SOLUTION BRIEF

MantaRay SMO: AI-driven service management and orchestration for autonomous RAN

From automation to autonomous RAN

As the AI supercycle unfolds, telecommunication networks must support the increasing scale and diversity of AI workloads while providing high-performance mobile broadband services for industries, enterprises and consumers.

To stay ahead of this evolution, your network must evolve to an AI-native platform that can operate at machine speed and deliver deterministic performance.

The growing number of network functionalities, algorithms and parameters means you need more intelligence in service management and orchestration. At the same time, multi-vendor deployments introduce additional complexity and cost pressure.

To effectively address these challenges, AI-driven autonomous radio access network (RAN) will become business-critical.

This solution brief describes Nokia MantaRay SMO, our service management and orchestration solution with AI capabilities that are field-proven in demanding,
real-world networks.

MantaRay SMO is the industry's first solution to reach level 4 of TM Forum's autonomous network framework today, enabling intent-driven autonomous operations at a massive scale in dynamic conditions.

Autonomous RAN requires AI at scale

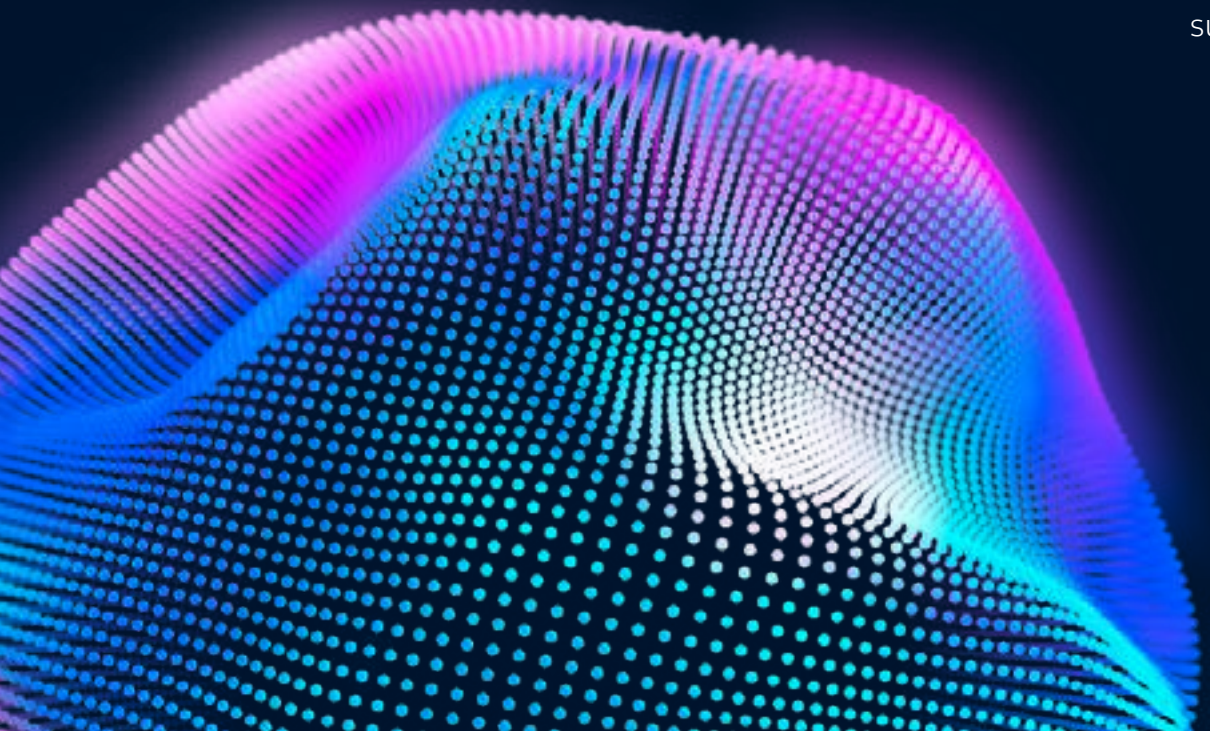
MantaRay SMO reaches TM Forum Level 4, enabling intent-based autonomous RAN.

Without extensive use of AI, it is not possible to achieve this level of autonomy.

SMO enables autonomy in multi-vendor RAN

The O-RAN Alliance has defined the service management and orchestration (SMO) framework as an open platform to manage multi-vendor, multi-technology radio access networks.

SMO provides the intelligence, automation and coordination for managing the end-to-end lifecycle of the network. It enables intelligent service agility and enhanced operational efficiency.



The SMO framework consists of different layers:

- Multi-vendor network management
- Application automation comprising radio applications (rApps) and their intelligent control
- Orchestration
- Nokia MantaRay SMO is built on this open architecture and supports AI-driven autonomous RAN in a standardized way.

MantaRay SMO delivers tangible benefits with autonomous RAN

Enhanced performance

- Continuously improves network performance across multiple KPIs through intent-based, AI-driven optimizations
- Executes closed-loop actions in real time to maintain optimal network conditions

Truly open architecture

- Supports O-RAN interfaces and an open ecosystem
- Enables deployment of Nokia and third-party rApps through an open marketplace

Sustainable TCO

- Reduces operational effort through autonomous closed-loop operations
- Significantly reduces operational costs

Dynamic slice orchestration

- Autonomously orchestrates network slices, dynamically adapting to network conditions
- Ensures that each slice meets specific SLAs

Autonomous RAN capabilities built on a proven portfolio

We provide a clear evolution path to autonomous RAN, building on field-proven solutions already deployed in live customer networks.

Already today, our portfolio:

- Enables AI-driven optimization and automation
- Supports multi-vendor environments
- Manages purpose-built and Cloud RAN

With MantaRay SMO, we introduce the next level of openness and autonomous operations:

- Enables seamless evolution from SON to non-real-time RAN Intelligent Controller (RIC)
- Supports O-RAN R1 interface, which enables an open ecosystem and marketplace for Nokia and third-party rApps
- Manages O-RAN in addition to purpose-built RAN and Cloud RAN

We offer a simple evolution, not an unnecessary revolution

MantaRay SMO: An integrated platform for autonomous RAN

Unified SMO platform for network management, automation and orchestration

MantaRay SON

MantaRay SON is a market-leading self-organizing networks solution. It has been field-proven in over 120 large-scale multi-supplier networks worldwide.

SON evolves into a non-real-time RIC platform with O-RAN compliant interfaces and rApps.

Our open application marketplace also includes an extensive catalog of third-party rApps.

MantaRay AutoPilot

MantaRay AutoPilot is an intent-based, AI-powered solution that autonomously orchestrates SON modules and rApps, enabling intent-based autonomous network operations.

Its extensive AI and autonomous capabilities are unique in the industry, already orchestrating dynamic optimizations in major customer networks today.

MantaRay NM

MantaRay NM is a centralized radio network management solution for purpose-built RAN and Cloud RAN, including data center hardware and cloud infrastructure. We are further enhancing it with O-RAN-compliant interfaces.

More than 500 customers are already running MantaRay NM in their networks.

Digital Operations Center

Digital Operations Center integrates a key functionality for the SMO, the RAN Slice Controller.

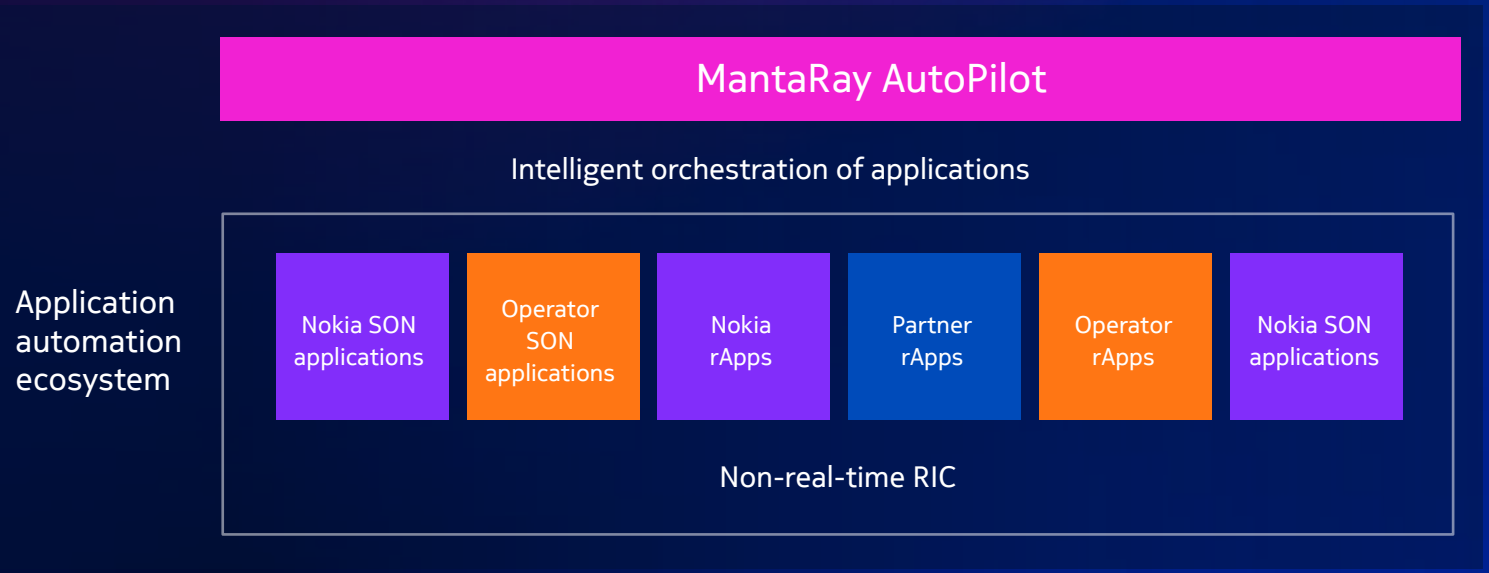
It provides dynamic orchestration and resource management capabilities, so that each network slice meets specific service-level agreements. It has been field-proven in customer networks globally.

SMO provides intelligent orchestration of SON modules and rApps

When the network becomes autonomous, you don't need to automate individual tasks. Instead, you define the intents that express business outcomes.

The key advantage of MantaRay SMO is its ability to translate intent into autonomous action by orchestrating existing SON modules used today and new rApps developed by Nokia, customers and application developers.

At the heart of this capability is our AI-driven MantaRay AutoPilot. It provides holistic, intent-based, closed-loop optimization across network configuration, energy efficiency, performance and quality of service.



Proven autonomous RAN operations form the foundation for MantaRay SMO

Ensure service continuity through autonomous recovery

95%

autonomous recovery rate

Maximize capacity from existing network assets

Up to

30%

higher capacity utilization

Operate the network autonomously at scale

>15,000

autonomous optimization actions per hour

Why Nokia SMO?

Simple evolution with investment protection
MantaRay SMO is the next evolution step of our field-proven MantaRay product family, which provides investment protection to our current customers.

Proven path to autonomous RAN
MantaRay SMO builds on AI-driven autonomous capabilities already proven in large-scale, multi-vendor customer networks.

These capabilities now form the foundation of a unified SMO platform, enabling TM Forum Level 4 autonomous operations today.

Open platform with application ecosystem
MantaRay SMO supports O-RAN interfaces and enables a fully open ecosystem, including a Nokia and third-party rApp marketplace.

Telecommunication providers and partners can develop, deploy and scale applications using our SDK and open interfaces.

Focus on measurable business outcomes
World's most advanced telecommunication providers trust Nokia to apply AI to their networks. Our AI-driven autonomous capabilities deliver measurable improvements in commercial networks, optimizing performance, efficiency and service quality at scale.

Read more about Nokia SMO

At Nokia, we build the autonomous networks of tomorrow, today

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About Nokia

Nokia is a global leader in connectivity for the AI era. With expertise across fixed, mobile, and transport networks, we're advancing connectivity to secure a brighter world.