

# Orange OGN RFI - Executive Summary

## IP Core router disaggregation

### Introduction – Modern Network Design

Service providers' network architectures haven't changed much in the past twenty-five years, despite significant advancements in related areas such as cloud infrastructure, 'as-a-service' business models, and now AI. As a result, many leading service providers like Orange, are left to maintain complex, inflexible, and costly networks across many domains. The challenges of operating such a diverse set of traditional networks without automation or modern tools, have locked service providers to their current architectures, restricting their ability to make changes, differentiate, and innovate.

To address these limitations, service providers look to simplify network design and operations, and unlock their vendor dependency by transitioning to a modern cloud-like architecture. This new model has three key characteristics: 1 – software-based approach that enables faster innovation and feature development, 2 – disaggregation of hardware and software and the ability to mix-and-match between them, which increases service provider's control and lowers network cost, and 3 – streamlined operations through fewer hardware building blocks and greater automation and analytics, including the use of AI-driven operations.

To drive change and gain greater control over their networks and business models, service providers need to change the way they build their networks.

### Objectives

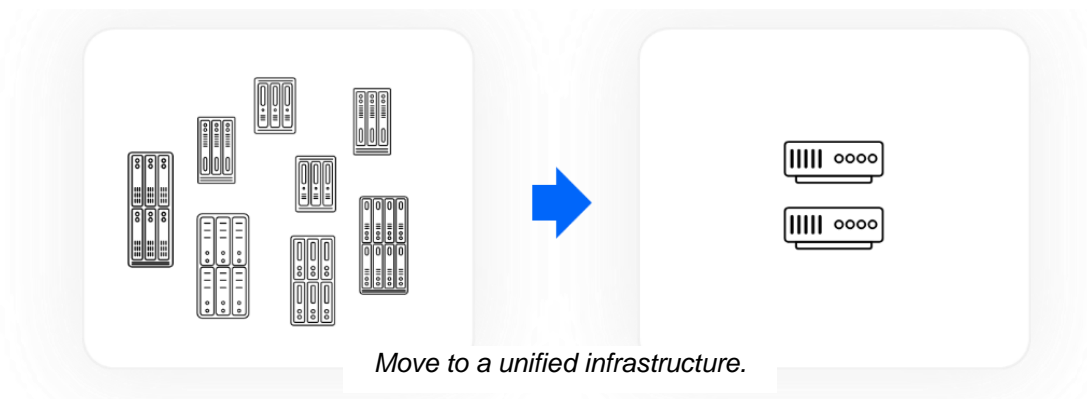
In this landscape, Orange is starting the process of modernizing its core network infrastructure. The goal of this RFI is to meet the new market dynamics and business demands by changing the current network architecture and operational methods, to achieve the following:

1. **Lower cost and greater ownership over the strategy (no vendor lock)** through network disaggregation. Choose your NOS vendor, hardware ODM, network ASIC vendor, or optical components, and maintain leverage with suppliers.
2. **Accelerated Innovation:** software-based networks enable rapid feature development.
3. **Simplified operations:** software-based networks and standard streamlined hardware enable advance tools and AI models to automate, orchestrate, predict, and react in real-time to improve operations.
4. **Reduced carbon footprint:** benefit from unified, reusable, and power efficient hardware.

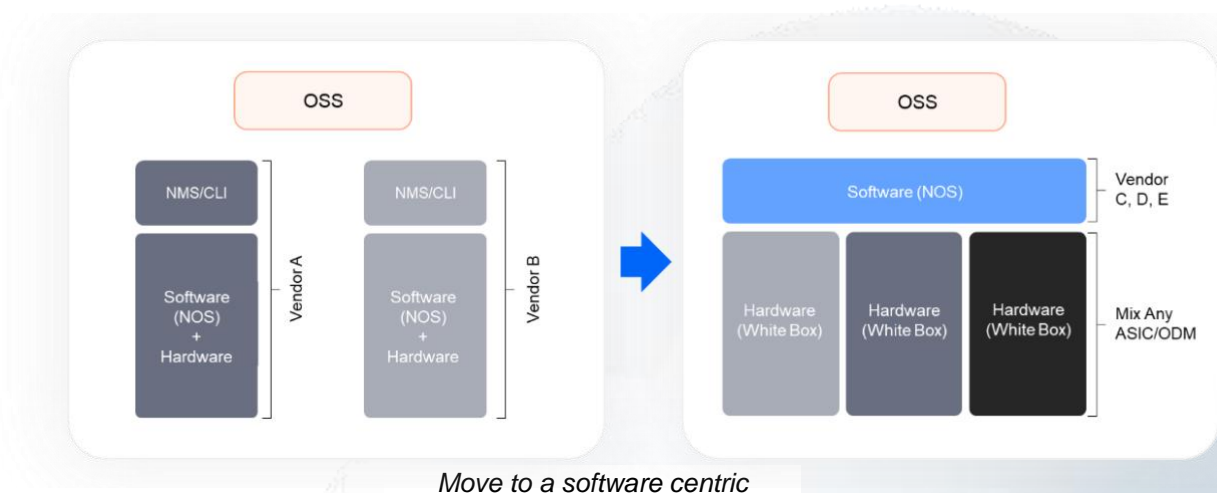
### Three-Pillar Blueprint

This strategic move towards a more open, flexible, and sustainable network architecture requires three major steps:

1. **Architecture change** - moving to a unified infrastructure that can handle all services and use-cases with minimum number of building blocks, to simplify network complexity.
  - Gain more control over the network by using modern advanced routing solutions, such as segment routing and FlexAlgo.
  - Use unified and modular network building blocks for any use case at any scale, to simplify sourcing, sparing and operations.
  - Adopt a simple network design based on standalone boxes that are most energy-efficient at small scale but can elastically grow to larger clusters when needed.

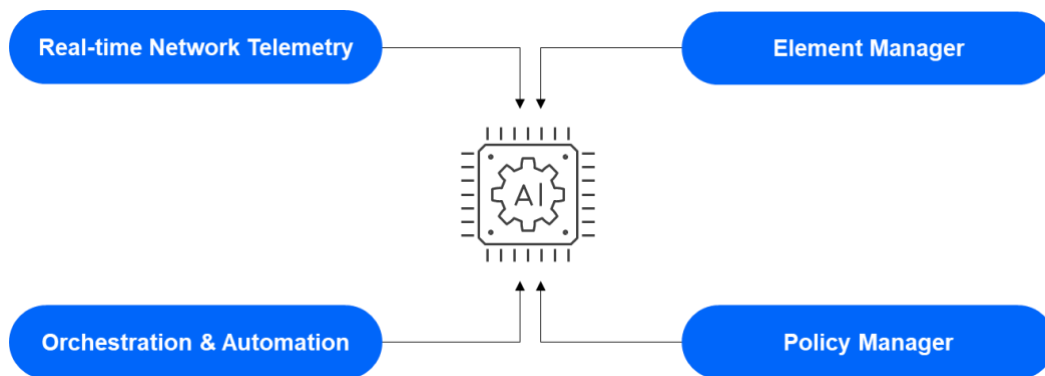


2. **Software-centric network** – disaggregate hardware and software, enabled by automated orchestration and operations.
  - Create a cohesive, consolidated network software layer.
  - The network is the router – leverage abstracted hardware, elastic fabric, and advanced traffic engineering to enhance network agility and control.
  - The network transforms into a more effective business enabler.



### 3. **Advanced tools and AI** - leverage the new operational model and software-based network design to automate and improve operations with advanced tools and AI.

- Strategically use network monitoring metrics to feed advance tools and AI models



*Advance tools and AI models*

## How Can DriveNets Meet Orange's Objectives?

DriveNets can enable Orange to lead the strategic transformation to a cost-effective, software-centric network, using [DriveNets Network Cloud](#).

DriveNets Network Cloud breaks traditional network solutions into modular building blocks. Using its Network Operating System (DNOS), it combines hardware building blocks - standard low-cost white boxes, into networking solutions for any size and use case. These can range from a 2.4T standalone white box to a 691.2Tbps large cluster (DDC) made up of dozens of white boxes, all functioning as a single routing entity.

### Benefits and capabilities:

#### 1. Flexibility and elasticity

- **Hardware-agnostic:** Orange can chose any networking ASICs, whitebox ODMs and optics. Even the DriveNets NOS can be replaced at any time without jeopardizing hardware investments. Just two types of standard building blocks, can support any network domains - from core to edge.
- **Unified eosystem:** DriveNets unified ecosystem offers a choice of whitebox vendor, optics vendors and silicon vendor, while DriveNets ensures that its software supports any solution combination - fully tested and supported.
- **Elasticity:** DriveNets is able to build any router type and size, ranging from 2.4Tbps standalone box up to 691.2Tbps cluster.

## 2. Dissaggregated, software-centric solution

- **Faster Innovation:** DriveNets Network Cloud supports separate hardware and software development cycles for quick updates and fast time-to-market of new software capabilities and white boxes.
- **Robust and simple maintenance:** DriveNets software architecture allows each software element to operate independently. This makes operations simpler, as patches can be applied to affected elements individually, minimizing system disruption.
- **Frictionless integration:** leverage a wide range of open northbound interface standards, protocols, and data modules for effortless orchestration and automation.

## 3. AI and other advance tools

- **Real time data delivery:** DriveNets software API enables tight integration between external tools, AI models and real time network telemetry, as well as internal performance metrics such as ASIC, CPU, memory, and logs.

## 4. Sustainability

- **Incremental scalability and common hardware building blocks:** avoid overprovisioning and streamlines operational processes.
- **Hardware reuse:** easily repurpose whitebox hardware across different network domains.
- **Power efficiency:** up to x3 less power by switching to low-power standalone whiteboxes when possible.

## 5. Lower TCO

- **Reduce hardware cost:** use commercial off-the-shelf (COTS) components to eliminate vendor lock and reduce procurement costs.
- **Pay as you grow:** incrementally adapt to meet demand, minimizing upfront costs.
- **Resource utilization and reduced rack size:** dynamically allocate abstracted hardware resources for better utilization.
- **Reduce site costs:** Network Cloud is not bound by chassis or fabric limitations, enabling distributed heat, weight, and power across the site, resulting in substantial savings in power, cooling, and floor space.

## No shortcuts. A path to a cloud-like network

Orange wants a modern elastic network design. While traditional approaches might suffice, we believe that seeking innovative strategies will greatly enhance Orange's capacity to drive change, differentiate, and foster innovation. By adopting advanced routing solutions, consolidating network domains, and disaggregating hardware and software this will enable significant progress in the desired direction.

DriveNets Network Cloud has a proven track record of easing the network transformation of multiple Tier-1 carriers, including the core of the largest networks in North America. This was enabled by our deep, hands-on technical involvement and collaborative partnership with our service provider customers, from the initial planning stages as design partners through to a successful network rollout.

Examples of commercial networking deployments:

- **Comcast:** Replaced chassis-based routers with DriveNets Network Cloud for aggregation and peering, expecting to handle 25% of traffic by the end of 2023.
  - **AT&T:** Migrated IP/MPLS core network to DDC, carrying over 50% of traffic as of Jan 2023 and expecting to reach 65% by year-end
  - **KDDI:** Deployed DriveNets-powered DDBR architecture for internet gateway peering routers.
  - **Turkcell:** Deployed DriveNets-powered DDBR router with scalability up to 192 Tbps for internet gateway peering.
  - **TATA Communications:** Upgraded global and domestic networks with 400GE infrastructure and elastic scaling using DriveNets Network Cloud across more than 100 worldwide sites.
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