



Executive Briefing

THE TELECOM TECHCO: THE ROLE OF NETWORK CLOUD, AUTOMATION AND AI

Telcos are pursuing a telecom techco vision to renew business models. This report explores how network cloud, automation and AI accelerate this transformation, with insights on scaling these technologies, impactful AI/automation use cases and the advantages of open source.



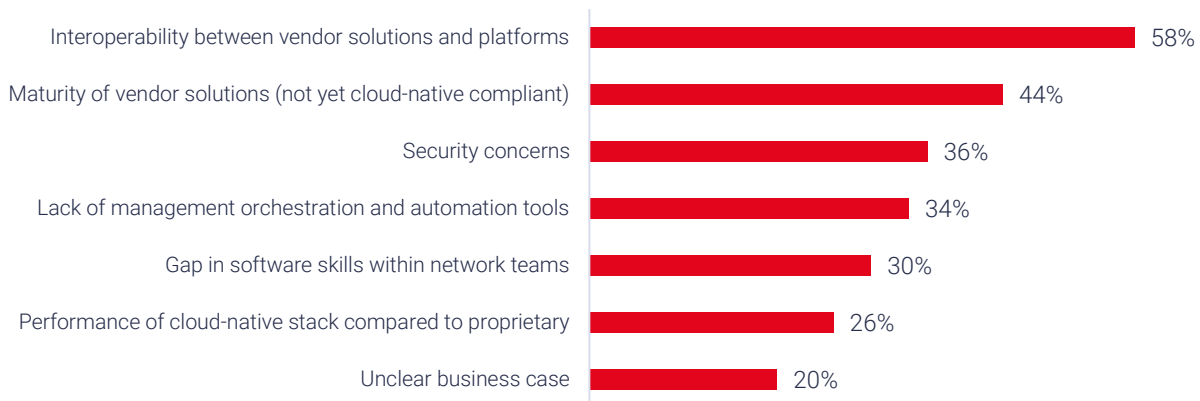
Executive summary

According to our survey, 80% of telcos are aiming to transform into telecom techcos within the next three to five years, driven by the need to overcome stagnant revenues, improve efficiency and regain relevance in capital markets. At the core of this shift are autonomous cloud network platforms, which is a term to describe future networks, powered by cloud-native technologies, automation and AI. This will enable telcos to unlock 'techco-style' revenue streams, such as AI-driven services, network application programming interfaces (APIs) and network slicing. However, progress is slow. Only 28% of telcos expect to achieve high autonomous network maturity within the next three years, with many still reliant on non-cloud-native architectures that limit agility and innovation.

Figure 1: A wide range of significant challenges are limiting telco progress

What do you see as the biggest challenges in moving to cloud native?

Please select up to three options.



Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

As shown in Figure 1, significant challenges remain, preventing telcos from reaping the full benefits of their networks and potential for value creation. This report offers three key recommendations to help telcos overcome these barriers.

1. Link network modernisation to the telecom techco strategy

Telcos have struggled compared to other leading technology companies. The top 160 listed telcos saw a 32% decline in market capitalisation between 2019 and 2023, while seven of the leading technology companies grew theirs by 75%¹. This reality is at the heart of telcos' motivation to renew business models. Part of the transition to a techco is outside the technology domain, but transforming the network from a monolithic pipe to a programmable platform must be a core pillar. Nonetheless,

Note: Unless stated otherwise, statistics included in the executive summary are sourced from STL's telco autonomous cloud networks survey, n=50 (Nov 2024). See Background on our research for more information on this programme.

¹ STL Partners' Telecoms 2030 Part 1: The telecoms industry problem (Mar 2024)

* The seven leading technology companies included are: Alphabet, Alibaba, Amazon, Apple, Meta, Microsoft and Tencent.

our survey suggests that telcos' progress towards autonomous cloud network platforms is slow, delaying their business model transformation:

- 92% of telco respondents stated that they have a TM Forum autonomous networks maturity level of 2 or below².
- Most telcos plan to adopt non-cloud-native architectures for network upgrades and deployments. For instance, outside of the core network, around 70% of telcos are planning to use predominantly single-vendor or non-virtualised infrastructure.
- 94% of telco respondents have not implemented open RAN and only 50% have piloted it.

2. Pursue automation and AI use cases that generate value in the near term

Automation and AI are vital for telcos to realise their telecom techco ambitions, with STL Partners estimating the financial impact of automation, AI and analytics (A3) in network operations to be equivalent to 5% of telco revenues³. Implementing AI/ML and automation is the top priority for most telcos over the next 12–18 months. However, progress remains limited, with few operators achieving scale in these technologies.

There is a clear interdependence between network cloudification and automation/AI. Cloudification enhances data availability, programmability and analytics, creating the foundation for advanced AI use cases. Conversely, automation and AI manage the complexity of advanced networks, enabling self-healing capabilities and real-time orchestration. These technologies are crucial for scaling networks to meet the demands of advanced telco business models.

To accelerate progress, telcos should focus on high-impact, fast time-to-value use cases that will demonstrate financial benefits in the short-to-medium term, and thus support the case to continue to invest in advancing their autonomous cloud network platform and telecom techco journey. Examples of such use cases include alarm monitoring, predictive maintenance and service provisioning.

A critical enabler of network automation/AI is a unified data framework, which helps standardise and connect disparate data sources. Telcos with unified data frameworks are three times more likely to achieve live AI/automation deployments in any given network domain, which should make it a key priority for the 48% of telcos yet to adopt one.

3. Leverage open source to accelerate the journey to telecom techco

Telcos face a maturity ceiling that hinders modernisation and innovation, driven by reliance on proprietary, single-vendor solutions. This threshold stems from limited vendor maturity, interoperability issues that create silos and vendor lock-in, which restricts agility and blocks the adoption of emerging technologies.

² Autonomous networks: exploring the evolution from level 0 to level 5 (Dec 2021)

³ Finding value from AI, analytics and automation (A3) in the telco network (Mar 2024)

Despite its potential, 26% of telcos have yet to adopt open source in any domain. To accelerate their transformation, operators should actively engage with open-source communities, such as Project Sylva and Nephio within the Linux Foundation:

- **Project Sylva:** This collaboration among major European telcos and vendors – including Deutsche Telekom, Orange, Telefónica and Red Hat – aims to develop an open-source, production-grade telco cloud stack. The goal is to reduce fragmentation in cloud infrastructure, enhance interoperability and accelerate the adoption of cloud-native technologies within telecom⁴.
- **Nephio:** The project's goal is to deliver carrier-grade, simple, open, Kubernetes-based cloud native intent automation and common automation templates that simplify the deployment and management of multi-vendor cloud infrastructure and network functions across large scale edge deployments. Supported by industry leaders such as Verizon, Vodafone, Deutsche Telekom, Google Cloud and Capgemini, Nephio aims to streamline network function deployment through Kubernetes-based automation and intent-driven management⁵.

Open source also unlocks value across diverse use cases, such as Kubernetes management, network visibility and function onboarding, with more examples included on page 24. Evidence from our survey suggests that those readily adopting open source are achieving significant benefits:

- Telcos with high levels of open-source adoption are 57% more likely to implement advanced cloudified network architectures within the next 12 months compared to those with no open-source adoption⁶.
- Telcos with high open source adoption are almost twice more likely to have live automation/AI deployments in any given network domain.

⁴ Linux Foundation Europe announces Project Sylva (Nov 2022)

⁵ Nephio sees rapid growth (Jun 2022)

⁶ High levels of open-source adoption is defined as telcos leveraging open-source tools across more than one network operation process. Advanced cloudified network architecture is defined as telcos utilising multi-vendor or cloud-native stack solutions.

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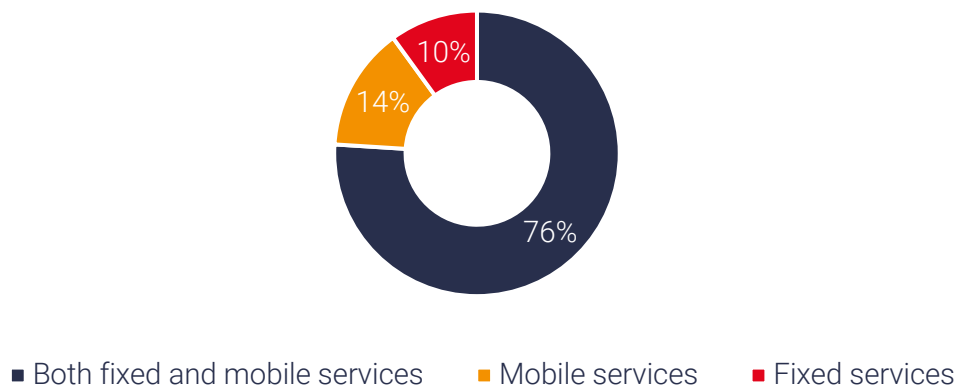
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Background on our research

During October and November 2024, STL Partners ran a survey titled '**STL Partners operator autonomous cloud networks**', aimed at understanding the network cloud, automation and AI priorities and progress of telco operators across the globe. The survey received 50 responses from 38 telco operators. Below is a breakdown of the profile of our respondents.

Figure 2: Most respondents were employed by telcos offering fixed and mobile services

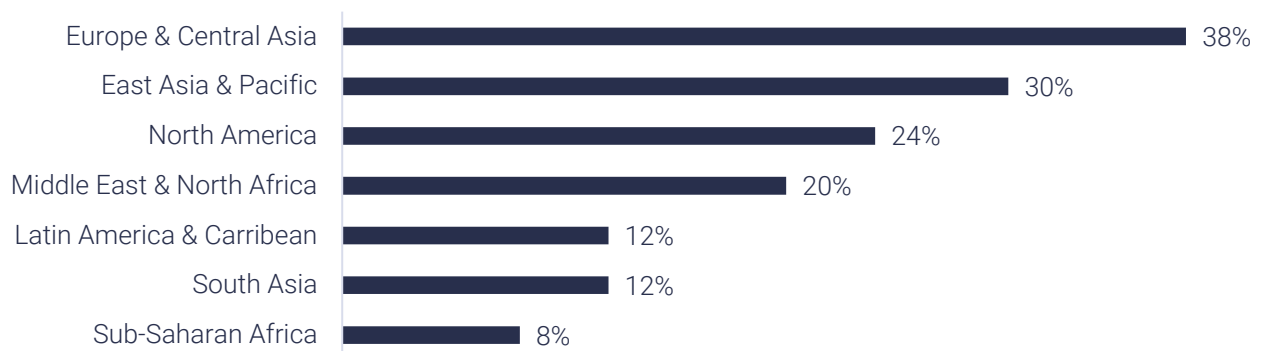
Which type(s) of network services does your organisation provide?
Please select one.



Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

Figure 3: The survey had representation from every global region

Where is your company/OpCo based? *Select all that apply.*

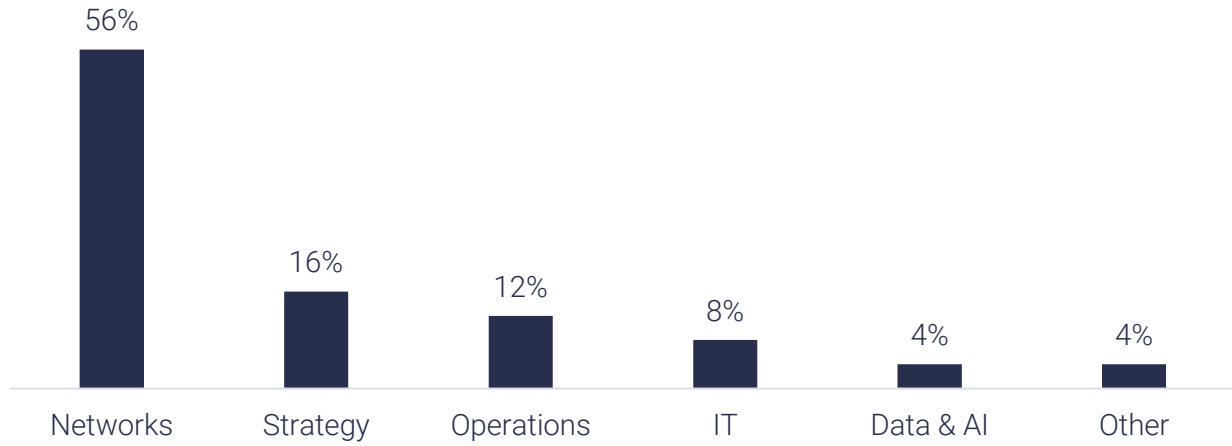


Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)⁷

⁷ Note: Percentages don't sum to 100% as some telcos operate across multiple regions.

Figure 4: The majority of respondents were from network teams

Which of the following options best describes the team you work in at your organisation? *Please select one.*

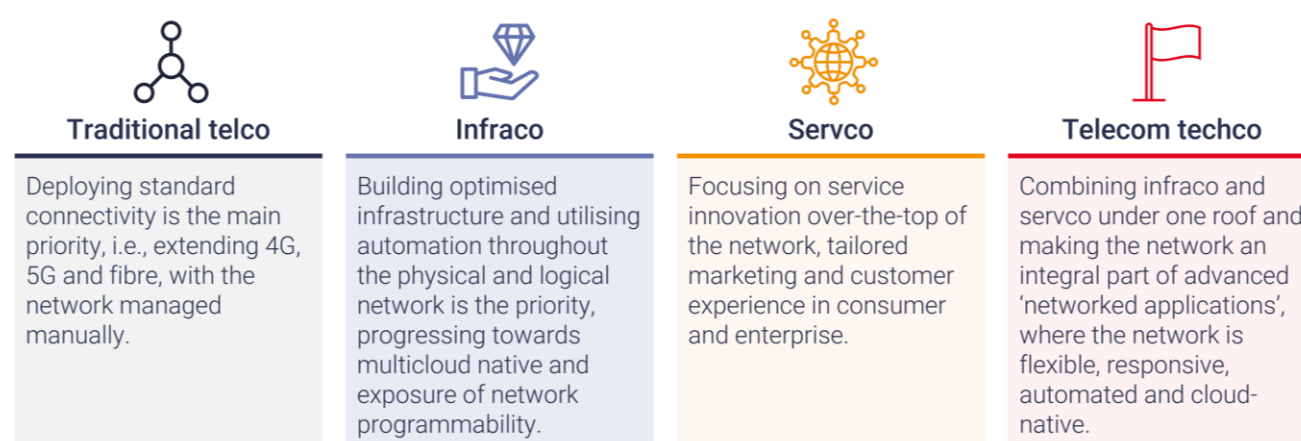


Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)
'Other' included product management and solution architect

Introduction: The relevance of autonomous cloud network platforms in the telecom techco journey

Telcos stand at a pivotal juncture and are intent on transforming into telecom techcos. The telecom techco business model (defined in Figure 5) seeks to incorporate the elements of leading technology companies' business models that have made them successful. This includes how they leverage technology internally and for their services, how they finance investments, operate the business (people, processes and operational systems), and ensure a culture of agility and a growth mindset. Fundamentally for telcos, this has become an almost unilateral ambition due to the challenging financial situation they find themselves in, where it has become difficult to monetise networks through traditional connectivity services.

Figure 5: Telcos will embody different business models in the future



Source: STL Partners

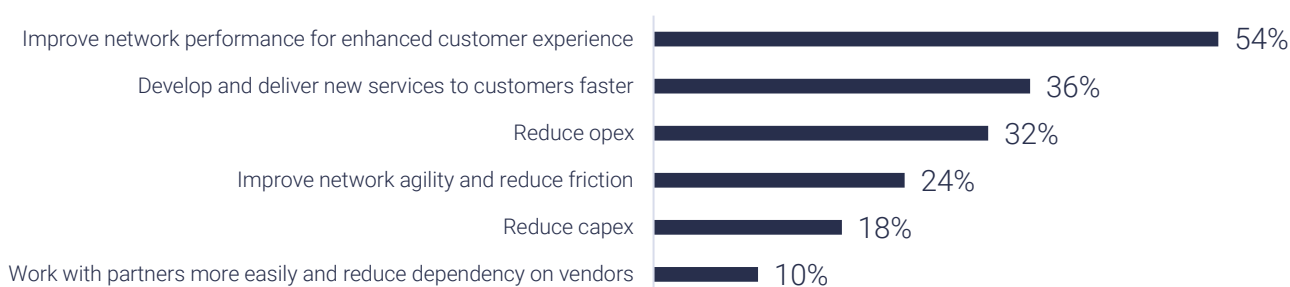
This report defines **autonomous cloud network platforms** as highly automated, AI-enabled, cloud-native networks and operations systems that ensure telcos can deliver connectivity services in innovative ways. This includes new as-a-service models, network services tailored to application needs or network capabilities integrated with other technology solutions, etc. These networks leverage automation and AI to manage the network in a more efficient and effective way, for example dynamically allocating resources, optimising performance and supporting real-time adaptability. This makes it easier to deploy 'networked applications' such as smart cities, immersive gaming and mission-critical enterprise services.

Cloudifying and virtualising networks have long been associated with helping telcos achieve cost efficiencies, primarily by reducing hardware costs from being tied to proprietary solutions and challenging the ecosystem to drive new competition. However, the survey demonstrated that, in fact, many telcos (fixed and mobile) are primarily motivated to invest in the automation and cloudification

of the network and its support systems to increase revenues (see Figure 6). This can be achieved either through enhanced customer experience resulting from better network performance, or from the faster development and delivery of new services to customers.

Figure 6: Telcos are investing in network automation and cloudification to improve services and revenues

What are the primary goals driving your investments towards a cloud-based, autonomous network? *Please select up to two options.*

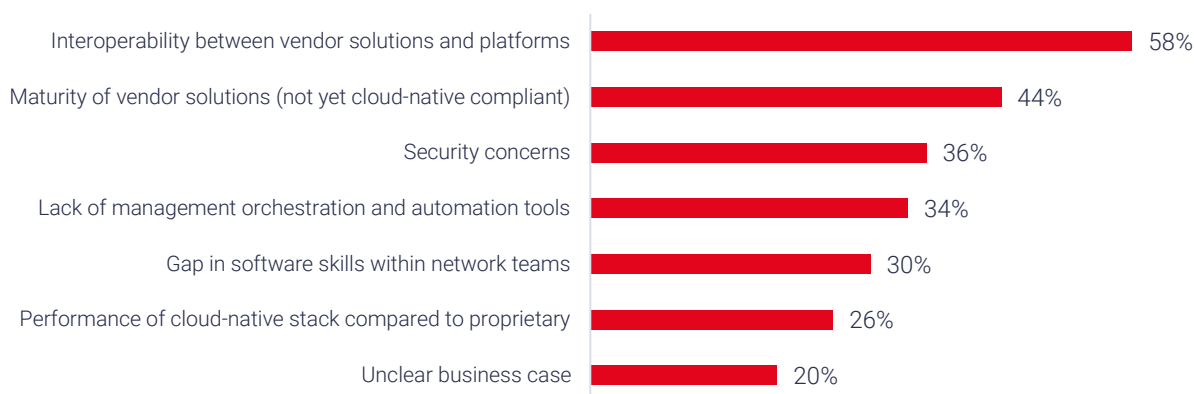


Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

The potential commercial benefits of the move towards cloud native are now well understood; Figure 7 demonstrates that it is not the business case that is a challenge. Instead, the primary hurdles are more reflective of the technological progress required by the industry to successfully deploy cloud-native networks. Overcoming these challenges reinforces the need for the ecosystem to work together to ensure that cloud-native technologies, which are mature in IT, can be applied to the networks domain and yet maintain the level of performance expected by the network, comply with regulation and ensure security.

Figure 7: Telcos recognise a wide range of significant barriers to cloud native

What do you see as the biggest challenges in moving to cloud native? *Please select up to three options.*



Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

Telcos should not view these as insurmountable barriers. Instead, they should adopt a proactive and collaborative approach, recognising that overcoming many of these obstacles will depend on strong partnerships that consider telcos' needs, bring best-of-breed capabilities and ensure scale across the industry. To help telcos embody this approach and accelerate their journey to becoming telecom techcos, this report provides three key recommendations:

1. Link network modernisation to the telecom techco strategy
2. Pursue AI and automation use cases that generate value in the near term
3. Leverage open source to accelerate the journey to telecom techco

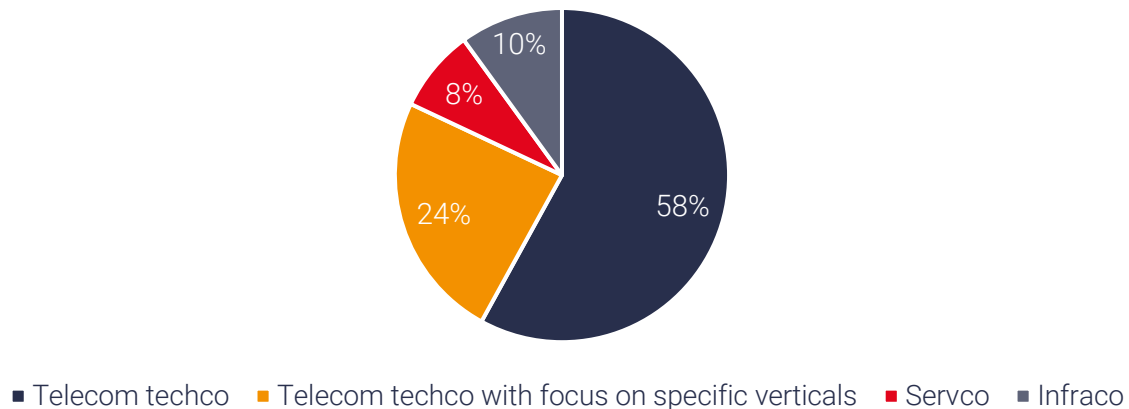
1. Link network modernisation to the telecom techco strategy

The ambition to become a telecom techco is widespread across the telecom industry

The ambition to become telecom techcos is widespread among telcos, with 82% of our respondents aiming to embody this business model within the next 3-5 years.⁸

Figure 8: Telcos are aiming to become telecom techcos within 3-5 years

What type of business model is your organisation aiming for in the next 3-5 years? *Please select one.*



Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

Although most telcos acknowledge that they are not in a position to become global internet giants (i.e. Microsoft, Apple, etc.), the differences in recent years' financial performance between the traditional telecom business model and the techco one is stark. It signifies why telcos are eager to leverage best practices from such companies.

Hyperscalers and internet giants have consistently outperformed traditional telcos in creating shareholder value. In 2019, the top 160 listed telco operators generated USD1.45 trillion in revenue compared with the USD1 trillion generated by just seven leading technology companies⁹. Since then, the situation has worsened. In 2023, the same telcos had only grown revenues by 8% to USD1.57 trillion, while the seven leading technology companies had grown revenues by 80% to more than USD1.8 trillion. Over the same period, the market capitalisation of telcos declined 32% while leading

⁸ STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

⁹ The seven leading technology companies included are: Alphabet, Alibaba, Amazon, Apple, Meta, Microsoft and Tencent.

technology companies grew theirs by 75%, signalling that investors believe future growth will come from leading techco players and not telcos¹⁰.

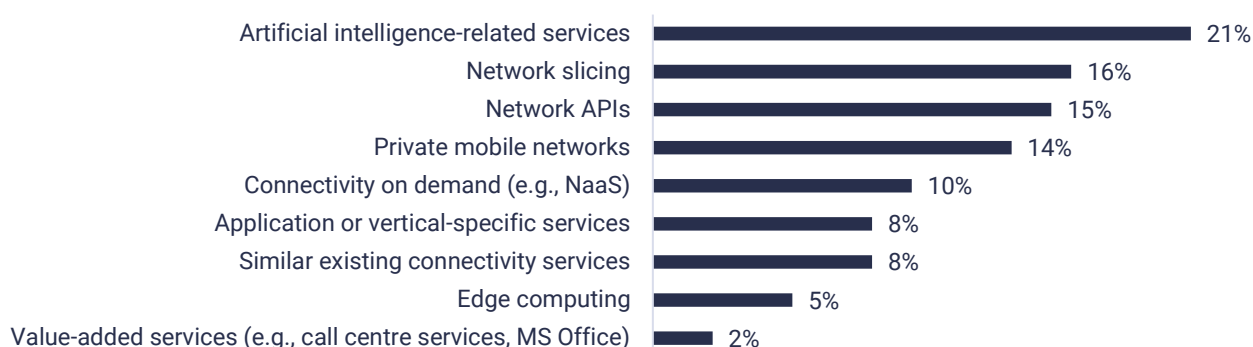
Autonomous cloud network platforms unlock opportunities for new services

The transition to autonomous cloud network platforms underpins the techco business model, as it will allow the capabilities of the network to be better integrated in services and applications. By making the network and its support systems (e.g. OSS) more flexible, scalable and programmable, it becomes a platform for innovation. Early indications of this are being seen through network-as-a-service (NaaS) offerings, private mobile networks and combining connectivity in vertical solutions or applications.

The reality is that most telecom operators are taking different types of services to market in an attempt to drive revenue growth, so there is no one single opportunity area that is predicted to be the silver bullet, as seen in Figure 9 below.

Figure 9: Telcos expect network investments to enable ‘techco-style’ revenue streams

Which types of services do you expect to drive revenue growth in the next three to five years as a result of network investments? Please select up to three options.



Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

The top three types of services driving revenue growth over the next 3-5 years, chosen by survey respondents, are services that are not yet available at widespread, commercial scale globally and will rely on a high level of automation and effective delivery of AI:

- **AI-related services:** Services such as AI-driven analytics platforms, or AI-as-a-service (AlaaS), will need to be supported by networks that can meet AI's new demands. Autonomous cloud network platforms integrate automation, modularity and edge-cloud capabilities, making it possible to manage the high scalability and responsiveness these services demand, beyond the limitations of

¹⁰ STL Partners' Telecoms 2030 Part 1: The telecoms industry problem. (Mar 2024).

traditional networks. Industry initiatives such as the AI-RAN Alliance are exploring the use of available compute capacity in the network for AI applications (e.g. AI-and-RAN, AI-on-RAN). For this to work effectively, telcos will need to orchestrate infrastructure effectively and scale capacity up and down.

Generative AI (GenAI) is the latest domain in which telcos are seeking to provide services. STL Partners has recorded that of all telcos' GenAI initiatives, including those for internal use cases, 47% are for GenAI services for customers¹¹. As the technology adoption grows, the demand for new network capabilities will too.

- **Network slicing** enables telcos to create bespoke connectivity solutions for specific applications, such as ultra-reliable low-latency slices for connected vehicles or high-throughput slices for streaming. Autonomous cloud network platforms are essential here because they can combine real-time automation with intelligent resource allocation, allowing slices to be dynamically adjusted to meet varying demands. This level of agility and efficiency is only achievable with programmable, software-defined architectures (as well as the standalone variant of 5G being available where network slicing is to be offered).
- **Network APIs** that expose network capabilities (e.g., Quality on Demand or Simple Edge Discovery) require modular, disaggregated infrastructure to deliver services dynamically and at scale. Autonomous cloud network platforms enable this by integrating the programmable architectures with automation and AI, making it easier to orchestrate services and support third-party innovation. Programmable network functions can react to instructions from the applications to adapt to customer demands. For instance, with next-generation APIs (e.g., the Traffic Influence API), applications can not only access information from but also enact changes on the network¹².

Telcos are at risk of not reaching maturity levels expected of a telecom techco

The survey highlighted a contradiction telcos face: they clearly want to achieve this techco business model and are investing huge amounts into their network; however, the survey discovered that progress is too slow. Automation, AI and cloud-native network technologies are three key components for achieving the autonomous cloud network platform vision. Yet, on both counts, telecom operators will be far from a level that is akin to an autonomous cloud network platform.

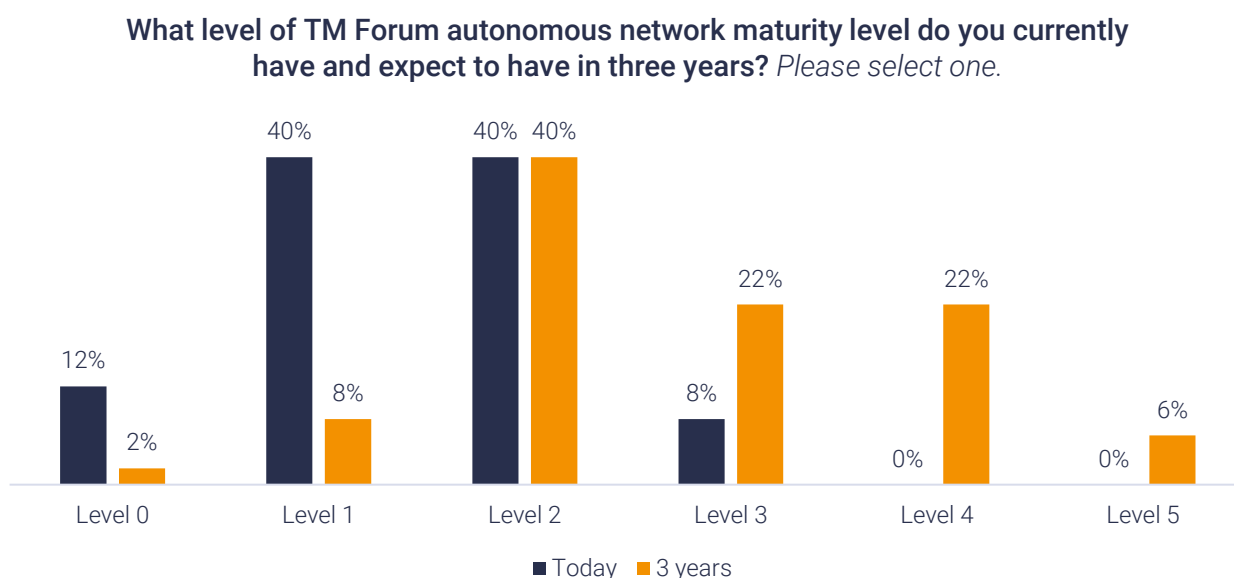
- **Autonomous network maturity:** 92% of telcos are still at a TM Forum autonomous networks maturity level of 2 or below. This means that, at best, these operators have a very limited set of tasks running autonomously, but haven't yet deployed intent-based, closed-loop automation. Furthermore, only 28% expect to reach highly or fully autonomous networks (level 4 or 5) in three

¹¹ STL Partners Generative AI Tracker, November 2024

¹² [GSMA Open Gateway API descriptions](#).

years' time, which means the majority will struggle to have the advanced networking capabilities needed to underpin telecom techco-style business models.

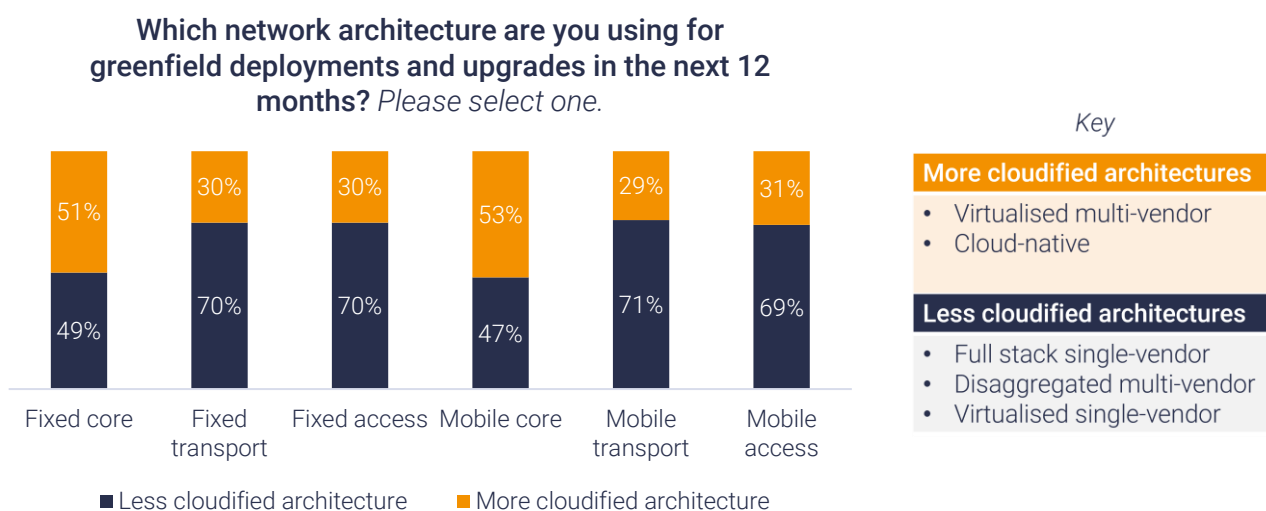
Figure 10: Telcos have a long way to go on their autonomous networks journey



Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

- **Cloud-native adoption:** Despite their limited maturity and lofty goals, many operators are still planning to deploy single-vendor and/or non-virtualised network stacks, which means they are forgoing the added benefits of cloudification and disaggregation, such as increased modularity and vendor choice (see Figure 11).

Figure 11: Most telcos still plan to deploy less cloudified network architectures



Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

- **Open RAN deployments:** 94% of telco respondents have not implemented open RAN and a staggering 50% are yet to even pilot it, underscoring a lack of urgency to embrace such solutions or a wait-and-see approach until they are proven at scale by open RAN pioneers among the Tier-1 operators.

Automation and AI use case adoption: Fewer than a quarter of operators report live deployments of automation and AI use cases across key network domains – from power management to infrastructure deployment/management to operations (see Figure 14)¹³.

¹³ STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

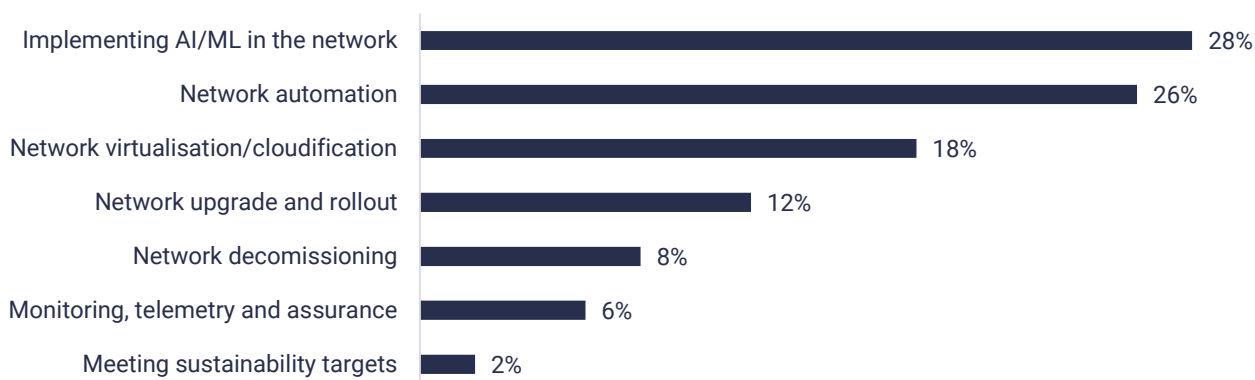
2. Pursue AI and automation use cases that generate value in the near term

AI/ML is (unsurprisingly) a top priority for telco networks

The potential of AI and automation in the network is well-understood. STL Partners predicts that A3 in the network will generate a financial benefit equivalent to 5% of revenues for a typical telecom operator¹⁴. Figure 12 also demonstrates that the majority of our telco survey respondents chose implementing network AI/ML or automation as their biggest network transformation priority over the next 12-18 months, signalling a consensus on the value and urgency of adopting AI and automation in the network.

Figure 12: Telcos are prioritising network automation and AI/ML

What do you see as your biggest priority in the next 12-18 months when it comes to network transformation? Please select one.

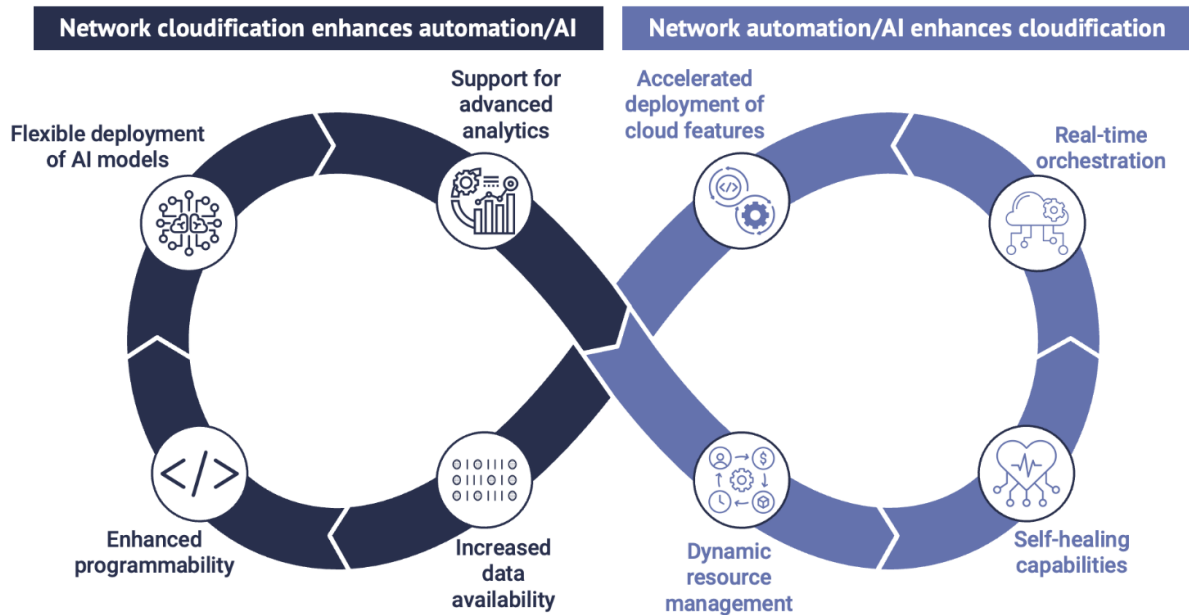


Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

As networks become increasingly complex and interconnected, automation and AI are indispensable for managing them. Conversely, more virtualised, disaggregated and cloudified networks create the foundation for deploying advanced automation and AI use cases that deliver tangible value to telcos and their customers.

¹⁴ Finding value from AI, analytics and automation (A3) in the telco network (Mar 2024)

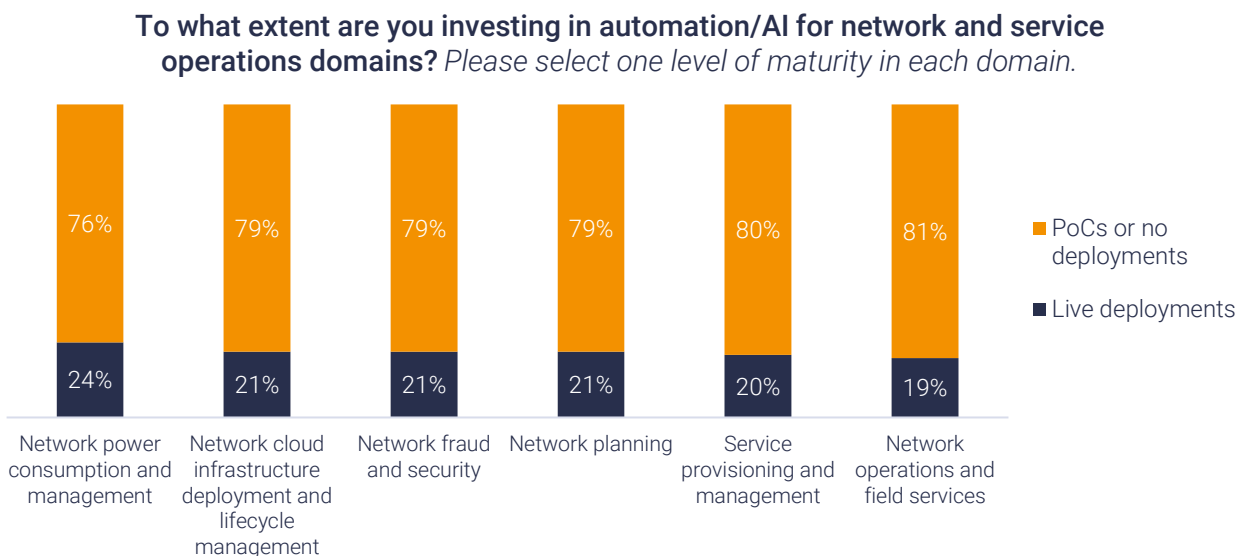
Figure 13: There is a symbiotic relationship between network cloudification and automation/AI



Source: STL Partners

Automation and AI have long promised to revolutionise telco operations, with use cases such as power optimisation, automated capacity management and intent-based networking offering clear potential to reduce costs and improve efficiency. Many of these solutions, especially those leveraging predictive AI, have been available for years, offering tools to address critical operational challenges and enable smarter network management.

Figure 14: Network automation/AI activity is lacking maturity across network domains



Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

Despite this, limited progress has been made. As Figure 14 shows, fewer than 25% of respondents reported live deployments of automation and AI across key domains, such as power consumption management (24%), and service provisioning and management (20%). Even after years of experimentation, most operators remain stuck in proof of concept (PoC) stages, failing to scale these solutions effectively.

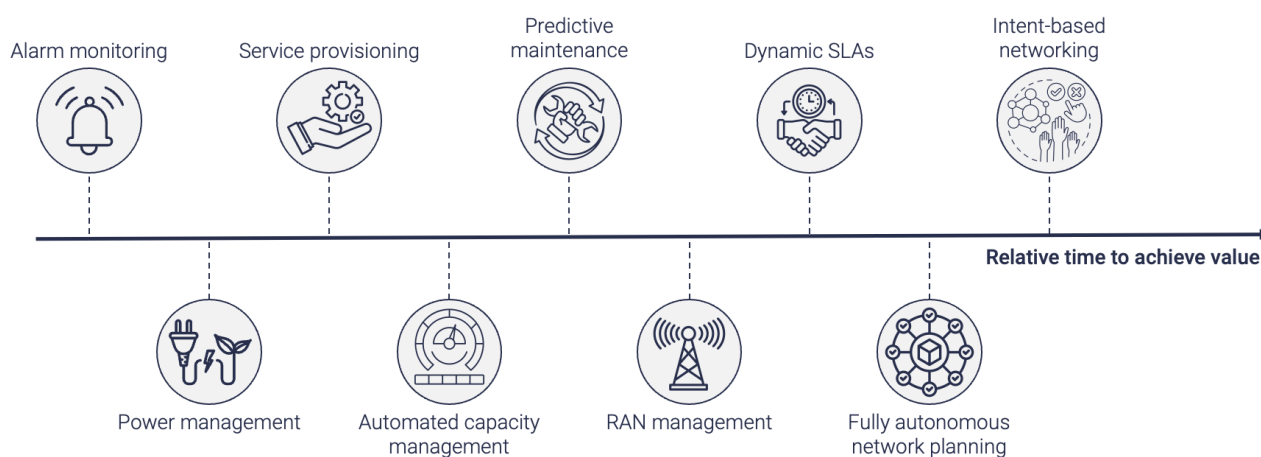
The relatively slow progress to date does mean that there is a significant opportunity for telcos to build momentum by focusing on high-impact automation and AI use cases. With proven use cases already available, operators are well-positioned to scale automation and AI – and turn them into powerful tools for driving growth.

Prioritise use cases based on speed of time to value

To achieve meaningful progress, telcos must focus on prioritising use cases that align with their existing network maturity and deliver the fastest return on investment (ROI). This approach, based on time to value, can help operators demonstrate financial benefits in the short-to-medium term, and thus support the case to continue invest in advancing their autonomous cloud network platform.

Figure 15 outlines some of the highest value use cases and the relative order in which they can generate ROI. By initially focusing on quick return initiatives, such as alarm monitoring and power management, telcos can reinvest the financial benefits gained into the development of more complex use cases. Operators can then implement advanced solutions, such as intent-based networking and fully autonomous network planning, which require highly accessible, unified network data and closed-loop automation.

Figure 15: Time to achieve value from priority automation/AI use cases



Source: STL Partners analysis based on 'Finding value from AI, analytics and automation (A3) in the telco network' (Mar 2024)

Operators at varying levels of maturity are already benefiting from these use cases. For instance:

- **Alarm monitoring:** One Tier-1 mobile network operator has implemented an AI/ML alarm monitoring application trained on historical alarm data and the subsequent actions/outcomes to categorise alarms into: 'Important', 'Standard' or 'Ignore'. This allows the company to prioritise

which alarms are addressed first. It has been estimated that the operator can address 70-80% of the network issues by focusing on the 20% of alarms classified as 'Important'¹⁵. Ultimately, this use case can enhance customer experience through heightened network performance/uptime and reduce costs associated with network faults and fraud.

- **RAN management:** Orange has implemented an AI-driven RAN optimisation project aimed at enhancing 4G and 5G network performance. The initiative leverages AI/ML on large telco datasets to evaluate and predict quality of experience (QoE) and capacity constraints, employing AI-based dimensioning methodologies for the access network. For the relevant sites, Orange was able to optimise investment by 6-8% and reduce its carbon footprint while maintaining quality of service (QoS) and QoE¹⁶. Broader adoption of autonomous cloud network platforms is expected to facilitate the deployment of such use cases at scale, leading to similar KPI enhancements across the whole network.
- **Intent-based networking:** China Telecom has advanced its network operations by implementing an intent-based networking system leveraging AI/ML and automation. The system translates high-level business objectives into automated network configurations, enabling on-demand, self-service and elastic network services. China Telecom is leveraging this approach across several areas, including through an intelligent operations platform for wireless networks, slice management and an intelligent work order system. Projections suggest that operators adopting this solution can benefit from a savings potential of 80% in network and operations management, and 9% in network maintenance¹⁷.

Unified data frameworks are a prerequisite for automation and AI maturity

For telcos looking to advance AI adoption, implementing a unified data framework will be a key enabler. Such a framework addresses the issues of siloed datasets and inefficient data pipelines by providing clear guidelines for standardising and connecting disparate data sources. In addition, it allows seamless integration of data across network domains, ensuring consistency, accessibility and scalability for AI and automation initiatives, even when separate teams are responsible for different data and applications. Telcos with unified data frameworks are almost three times more likely to have live deployments of automation and AI across network domains.

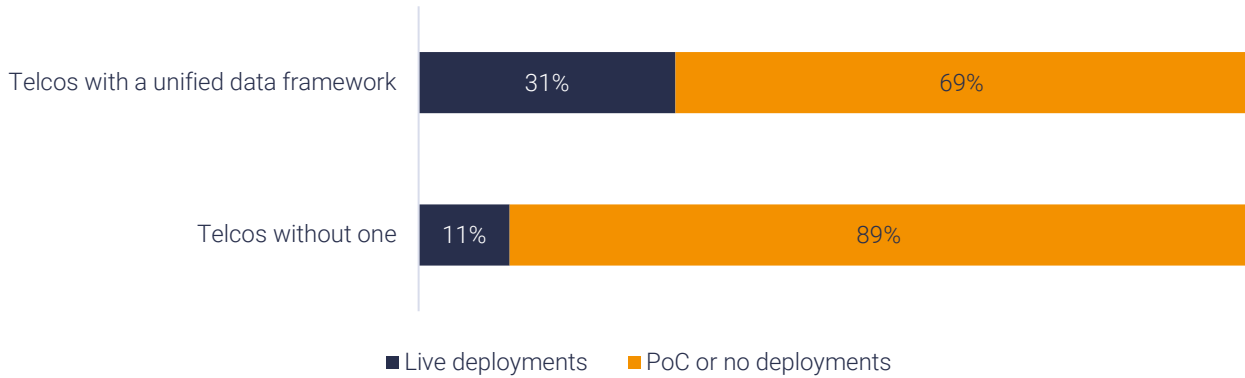
¹⁵ TEOCO's AI/ML for Telco Operations: From Reactive to Predictive & Autonomous

¹⁶ Sofrecom: Optimal dimensioning of the 4G/5G RAN with big data and AI (Aug 2024)

¹⁷ GSMA: China Telecom: Network AI development strategy and development layout (Feb 2020)

Figure 16: Within our sample, telcos with a unified data framework are around three times more likely to have live automation/AI deployments across network domains

To what extent are you investing in automation/AI for network and service operations domains? *(Average across seven domains surveyed taken in this case).*



Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

A unified data framework essentially serves as the foundation for machine learning operations (MLOps) platforms, which facilitate the lifecycle management of AI models. By addressing challenges such as fragmented data, operational inefficiencies and lack of scalability, such platforms enable telcos to move from isolated PoC AI efforts to full-scale, live deployments.

3. Leverage open source to accelerate the journey to telecom techco

As telcos pursue their transformation into telecom techcos, they face significant barriers that hinder progress in network cloudification, disaggregation and automation. Among the most prominent challenges are vendor maturity, interoperability issues and siloed solutions, which can stall innovation, lead to inefficiencies and slow down implementation. Open source is increasingly being explored to overcome these challenges and enable network innovation without a heavy reliance on traditional vendors' product development roadmaps.

Proprietary vendor-dependent approaches impose a maturity threshold

Relying on proprietary, single vendor-dependent solutions creates significant barriers to progress for telcos, limiting their ability to modernise and innovate. This maturity threshold is driven by three interrelated mechanisms:

1. **Limited vendor solution maturity:** Proprietary solutions can lag behind in adopting cutting-edge technologies and are constrained by the investment decisions that the vendor has chosen to make for its solutions. Telcos relying solely on these vendors are constrained by their pace of development, which may not align with the urgency required for network modernisation.
2. **Interoperability challenges:** Proprietary systems are frequently designed to work within closed ecosystems, making integration with third-party solutions difficult. This lack of interoperability creates silos, limiting the ability of telcos to scale automation and AI across network domains, and stalling the adoption of open and flexible architectures.
3. **Inflexibility and vendor lock-in:** A single-vendor approach reduces operational agility by locking telcos into rigid solutions that cannot easily accommodate emerging technologies. This restricts innovation and complicates efforts to adapt networks to support high-value services such as AI-driven offerings or network slicing.

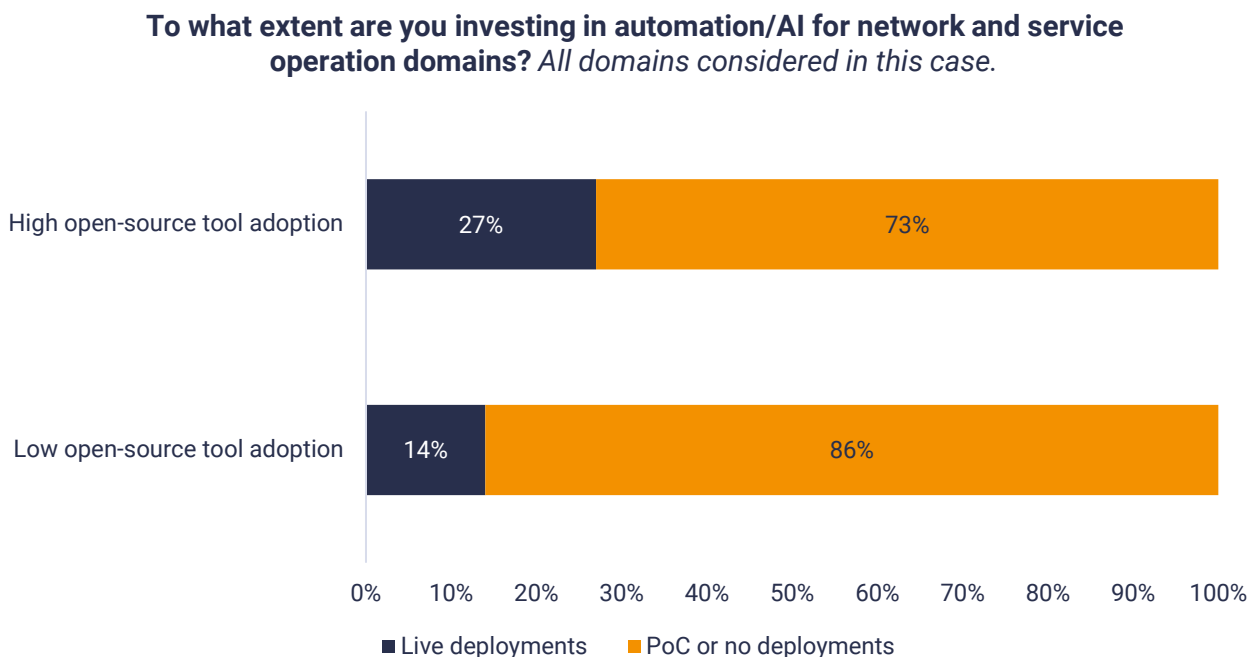
These mechanisms collectively create a ceiling on telcos' technological advancement, preventing them from reaching higher levels of network maturity. Overcoming this threshold requires a shift towards open-source and multi-vendor ecosystems, which offer greater flexibility, faster innovation and enhanced interoperability to ultimately achieve faster time to market (TTM).

Open-source tools provide solutions to key challenges

Open source plays a critical role in helping telcos bypass the limitations imposed by proprietary, vendor-dependent approaches.

- **Telcos that widely adopt open source are deploying more advanced network architectures:** Telcos that use open source across two or more domains are 57% more likely to be deploying more cloudified network architectures over the next 12 months than those that don't.¹⁸
- **There is a correlation between high open-source adoption and greater AI/automation use case maturity:** As demonstrated in Figure 17, telcos that use open source across two or more domains are almost twice as likely to have live automation/AI deployments in any given network domain.

Figure 17: Within our sample, telcos with greater open-source adoption demonstrate more advanced automation/AI activity



Source: STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

Same It is evident that telcos at more advanced levels of autonomous cloud network platform maturity recognise the value of leveraging open-source tools. They are benefiting by:

- **Avoiding vendor lock-in:** Open source reduces reliance on single-vendor solutions, giving telcos the flexibility to adopt best-of-breed technologies and foster competition among suppliers.

¹⁸ STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

- **Enhancing interoperability:** By adhering to open standards, open-source tools enable seamless integration across network components, breaking down silos and enabling greater collaboration.
- **Driving rapid innovation:** The global open-source community continuously iterates and improves solutions, delivering cutting-edge advancements at a faster pace than traditional vendor ecosystems.

Despite its benefits, 26% have not deployed open source in any network domain and only a third of operators are leveraging open source across more than two domains¹⁹. The domains we see open source providing the most value in are:

- **End-to-end visibility and monitoring:** Open-source tools provide comprehensive visibility across the network, enabling operators to monitor and manage performance issues proactively and efficiently.
- **Kubernetes cluster provisioning and lifecycle management:** Open-source solutions streamline the setup and maintenance of Kubernetes clusters, ensuring scalability and adaptability for network operations.
- **Cloud infrastructure provisioning and lifecycle management:** Leveraging open source accelerates the deployment and management of cloud infrastructure, allowing telcos to reduce TTM and improve operational flexibility.
- **Network function provisioning and lifecycle management:** Open-source frameworks simplify the deployment and management of virtualised network functions, enhancing interoperability and reducing vendor lock-in.
- **Containerisation and platform virtualisation:** Open-source containerisation technologies enable telcos to optimise resource utilisation and support dynamic, multidomain applications.
- **Network function onboarding:** Open-source tools ease the onboarding process for new network functions, ensuring faster integration and alignment with modernised infrastructure.

As these benefits show, open source can act as a key enabler of the deployment, monitoring and management of cloud-based networks, offering tools that proprietary solution vendors may lack.

¹⁹ STL Partners telco autonomous cloud networks survey, n=50 (Nov 2024)

Network-specific open-source initiatives will help technologies scale across the industry

Active engagement in open-source initiatives is pivotal for telcos aiming to transition into tech-centric organisations. Collectively, telcos can leverage their buying power by actively engaging with open-source community initiatives to influence the development of tools and frameworks. These include the following projects within the Linux Foundation:

- **Project Sylva:** This collaboration among major European telcos and vendors – including Deutsche Telekom, Orange, Telefónica and Red Hat – aims to develop an open-source, production-grade telco cloud stack. The goal is to reduce fragmentation in cloud infrastructure, enhance interoperability and accelerate the adoption of cloud-native technologies within telco²⁰.

“The telco cloud ecosystem today is fragmented and slowing down our operational model transformation... Sylva, by providing a homogenous and open telco cloud reference implementation for the entire industry, should help all the ecosystem.

Laurent Leboucher, Group CTO at Orange”

- **Nephio:** The project's goal is to deliver carrier-grade, simple, open, Kubernetes-based cloud native intent automation and common automation templates that simplify the deployment and management of multi-vendor cloud infrastructure and network functions across large scale edge deployments. Supported by industry leaders such as Verizon, Vodafone, Deutsche Telekom, Google Cloud and Capgemini, Nephio aims to streamline network function deployment through Kubernetes-based automation and intent-driven management²¹.

“Large-scale automation is pivotal on our Software Telco journey. It is important that we work together...and simplify the cloud-native automation of network functions. And we believe the Nephio project can play a fundamental role to speed up this process.

Jochen Appel, VP Network Automation at Deutsche Telekom”

²⁰ Linux Foundation Europe announces Project Sylva (Nov 2022)

²¹ Nephio sees rapid growth (Jun 2022)

Conclusion: Three recommendations for accelerating the telco to techco journey

If telcos are to realise their techco vision, they must address the critical gaps in their network capabilities while adopting strategies that deliver immediate and long-term value. This report highlights three key recommendations to guide operators on this path:

1. **Link network modernisation to the telecom techco strategy:** Telcos need to be brought in to the fact that investments in the network will help achieve their techco goals – they cannot be separate. Operators must prioritise investments in cloud native, AI and automation to streamline operations, reduce infrastructure costs and improved flexibility. Scaling these technologies also lays the foundation for innovation, so telcos can grow revenues through new services that take full advantage of the network's capabilities.
2. **Pursue AI and automation use cases that generate value in the near term:** While AI holds transformative potential, less than a quarter of telcos have commercially live deployments of AI/automation use cases in any given network domain. To accelerate progress, telcos should prioritise AI use cases that deliver tangible financial value quickly, such as alarm monitoring and power management. Adopting fast time-to-value use cases creates a foundation for scaling more complex AI initiatives in the future by unlocking resources for reinvestment.
3. **Leverage open source to accelerate the journey to telecom techco:** Open-source technologies enable telcos to reduce reliance on proprietary solutions, overcome interoperability challenges and adopt cloud-native innovations more rapidly. Initiatives such as Project Sylva, which is focused on developing a production-grade telco cloud stack, and Nephio, which simplifies cloud-native network deployments, demonstrate how collaboration can scale solutions to the network transformation challenges. Telcos with high open-source adoption are nearly twice as likely to deploy advanced AI and automation solutions, making use of these tools a strategic priority.

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