Atos is a global leader in digital transformation with 107,000 employees and annual revenue of over € 11 billion.

European number one in cybersecurity, cloud and high performance computing, the Group provides tailored end-to-end solutions for all industries in 71 countries. A pioneer in decarbonization services and products, Atos is committed to a secure and decarbonized digital for its clients. Atos is a SE (Societas Europaea), listed on Euronext Paris and included in the CAC 40 ESG and Next 20 Paris Stock indexes.

The purpose of Atos is to help design the future of the information space. Its expertise and services support the development of knowledge, education and research in a multicultural approach and contribute to the development of scientific and technological excellence. Across the world, the Group enables its customers and employees, and members of societies at large to live, work and develop sustainably, in a safe and secure information space.

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Let's start a discussion together



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