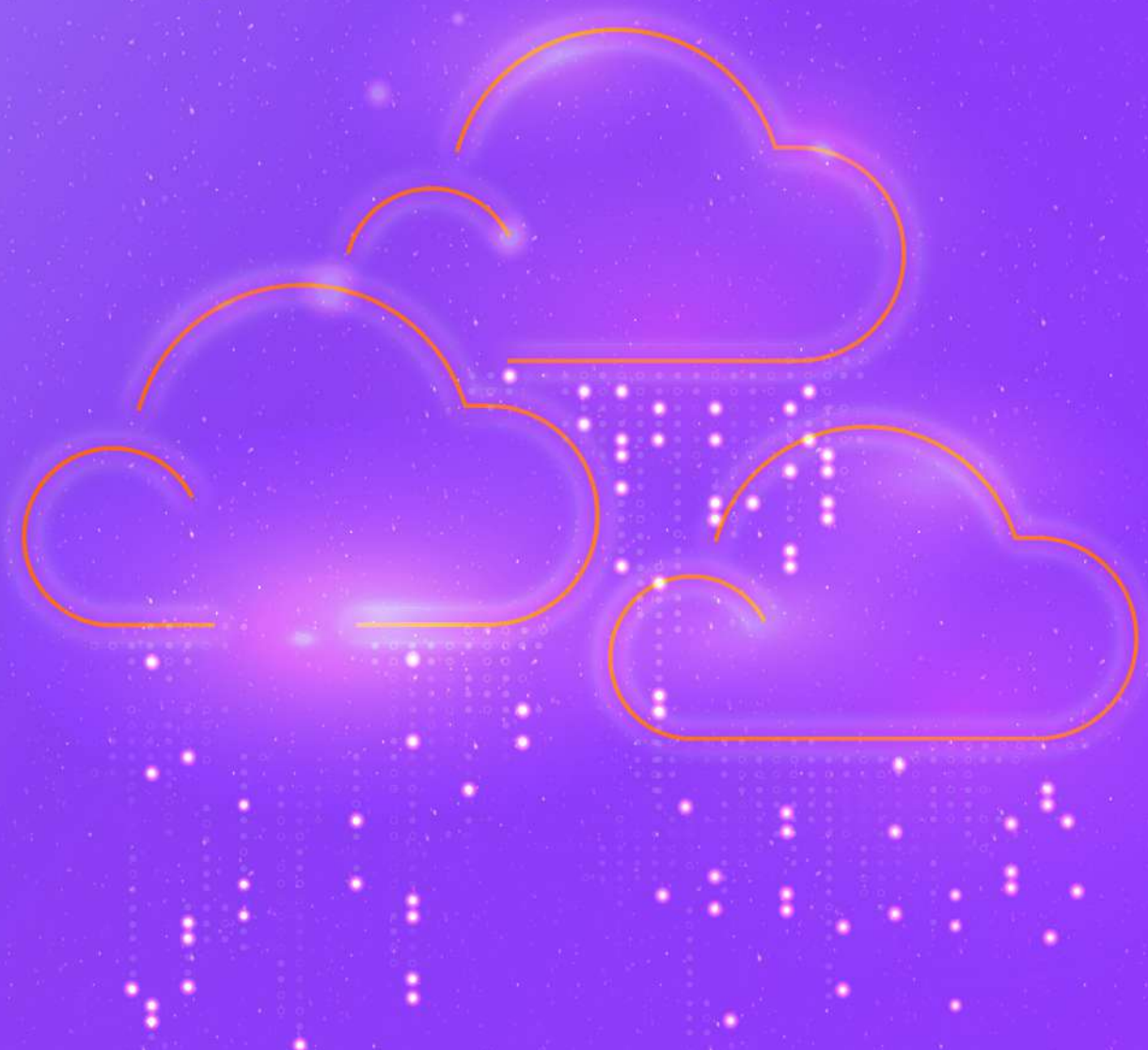
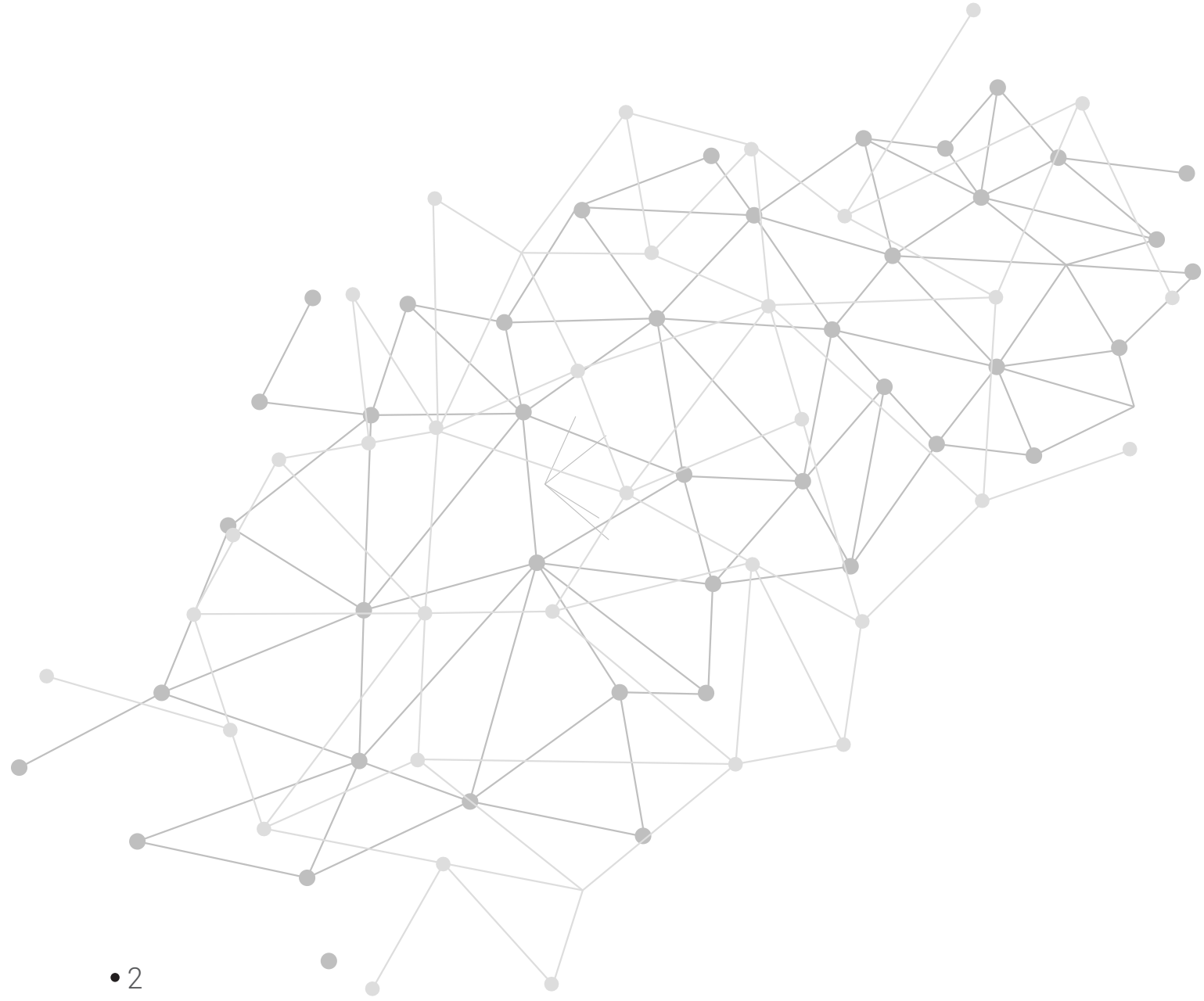
Intraway

From Legacy to Cloud-Native: A CSPs Roadmap for Succes





From Legacy to Cloud-Native: A CSPs Roadmap for Success

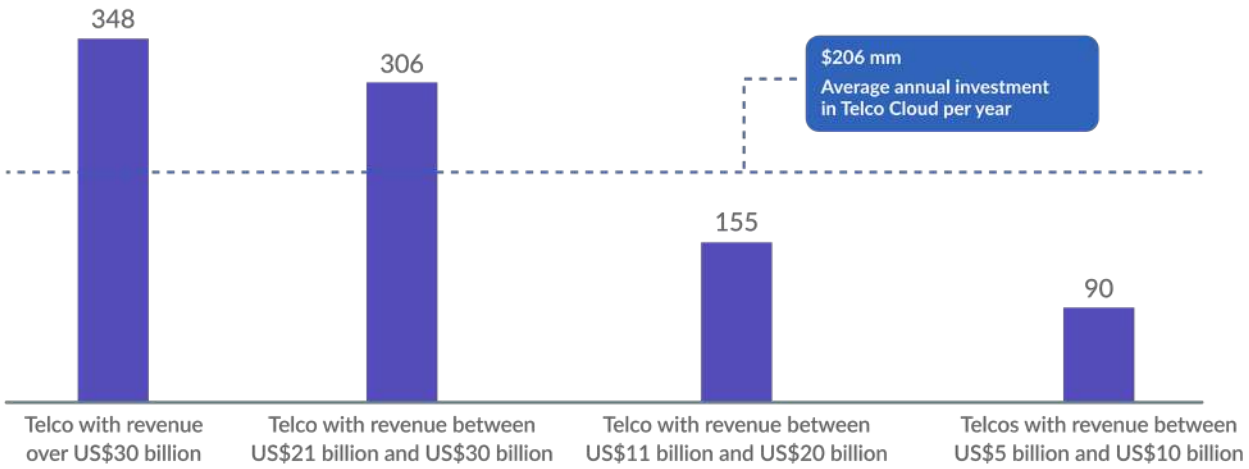
The introduction of 5G telecommunications networks has pushed mobile communications service providers (CSP) into a new technology paradigm. It is forcing them to adopt a cloud-based network infrastructure, an approach in which the replacement of single physical network appliances by virtualized network functions (VNFs) was – and for many CSPs still is - the first step.

This first step facilitates sophisticated network management functions to run on commodity hardware. And that, in turn, allows VNFs to move into the cloud, enabling virtualization at scale. By moving towards software-defined cloud-based networking, CSPs are creating the so-called 'Telco Cloud'.

This Telco Cloud enables CSPs to more easily manage and expand their network capabilities and speed up innovation, service fulfillment and operations. It also allows for an unprecedented level of network automation, increasingly important in an environment where no time is available for human interaction. Network scalability, reduced network complexity, and increased operational efficiency are the key characteristics of network transition to the cloud.

The Telco Cloud is one of the key foundational components in a successful digital transformation and critical for the widespread roll-out of 5G. The adoption of Telco Cloud is essential for the much-needed cost reduction which is a key priority for CSPs to keep profitability ticking amid the immense burden of 5G investments, stagnating revenues, and fierce competition of new greenfield competition. According to a **2023 Cap Gemini** report based on the results of a survey involving 170 senior executives from major operators, CSPs will invest US$ 1 billion for telco cloud transformation over the next 3-5 years (see Figure 1).

Average annual investment in telco cloud transformation per year ($ million, by annual revenue)



Source: Capgemini Research Institute, Telco Cloud Executive Survey, November-December 2022, N=170 telco executives.
Note: The values in $ million indicate average annual investment in telco cloud for telcos.

Figure 1. *Investment in Telco Cloud with top $1 billion on average over the next five years.*

Telco Cloud – an imperative for sustainable growth and profitability

The Telco Cloud enables the CSP to significantly lower Capex and Opex, among others through the use of non-specialized hardware (rather than expensive, dedicated equipment requiring ongoing, vendor-provided support, maintenance and upgrades) and automation. According to the Cap Gemini research, early adopters of cloud-based telco platforms expect to optimize network TCO by 13%. For a 'typical' CSP with average annual revenues of US$21 billion this means realizing cost savings of up to $260 to $380 million per year. Furthermore, a CSP of that size could also make $110 to 210 million per year in additional revenues by exploiting early-mover status in markets enabled by cloud-based platforms.

Some CSPs already claimed that their Telco Cloud investments have resulted in lower TCO. For example, Vodafone's group CTO **Scott Petty** recently said that the company, which has annual revenues of around $48 billion, has saved €500 million over three years from the introduction of cloud-based digital and automated processes. And the Japanese green field operator **Rakuten Mobile** has calculated that their network cloudification approach has resulted in a 40% lower Capex per cell site, and a 30% lower Opex, than its competition in the same market.

Network cloudification also provides the means to increase top-line revenues by building new 5G revenue streams. Effectively monetizing 5G network capabilities requires the new core and edge network capabilities that Telco Cloud provides. Telco cloud transformation is particularly important for rolling out industry-specific 5G use cases as the greatest revenue growth opportunities are found in the enterprise and industrial markets.

CSPs also recognize the increase of customer lifetime value (CLV) as a key business benefit. This because Telco Cloud provides a high level of availability causing no downtime or disruption of the end-user experience – resulting in less churn -, and also helps to develop new services faster and to up/cross-sell these to existing customers while keep iterating continuously. As Henriette Haagaas, Head of Cloud and ICT at Telia, said in the Cap Gemini survey: "Besides moving our networks to the cloud, we are leveraging cloud to move customers to new services beyond core connectivity services."

Because of all these business benefits there is little doubt about the shift towards the use of Telco Cloud to support the communications services of the future. But the adoption is proving challenging and things are not moving as rapidly as it might sometimes seem. According to an **STL report** published in June 2022, most Tier-2s and -3s CSPs, smaller MNOs, and Tier-1s in most developing markets are generally still going through their initial investments in network function virtualisation. In contrast, a considerable number of Tier-1 and some Tier-2 CSPs are already in the network cloudification phase.

Moving from 'lift-and-shift' to cloud-native

The initial move to the cloud came with VNFs, which took functions that were traditionally handled by specific hardware and adapting them to a cloud environment. Though this 'lift-and-shift' approach has the cost-benefit of allowing a CSP to move from proprietary hardware to commodity hardware, the move to the cloud does little to optimize VNFs for the cloud environment. The real benefit from network cloudification comes from a 'cloud-native' approach.

Cloud-native network functions (CNFs), which are typically made up of microservices and run in containers, differ from the lift-and-shift VNFs because they are specifically designed for the cloud from day one. CNFs take full advantage of the architectural principles and inherent capabilities within the cloud

environment, and run without many of the overheads associated with VNFs. As a result, they are faster and more efficient, scalable, elastic and resilient.

Cloud-native development is a fast-growing area. According to **Gartner,** more than 85% of enterprises will embrace the cloud-native approach by 2025. Microsoft CEO **Satya Nadella** recently claimed that most of the applications built by 2025 will be cloud-native.

Cloud-native technology is vital for enabling scalability, agility and time-to-market required for CSPs' digital transformation initiatives. It is fundamental for restructuring business models and cost base. And it brings along agile practices like DevOps and continuous delivery (CD) to accelerate business innovation and to build scalable applications rapidly.

According to a 2021 survey conducted by **Heavy Reading**, CSPs are expecting a lot of RoI in cloud-native, led by better customer experience, speed of innovation and lower costs. (see Figure 2). Remarkably, all benefits as shown in this figure were considered important, with almost no votes for 'not important', underscoring the importance of cloud-native networks.

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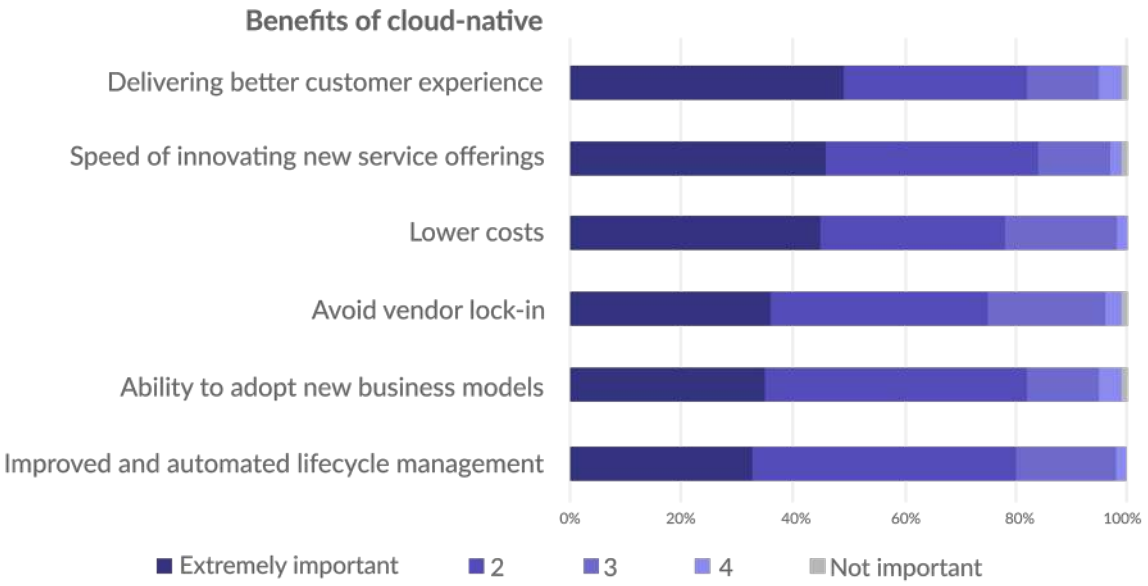


Source: Heavy Reading, 2021 Q3. Q: How important to your company are these benefits of moving to cloud native? n=91

Figure 2. *The move to cloud-native is all upside according to the Heavy Reading survey*

A small number of 'greenfield' CSPs, that are building 5G networks from scratch, are going all-in on cloud-native. Examples include Japanese **Rakuten Mobile** and the US mobile network operator **Dish wireless**. Dish is building a **cloud-native 5G** network on the Open RAN standard that is planned to cover 75% of the US population by mid 2023.

For the 'brownfield' CSPs the transition to cloud-native networks may be more cumbersome, but they have a lot to gain from CNFs and from migrating away from their legacy network features. A number of them have already started to deploy cloud native networks, such as **China Mobile** and Finland operator **DNA**. As another example, **T-Mobile** announced in December 2022 the launch of the "world's largest" cloud-native converged core gateway. The CSP said this has resulted in an immediate 10% boost in speed and latency for customers.

Simplify operations for the Telco Cloud

In addition to network functions and applications moving to cloud-native, operating support systems (OSS) have to become cloud-native as well. This is because current legacy OSS systems are not able to cope with the operational challenges related to operating a virtualized network. The advent of microservices-based networks and applications, the upcoming surge in network traffic and dynamic user needs, as well as the possibility to provide real time network slicing, will put much more demands on OSS systems.

The complexity of network operations in the Telco Cloud and the high speed at which digital services are deployed require real-time dynamic resource orchestration, rapid network scaling and continuous delivery of new functions and services. To enable that, a high level of automation is needed that only intelligent (AI-based) cloud-native OSS can provide. AI is essential for automating network operations, and to become more proactive and predictive in order to minimize performance degradations, prevent failures and eliminate critical customer-impacting problems.

Indeed, cloud-native OSS provides the agility needed to create highly-customized enterprise solutions and to make personalized and innovative customer experiences that will result in higher customer retention and improved revenue. The transition to containerized OSS solutions also provide significant cost benefits. The British mobile network operator **Truphone**, as an example, managed to reduce TCO of OSS applications by 60% after migrating to the cloud.

There's no debate about whether OSS - and billing support systems (BSS) - are going cloud-native; it is a question of how fast. CSPs' appetite to embrace cloud-native OSS/BSS applications, however, has been met with several barriers that must be addressed. A recent **Omdia's OSS/BSS Evolution survey** found that 61% of CSPs are hindered by limited in-house IT expertise. As a result, many CSPs will rely on outside help from vendors while embracing a low-code/no-code approach.

Low-/no-code as a key enabler in a CSP's cloud-native journey

In a cloud-native environment, new network functions and applications are realized by assembling and composing microservices run in containers, rather than through traditional development using line coding. This new approach is driving the use of low-code and no-code approaches. In the 2022 OutSystems report "**Cloud-Native Development: Ready or Not,**" the survey among 505 IT executives and developers revealed that cloud-native leaders see low-code platforms as winning partners in their cloud-native journeys, with 60% saying low-code platforms are "very good" or "excellent" tools for cloud-native implementation.

Low-/no code is a paradigm shift in how users interact with services. It is a software development environment that uses visualization to develop applications or to set up business processes. It allows people without programming skills to convert network requirements and customer needs into new processes and applications. By reducing line coding significantly or completely, and focusing on a visual automated process, this approach makes CSPs more responsive to changing network requirements and customer needs.

Low code/no code is increasingly recognized as a key enabler of telco transformation. It is starting to become more established within telecom companies to upgrade their infrastructure and to to overcome the shortage of IT skills and/or developers within their organizations. In particular 'no-code', offering the opportunity to build digital solutions without writing a single line of code, is gaining ground very fast, in particular in the area of OSS.

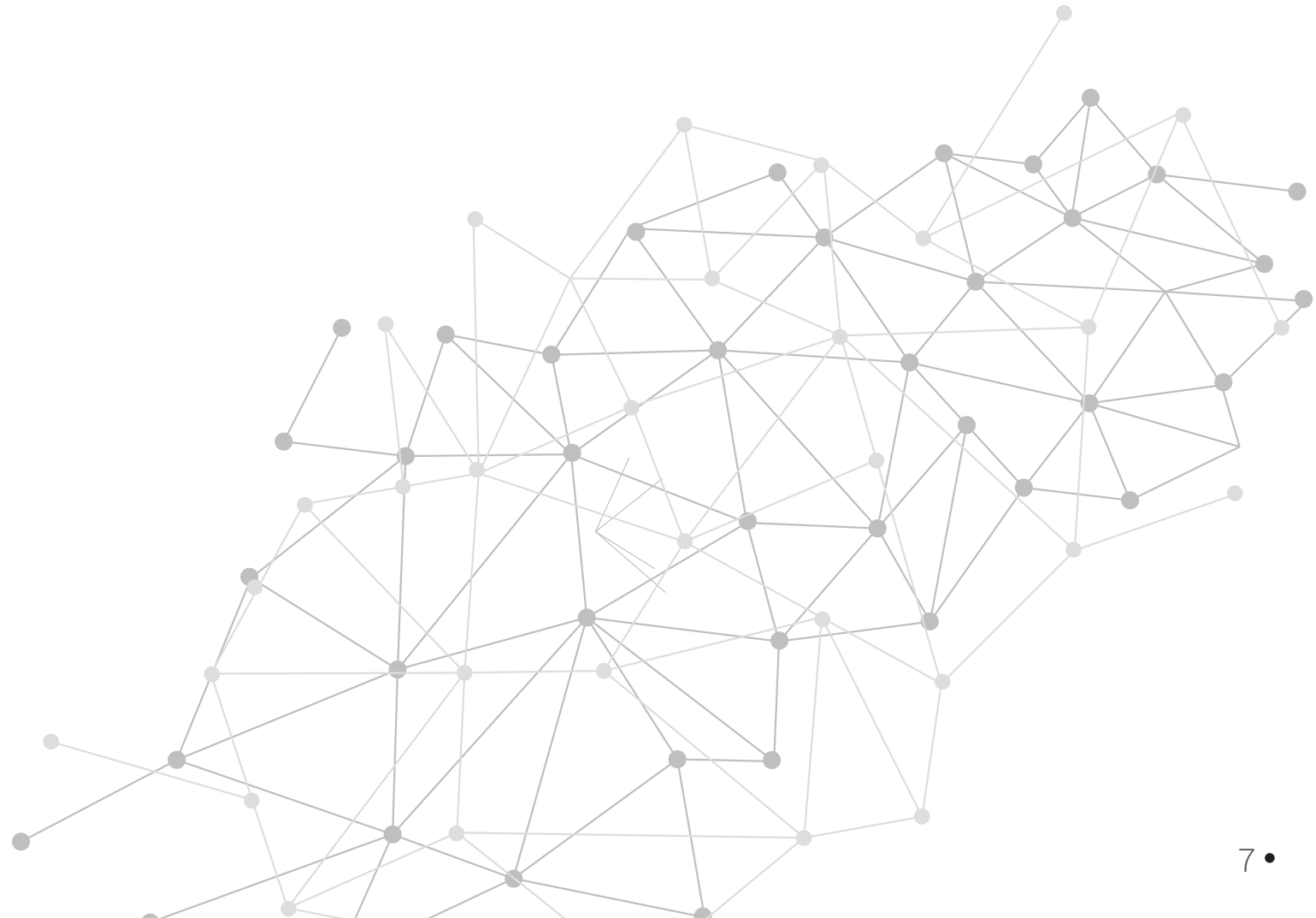
A case study – cloud-native and no-code OSS

Izzi is a Mexican CSP that is pursuing an aggressive growth and expansion strategy. The company provides telephone, Internet, cable TV and mobile services to individuals and companies. Izzi's acquisition strategy entails overcoming challenges with heterogeneous networks and operations environments.

Izzi sought to accelerate its time to market for new services with a solution that would enable any roll out, in any city, to be done remotely in a highly automated way. The CSP engaged Intraway for its Symphonica no-code cloud service orchestration solution, a cloud-native platforms that runs out of Amazon Web Services (AWS) in a Kubernetes-based environment.

Together, Intraway and Izzi needed to solve several operational challenges. Integration with two existing systems from different vendors had to be conducted rapidly as did integration with Izzi's legacy BSS. The program's results were stunning. High speed data were launched in the third month. Initial components were deployed and configured in just one day. These results were established, among others, through the use of Symphonica's codeless approach that enables its users to create their own workflows without writing a single line of code.

Intraway needed only one month to add the assets of another acquired FTTH provider, just three weeks to add a new network management software to Izzi's existing provisioning flows, and barely a week to solve an OLT multi-session handling challenge (rather than 2 months required with the legacy system). By providing an API-based abstraction and its codeless approach, the use of Symphonica also resulted in significant TCO savings (up to 30%) and a reduction (up to 50%) of time-to-market for new services.



Intraway

About Intraway

Intraway takes a partnering and trusted advisor approach to every customer. Not only is Symphonica a cutting-edge solution, Intraway also takes responsibility for its delivery and for educating customers on how to maximize its use. Intraway partners with its customers to overcome the unique technical and operational challenges inherent to every operator's IT and network environment. The result is a 100% success rate for Intraway's deployments (very uncommon in an industry with a failure rate greater than 80%), and more than a 90 NPS score over the last 3+ years. With as result that till now none of Intraway's customers has stopped doing business with the company, a rarity in this competitive field of OSS solution providers.

www.intraway.com

Moving the Telecom Industry to the Cloud