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**Lawrence Miller**

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# Telecom SaaS

Nokia Special Edition

**by Lawrence Miller**

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A Wiley Brand

# Telecom SaaS For Dummies®, Nokia Special Edition

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# Introduction

For decades, telecom service providers have run their operations and business software on complex, custom-built, on-premises infrastructure. This approach can no longer keep pace with today's rapidly changing customer expectations. To seize dynamic new 5G market opportunities, telecoms must accelerate time to value and lower the total cost of ownership for the software their businesses and networks depend on.

Enter telecom software as a service (SaaS).

SaaS is already widely used in other industries. Now that network software can be hosted literally anywhere, disaggregated from network hardware, it's time to bring the SaaS mindset to telecoms. With on-demand access to the applications you need, you can achieve faster time to value, cut non-strategic IT costs, and improve operational agility.

## About This Book

*Telecom SaaS For Dummies*, Nokia Special Edition, consists of five chapters that explore the following:

- » The basics of SaaS and telecom SaaS and why it's critical for transformation today (Chapter 1)
- » Telecom SaaS and 5G business opportunities (Chapter 2)
- » Telecom SaaS challenges (Chapter 3)
- » Telecom SaaS use cases (Chapter 4)
- » Key benefits of telecom SaaS (Chapter 5)

Each chapter is written to stand on its own, so if you see a topic that piques your interest, feel free to jump ahead to that chapter. You can read this book in any order that suits you (though I don't recommend upside down or backwards).

# Foolish Assumptions

It's been said that most assumptions have outlived their usefulness, but I assume a few things nonetheless!

Mainly, I assume that you work for a telecom service provider and have at least a basic understanding of cloud-native technologies and IT SaaS, but you would like to understand how telecom SaaS can help your business achieve digital transformation.

## Icons Used in This Book

Throughout this book, I occasionally use special icons to call attention to important information. Here's what to expect:



REMEMBER

This icon points out important information you should commit to your nonvolatile memory, your gray matter, or your noggin — along with birthdays and anniversaries.



TECHNICAL  
STUFF

If you seek to attain the seventh level of nerd-vana, then perk up! This icon explains the jargon beneath the jargon and is the stuff legends — well, legendary nerds — are made of.



TIP

Tips are appreciated, but never expected — and I sure hope you'll appreciate these useful nuggets of information.



WARNING

These alerts point out the stuff your mother warned you about (well, probably not), but they do offer practical advice to help you avoid potentially costly mistakes.

## Beyond the Book

There's only so much we can cover in this short book, so if you find yourself at the end of this book wondering, "Where can I learn more?" go to <https://nokia.com/saas>.

- » Looking at SaaS, the cloud, and the 5G landscape
- » Recognizing key differences between IT SaaS and telecom SaaS
- » Exploring the telecom SaaS market opportunity

# Chapter 1

## What Is Telecom SaaS?

In this chapter, we look at software as a service (SaaS), the cloud, the 5G landscape, how IT SaaS and telecom SaaS differ, and why telecoms and communication service providers (CSPs) must seize the telecom SaaS opportunity now by consuming different value-added services as SaaS offerings.

### Starting With the Basics

Moving at lightning speed toward fulfilling the promise of 5G, CSPs are on the cusp of a new era in fast, affordable, profitable connectivity. Telecom SaaS is key to achieving positive outcomes as CSPs digitally transform their operations and business models.

### Defining telecom SaaS

SaaS is a type of model in which the user consumes applications running on a cloud, where the applications and cloud are managed by the SaaS provider. Unlike a hosted private cloud, which is based on a single-tenant business model, SaaS offerings support a multi-tenant business model that scales to accommodate hundreds or even thousands of customers accessing the software simultaneously over the Internet. SaaS solutions are often integrated with other software offerings from the same SaaS solution provider.

Compared with the traditional approach of installing and maintaining on-premises software, with the SaaS model telecom companies don't have to worry about adding another server to run the software. The SaaS provider takes care of all server capacity planning.

Telecom companies only need to enable a new SaaS offering — and they get the flexibility to scale their SaaS use up and down through automation in a carrier-grade delivery model, based on specific needs.

In addition, because the software is delivered on cloud-based architecture, telecom companies don't need to download upgrades or reinstall new versions of a product. Any updates or patches to a service are handled by the SaaS provider.



REMEMBER

SaaS is:

- » **Subscription-based**, purchased from a SaaS vendor on a monthly or annual basis and delivered on-demand as an operating expense, not an upfront capital investment.
- » **Outcome-oriented** with value measured not by technical specifications, but in terms of benefits to CSPs and their customers.
- » **Cloud-native**, to deliver a reliable, scalable service with a lower total cost of ownership (TCO).

## Looking at the growth of 5G+ and SaaS

The 5G+ landscape is evolving rapidly, and SaaS is the acceleration engine for communication service providers to realize the full potential of 5G and beyond.

Some important trends reported by various industry sources include:

- » **7x growth experienced** in mobile traffic in the last five years
- » **5x growth expected** in mobile traffic in the next five years
- » **75 percent of data** will be processed at the telecom network edge in the next five years
- » **49 percent of the world's population** is un- or underserved by modern communications technology



It's clear that traffic on telecom networks will continue to grow exponentially, particularly as the proportion of machine versus human users increases with the rise of the Internet of Things (IoT), Industry 4.0, and more. This growth creates a significant opportunity for CSPs. To address this demand, compute capacity will continue to move closer to the point of consumption — that is, to the telecom edge.

SaaS is a profitable business model across many industries today and is a catalyst to bring all networks alive in real-time. Statista counts the number of SaaS companies worldwide at about 25,000 in 2021, with an estimated market of \$272.5 billion and an industry compound annual growth rate (CAGR) of approximately 11.7 percent, meaning that the global SaaS market will hit \$307.3 billion by 2026.



**WARNING**

Overbuilding telecom networks to address reliability and unforeseen demand is no longer a viable option. Likewise, leaving close to half the world's population un- or underserved is no longer acceptable. To capitalize on the new opportunities that abound, CSPs must have on-demand, elastic network scalability and availability.

## Differentiating Between Telecom SaaS and IT SaaS

Telecom SaaS is a service delivering a business outcome that is bought as a subscription and based on cloud-native software. It's delivered with a fully digitalized business experience and a fully automated services lifecycle, which is designed for any carrier-grade network. Simply put, with the SaaS model, CSPs are provided access to the software they need instead of buying it outright, typically through a usage-based subscription purchased on a monthly or yearly basis.

Telecom SaaS involves a significant degree of specialized capabilities required to support carrier-grade availability, scalability, resiliency, performance, and security to handle the rigors of managing telecom workloads. When an IT SaaS workload fails, that service is effectively “off-the-grid.” In contrast, when a telecom SaaS workload fails, the grid is subsequently at risk because the role of a CSP is to provide the grid itself.



CSPs are increasingly disaggregating software from hardware. While dedicated hardware is still needed for certain types of communications services, software can be hosted anywhere. When ultra-reliable low latency communication (URLLC) is required, the software can be hosted at the edge cloud, ensuring the fastest round-trip for mission-critical packets for services such as Industry 4.0 automation and monitoring of factory floors, augmented reality (AR), construction site security, and more.

While regular SaaS provides software, telecom SaaS can be deployed for specific geographies and target specific use-cases. Telecom SaaS provides a guaranteed service level for specific next-generation applications — such as Esports in an arena environment or low-latency communications in autonomous vehicles — creating new revenue opportunities as new technologies that leverage 5G's rich feature set are conceptualized and realized.



Telecom SaaS also provides the extreme reliability required to meet service-level agreements (SLAs) by containerizing applications that can be spun-up on secondary servers in the event of a failure on the primary host and by hosting at the edge cloud.

## Recognizing Why Telecom SaaS is Critical Today

As 5G deployments continue around the world and the 3rd Generation Partnership Project (3GPP) and other standards bodies release updates, managing a 5G network is becoming increasingly complex. At the same time, enterprise customers are demanding more from these increasingly agile networks.

In the past, telecom engineers and developers had to painstakingly build new capabilities by hand, then deploy and monitor them manually. In today's 5G world, there's simply too much going on for any one human to monitor and maintain.

To scale and profit from your 5G investment, it's critical that networks of the future be secure, programmable, orchestrated, and on-demand. The networks — and the applications that live on them — work together seamlessly to achieve business outcomes. These business outcomes require immediately available

and elastic network capacity that addresses different use cases in real-time. The return on investment (ROI) comes from delivering enterprise customers and developers with a dynamic service that the next Netflix, Snapchat Spectacles, or Pokemon Go can rely on for their next-generation services and products.



REMEMBER

If the telecom industry is to grow, it must be open to development by the next generation of entrepreneurs, startups, and over-the-top (OTT) service providers. Who knows what the next Netflix, Amazon, or TikTok will build on top of a network that provides almost zero latency with download speeds 100x faster than the previous generation network? CSPs will monetize these enhanced capabilities by offering value-added services to enterprises through telecom SaaS. Enterprise customers will be willing to pay a premium for the ability to quickly scale their SLA requirements up or down as they “move fast and break things.”

- » Transforming the telecom business model
- » Virtualizing network functions
- » Reimagining your value chain
- » Going to market with new offerings for your customers

# Chapter 2

## Realizing New Business Opportunities with SaaS and 5G

In this chapter you discover how telecom SaaS transforms the traditional communication service provider (CSP) business model and enables new revenue opportunities. You'll understand how containerized network functions (CNFs) have enabled a paradigm shift from specialized hardware to commoditized software, and how CSPs are building out their value chains and extending telecom SaaS offerings to their customers.

### Doing Business Differently in 5G

The telecom industry isn't particularly known for partnering with outside industry players, but working with enterprise partners and developers to expand your SaaS offerings is critical to the success of 5G. It's time to leverage your strategic partnerships.

Telecom SaaS enables CSPs to improve business agility by significantly reducing the time typically required to realize

the value of the investment in communications business and networking applications. A SaaS business model eliminates investments in large upfront capital expenditures and accelerates the ability to launch new services more rapidly and realize faster time-to-value.



REMEMBER

Transitioning to a SaaS business model offers many advantages for CSPs, including:

- » **Getting to market quickly.** No lengthy procurement, installation, or set-up processes means rapid time-to-value.
- » **Bridging the knowledge and talent gap.** Eliminating proprietary hardware and software reduces the need for specialized skills and enables you to recruit from a broader talent base.
- » **Testing new and existing markets.** With little upfront investment required, you can test markets, new products, and lines of business.
- » **Reducing IT spend.** Eliminate activities with little strategic value such as customizing and maintaining business and operational systems and networks.
- » **Using evergreen deployments.** Always be up to date on the most current versions of software.
- » **Transferring risk.** Transfer the risks of security management to the SaaS vendor.
- » **Lowering costs with commercial off-the-shelf (COTS) hardware.** Access standard off-the-shelf use cases and integrations, providing faster time to market and lower cost.

## Understanding the Role of CNF as a Foundation for 5G

Since the introduction of Network Functions Virtualization (NFV), software has been disaggregating from hardware and subsequently into cloud-native microservices. This steady evolution from proprietary on-premises monologic network appliances to Virtualized Network Functions (VNF) and Containerized Network Functions (CNF) running on COTS hardware sets the stage for a major paradigm shift. Software can run anywhere.

As communications software makes the leap to a 5G, any-cloud environment, telecom SaaS becomes a relevant business model to improve time-to-value and lower total-cost-of-ownership. Telecom SaaS isn't just a technological transformation. It's a business (and mindset) transformation and the next step in the evolution of the telecom network.



TIP

Seizing the 5G opportunity means shifting away from the legacy practice of deploying customized software for analytics, security, network management, and network functions. It's the natural evolution of the everything-as-a-service journey for the communications industry and a key enabler of Nokia's strategy toward network-as-code enabled by 5G networks.



TECHNICAL  
STUFF

Containerized Network Functions (CNFs) are a way to take routers, firewalls, and other high-functioning applications and deliver them as software on commoditized computer hardware. It's what makes it possible to tie all the features of 5G together by providing the ultra-reliability that comes with multiple containers acting as backups, the low latency that comes with deploying software in an edge cloud much closer to the user or their device, and the artificial intelligence (AI)-powered machine learning algorithms necessary to monitor, maintain, and deploy new services quickly and at low cost.

## Building New Value Chains

5G delivers higher multi-gigabit per second (GBPS) peak data speeds, ultra-low latency, more reliability, more precise location awareness, massive network capacity, increased availability, and a consistent experience for more users. In short, higher performance and improved efficiency empower new user experiences and connect new industries.



REMEMBER

As networks get bigger and more mobile, more data is generated farther away from the data center. Data processing must occur closer to where the data is generated — at the network edge. Edge computing processes data quickly, closing the loop between where the data is generated (near the user) and where it's processed, bypassing the data center. As networks become more decentralized to get closer to the point of consumption, they must also become increasingly available on-demand.

Internet of Things (IoT) devices can deliver autonomous, intelligent, local analytics based on their sensed environment. A good example is the rise of smart factories connected by the IoT operating within the plant. These factories operate in a seamless, connected environment where machinery and equipment improve processes through automation and optimization. Beyond producing goods, benefits include functions like planning and supply chain logistics with integration across the manufacturing supply chain. Consider the Siemens Electronic Works facility in Germany. Smart machines orchestrate production and a built-to-order process encompassing roughly 1.6 billion components.



REMEMBER

Watch for other markets from healthcare to consumer goods to adopt Industry 4.0 technologies, such as remote surgery and emergency response — life-critical use cases that count on highly reliable, low-latency network communication when it's needed. The use cases may have short life spans and peak-load spikes to deliver elasticity through combinations of mature infrastructure as a service (IaaS), platform as a service (PaaS), and SaaS offering in real- or near-real-time.

## Extending Telecom SaaS to the Customer

Once a CSP has the foundation of telecom SaaS, it can open its network to the economies of scale that come from consuming services as SaaS applications, enabling them to try more offerings and initiatives, achieve quick wins or fail fast, and quickly regroup if (or when) needed. CSPs need several SaaS-based applications, including:

- » Analytics
- » Monetization services
- » Security services
- » 5G core, network core or mobile core

CSPs will reimagine themselves towards thinking about outcome-based propositions. Instead of simply selling connectivity, they'll be selling bundled capabilities for Industry 4.0 players like airports, manufacturers, and smart cities. The services created by telecom SaaS can also be white-labeled for enterprises looking to provide 5G services for their own customers.



**TIP**

When building new revenue opportunities, the selling proposition for telecom SaaS is that the CSP has the ability to experiment with their business and technology strategy. Because they're using SaaS on a subscription basis, CSPs can explore new revenue streams in unknown markets without big upfront commitments.



#### IN THIS CHAPTER

- » Calculating the real total cost of ownership
- » Ensuring robust security and compliance with regulatory requirements
- » Transforming CSP operations
- » Starting your telecom SaaS journey

## Chapter 3

# Turning Hurdles into Opportunities

In this chapter we address some common telecom software-as-a-service (SaaS) concerns such as total cost of ownership (TCO), security, and operational silos, and show you how to get started with telecom SaaS.

## Addressing Total Cost of Ownership

The SaaS consumption model is typically a subscription-based, pay-as-you-go model in which costs are spread over time. Although this model allows organizations to avoid major upfront capital investments, the TCO can be significant as more services are consumed over longer periods of time.

However, this rather simplistic view of TCO fails to account for many of the hidden operational costs associated with traditional, on-premises deployments, as well as the new opportunities that SaaS opens up to telcos and communication service providers (CSPs).

In traditional deployment models, the CSP must purchase, deploy, and maintain hardware, software, and other physical (or virtual) infrastructure in their on-premises datacenters or private or public clouds. They are responsible for the energy costs (power and cooling) associated with the deployment, as well as operational tasks such as:

- » System administration
- » Patching and upgrades
- » Performance monitoring and troubleshooting
- » Lifecycle management and capacity planning
- » Backup/recovery and disaster recovery
- » Security and regulatory compliance

All of these operational tasks require dedicated, in-house expertise which requires significant investments in hiring, training, and retaining talented staff.



REMEMBER

Traditional software and hardware vendors also appreciate a recurring revenue model in the form of annual support and maintenance fees.

With SaaS, customers can quickly scale up/down services to support growth or bursts of demand. This on-demand aspect of SaaS enables CSPs to experiment with new service offerings, validate proofs of concept (POCs) or fail fast, reduce opportunity risk, and accelerate time-to-market.

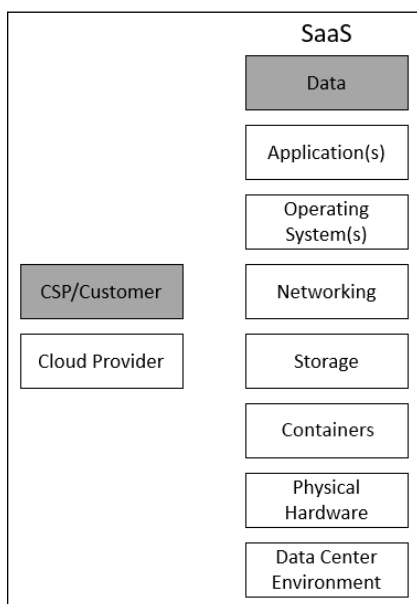
## Improving the Response to Cyberattacks



WARNING

Advanced 5G services have enormous revenue potential for CSPs, but building partners and customers into the solution lifecycle requires more openness in the network than ever before. This openness creates an exponentially larger attack surface for malicious actors at a time when cyberthreats are growing in frequency, scale, and sophistication.

Public hyperscaler clouds are secure by design. In fact, most of the world's sensitive data is already stored and processed in public clouds. In the shared responsibility model for SaaS (see Figure 3-1), the cloud provider is responsible for the security of the data center environment, physical hardware, virtual machine instance(s), storage, networking, operating system(s), and application(s). The CSP/customer is responsible for the security of their data.



**FIGURE 3-1:** The SaaS shared responsibility model.



**TIP**

To secure data, CSPs should implement the following security controls and best practices as part of their telecom SaaS deployment strategy:

- » Site-to-site virtual private networks (VPNs) using IPSec or a dedicated line for connectivity — no routing of traffic via the public Internet
- » Dedicated tenant resources/subscriptions — no shared resources

- » Security by design
- » Defense in depth
- » Data minimization principles
- » Data encryption in motion/transit and at rest
- » Sensitive subscriber data suppression or masking

Traditional CSP security operations (SecOps) teams struggle to identify and contain real threats in a daily deluge of tens of thousands of alarms and alerts. These SecOps teams need to increase the speed and intelligence of their cybersecurity response. Flexible cloud-based security SaaS solutions hold the key.

New configurations, combined with newly exposed interfaces and application programming interfaces (APIs), have made security more dynamic than ever before. The number of cloud-native network functions has skyrocketed. Deploying SaaS-based security enriched with artificial intelligence (AI) and automation can protect the network from breaches, and ensure that if anything happens, a CSP is able to deal with it as quickly and effectively as possible.



TIP

SaaS-based security AI has to consider a cross-layered data correlation to contextualize security events with intelligence-driven alerts for comprehensive alerts and responses. SaaS-based security automation allows the creation of cyber-playbooks that respond to threats based on a series of triggers, cutting mean-time-to-respond (MTTR) and centralizing response capability with automated workflows and orchestration.

## Breaking Down Silos at the CSP

5G isn't just a transformational wireless technology, it's transforming the CSP itself. The days of sales, marketing, IT, and engineering all operating in independent silos are coming to an end. For a 5G deployment to be successful, all groups must work together to develop new ways of leveraging the power of this next-generation service.

Telecom SaaS is a vehicle for digital transformation. It's an opportunity for CSPs to redefine themselves in the way they sell to customers. In an age of "Everything as a Service," enterprise

customers are quickly becoming accustomed to paying only for what they need. The cloud-native nature of telecom SaaS makes your CSP more agile by reducing or eliminating the time required to build, manage, and maintain a 5G network, so that you can focus your human and technological resources on new revenue opportunities.

Telecom SaaS allows a CSP to be more agile. When development and maintenance of the underlying software becomes the responsibility of a vendor, the resources previously required for these activities can be redeployed to other value-added services. What differentiates one CSP from another isn't the level of customization for the service they're consuming. Much like the success found by hyperscalers, it's the ability to innovate much faster than competitors that makes telecom SaaS critical to 5G success.



TIP

CSPs will reimagine themselves towards thinking about outcome-based propositions. Instead of simply selling connectivity, CSPs will sell bundled capabilities for Industry 4.0 players like airports, manufacturers, and smart cities. The services created by telecom SaaS can be white-labeled for enterprises looking to provide 5G services for their own customers.

## Getting Started with Telecom SaaS

As you begin your journey to telecom SaaS, it's important to clearly define the roles and responsibilities of several key players. These roles include the following:

- » **Chief executive officer (CEO).** An effective SaaS deployment requires buy-in from the top down. The CEO of any telecom company must be the leader in this transformational change.
- » **Chief financial officer (CFO).** The CFO must recognize the potential for generating new revenue and reducing costs with new business models involving partnerships with both developers and enterprises looking to leverage the power of 5G.
- » **Chief information security officer (CISO).** 5G opens new threat vectors and requires a CISO with a firm understanding of the ring-fence nature of the technology that comes from a SaaS-based CSP.

- » **Chief technology officer (CTO).** The CTO must remain on top of the evolution of the hardware and software required for a successful 5G deployment.
- » **Chief information officer (CIO).** The deployment of machine learning algorithms will change the IT department's role in a 5G world. No longer will this team be glued to dashboards or have to wade through log files looking for anomalies that signal potential failure. Instead of looking for fires, they can focus on fighting the ones they have, working with other departments to build robust redundancy into systems, and ensuring SLAs promised by the sales and marketing teams are achievable and achieved.
- » **Chief revenue officer (CRO).** Gone are the days of waiting for the phone to ring. Sales teams, armed with an understanding of SaaS, will be able to approach existing enterprise customers with new ideas for services that lead to increased revenue generation for both the enterprise and the CSP.

Armed with an understanding of who is responsible for what, you need to determine your primary focus when moving to SaaS. For most CSPs, the shift to a telecom SaaS model will be a gradual, multi-year journey. It is also not an “all-or-nothing” proposition — CSPs can begin the transformation with a few low-risk analytics, security, and network management functions, for example.

The next step is completely up to your imagination and creativity. 5G enables a bold new future of innovation and opportunities for CSPs that embrace telecom SaaS.

- » Leveraging Core SaaS
- » Reducing the cost of a breach with Security SaaS
- » Going green with Analytics SaaS

# Chapter 4

## Exploring Telecom SaaS Use Cases

The telecom industry must provide innovative and sophisticated technologies that operate at the edge to meet their customers' current and future needs. Telecom software as a service (SaaS) offers a secure, orchestrated network with programmable on-demand applications that are powered by artificial intelligence (AI) and machine learning (ML).

In this chapter, we explore three different telecom SaaS use cases (Core, Security, and Analytics) that communication service providers (CSPs) can leverage to realize the full potential of 5G and beyond.



REMEMBER

Telecom SaaS reduces complexity and provides the business and technical agility required to support current needs and deliver valuable services. Greater business agility provides improved cost management and lower total cost of ownership (TCO). Technical agility enables CSPs to focus on innovation rather than integration.

# Core SaaS

Core SaaS can substantially enhance an existing core network installation by simplifying cost control, reducing time to market, and enabling greater support for new service creation. Core SaaS provides a network template incorporating pre-integrated network functions, all delivered commissioned, operated, and maintained by the telecom SaaS provider.

Core SaaS can simplify integration and provide immediate capacity to address requirements from straightforward use cases to the most complex, hyper-connected 5G scenarios. Core SaaS can be configured and optimized for a variety of use cases, such as:

- » **Modernize network operations.** Provision test environments for digital transformation projects, technology trials, or innovation labs.
- » **Pop-up network on demand.** Industry 4.0 requires rapid scalability of telco networks. Customers may require peak load or event-related network expansion.
- » **Metaverse experience.** An on-demand core network can be set up for emerging opportunities like augmented reality and low latency use cases.
- » **Mobile Virtual Network Enabler (MVNE)/Mobile Virtual Network Operator (MVNO) as a Service.** Rapid, low risk deployment for VNOs, neutral hosting solution providers, or digital wholesalers.
- » **Enterprise demands.** Individual, scalable core for existing enterprises like utilities, railways, smart cities, or government agencies. Also meets the agile needs of entrepreneurial companies wanting to test new market opportunities.
- » **Network as Code.** Exposes Core SaaS capabilities via open application programming interfaces (APIs) for new services in multiple service chains.



REMEMBER

Using a telecom SaaS model for core network services enables CSPs to reduce risk, investment costs, and implementation time. With a telecom SaaS provider, CSPs can reduce risk by quickly executing pilots or proofs-of-concept for new digital transformation projects; investment costs can be avoided by leveraging cloud infrastructure owned and operated by the telecom SaaS provider; and



implementation time can be cut from a year or more to a fraction of that time with on-demand infrastructure and services.

## Security SaaS

Security operations teams are under constant pressure to defend against cyber threats in network environments that have never been more challenging to secure. Trends such as cloudification, expanding use of APIs, and the deployment of open 5G architectures are dramatically increasing the network attack surface, giving threat actors more opportunities to breach your network. The sheer volume of network activity makes it challenging for CSP security teams to identify breaches when they occur, and every day that goes by before an attack is detected means more damage and higher costs to the organization.



WARNING

The average total cost of a data breach in the telecommunications industry is \$3.62 million according to the Ponemon Institute's 2022 *Cost of a Data Breach Report*.

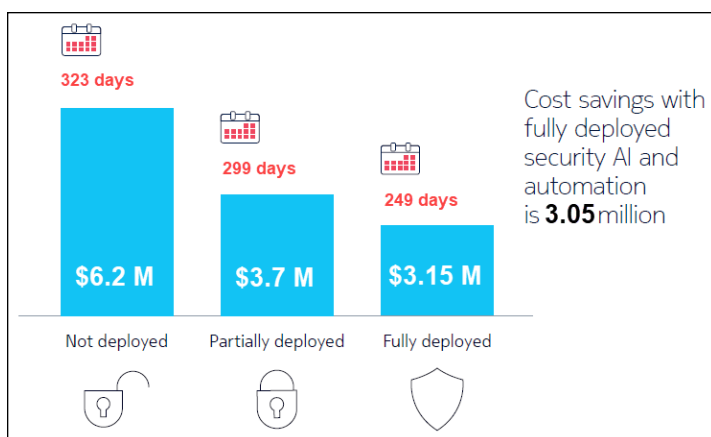
In a network with no AI or automation to support security actions, a breach takes an average of 323 days to identify and contain, and costs a company approximately \$6.2 million. Partial deployment of AI and automation reduces the average time to 299 days and the cost to \$3.7 million. With full automation, the average time drops to 249 days and the cost is reduced by nearly half, to \$3.15 million (see Figure 4-1).

Security SaaS reduces the time and cost associated with a breach by combining technologies such as extended detection and response (XDR), AI, and ML, to enable robust, automated threat detection, prevention, and response across the entire network topology — from the 5G core to the radio access network (RAN) and the transport network.



TECHNICAL  
STUFF

XDR software automatically classifies alerts by type and security, removing the need to manually investigate every alert so that security teams can focus on containing and eradicating sophisticated threats.



(Source: Ponemon Institute 2022 Cost of a Data Breach Report)

**FIGURE 4-1:** AI and automation reduce the cost of a breach.

## AI and Analytics SaaS

Energy is one of the largest and fastest-growing costs for telecom service providers. According to *GSMA Intelligence*, energy consumption accounts for 20 to 40 percent of telecom operating expenses (OPEX). But cutting energy consumption isn't just important to your bottom line — it's also essential to meeting corporate social responsibility commitments, complying with environmental regulations, and promoting your brand in today's eco-conscious society.

Energy efficiency is one example of a key telecom industry use case for AI and Analytics SaaS. AI can optimize power savings for every base station in every sector, every day. For example, conventional energy-saving methods operate based on pre-defined static shutdown windows and aren't able to handle complex savings scenarios. Nokia AVA Energy Efficiency, on the other hand, predicts low traffic periods and shuts down resources such as frequency carriers or even whole sites dynamically. AI-based solutions achieve two to five times more savings than non-AI systems that perform temporary shutdowns based on fixed schedules.

AI and Analytics SaaS can help you decouple network and traffic growth from energy consumption so you can keep expanding your

business while reducing energy-related OPEX. Key capabilities and benefits include:

- » **Minimize consumption.** Software-based overlay energy management solution Nokia AVA for Energy Efficiency minimizes the power consumption of RAN equipment across all layers for all major vendors.
- » **Gain insights to help you optimize.** Benchmarking lets you see the energy usage patterns of different sites and equipment types and analyze trends against current or historical averages (for example, GB of traffic per kWh of energy).
- » **Simulate energy savings.** AI models let you simulate the results of proposed changes so you can see which ones will have the greatest impact on your costs.
- » **Detect energy theft and fraud.** Advanced analytics highlight anomalous patterns that could point to theft and fraud so you can address them and protect your networks.
- » **Identify faulty equipment.** Anomalies can also indicate equipment that is malfunctioning or improperly configured so you can take appropriate action.



TIP

Leveraging a telecom SaaS model for analytics rather than traditional on-premises models increases business agility and reduces analytics costs. It does so by eliminating the need to retrain your AI and ML models for different analytics use cases and reducing infrastructure and integration costs associated with on-premises data lakes and data warehouses.

## CUSTOMER SUCCESS STORY: ELISA'S JOURNEY TO TELECOM SAAS

Elisa is a Finnish market leader in telecommunications and digital services, founded in 1882. Elisa and Nokia have a long history going back to the origins of Global System for Mobile Communications (GSM) technology with many areas of collaboration and innovations together over the years, including setting a speed record for 5G millimeter wave (mmWave) in 2021. Now the telecom industry

*(continued)*

(continued)

is at the cusp of real adoption of telecom SaaS, and Elisa is again ahead of the curve and showing real foresight in thinking about SaaS.

### **Automation**

Elisa has been focused on automation for more than a decade to drive both operational efficiency and greater business agility, resulting in faster time to value. Today they are looking for more automated solutions in the 5G world. Markus Kinnunen, vice president of Cloud Services at Elisa Telecom, says he looks forward to the time when “with a click of a button I could order a 5G network for our purposes.” He added, “It’s not a question of whether I prefer automation or not: the world gets more complex all the time,” and automation is essential for delivering quality and a great customer experience. When done well, automation cuts across organizational silos. Markus says, “Elisa is in a good position going forward because we have been doing this kind of automation already for a long time, when combining the network engineering skills with the software developing skills and bringing those two together in a concrete level.”

### **From IT SaaS to telecom SaaS**

Elisa adopted IT SaaS many years ago with the likes of Salesforce and Workday and they are also using resources from the public cloud. Markus notes: “And now we are seeing the same kind of path in telecom and going more software-wise into infrastructure and utilizing the models, for example from Nokia. We go step-by-step for 5G core utilization of the SaaS model. In telecom, the world is a little bit different; more complex. So there comes the telecom grade, five nines. Quality is extremely important all the time. And we also need to take into account regulatory privacy security issues, different service-level agreements (SLAs), maintenance windows, and so forth. We are learning all the time!”

### **Ecosystems and 5G monetization**

Most industry thought leaders believe that the road to 5G monetization is paved with partnerships and ecosystems. Gone are the days of a single-threaded value chain from the service provider to the customer, and instead service providers are experimenting with all kinds of ways to create new services and experiences with multiple providers with faster time to value.

Nokia and Elisa are currently partnering with an ecosystem of app developers to experiment with new use cases in the Nokia Arena in Tampere, Finland. Using a live 5G network, the ecosystem of partners is developing use cases based on virtual reality (VR)/augmented reality (AR) experiences for hockey games, concert events, commerce, and more. These new applications take advantage of the programmable nature of 5G to expose specific network capabilities — latency, location, speed — into applications via application programming interfaces (APIs) for greater business agility. Markus observes: “That is something we have built together in the Nokia Arena and the next experiment would be to demo the delivery of SaaS 5G private core network in the Arena and how, based on that, can we deliver some of the use cases for different developers or the customers in that Arena. So, let’s see. It will be an interesting experiment!”

As our industry continues to explore how to monetize 5G, accelerate experimentation, and manage costs with greater business agility, telecom SaaS can deliver on these objectives. We are at the dawn of an exciting new frontier of providing transformational 5G business-to-consumer (B2C) and business-to-business (B2B) experiences and capabilities, powered by telecom SaaS.

- » Accelerating time-to-value
- » Improving financial performance
- » Achieving greater business agility

# Chapter 5

## Ten Benefits of Telecom SaaS

Here are ten important business benefits of telecom SaaS for telecom service providers:

- » **Reduced time to value.** Enables rapid customer adoption and use of service by reducing the time spent on software installation, configuration, and upgrades.
- » **Greater value proposition.** Provides outcome-based solutions and services, increasing the value proposition of the service.
- » **Value-added ecosystem.** Facilitates ecosystem partners and customers in co-creation of value.  
Telecom SaaS accelerates communication service providers' (CSPs) ability to launch new services faster and realize quicker time-to-value.
- » **On-demand scalability and advanced security.** Permits automated scaling and on-demand resource availability, according to customer need, as well as advanced security capabilities.



TIP



REMEMBER

- » **Rapid provisioning.** Provides swift service provisioning, often within minutes or hours.
- » **Evergreen operation.** Enables customers to remain up-to-date with frequent and efficient delivery of software patches and upgrades.

Telecom SaaS is about improving value and reducing complexity by providing software that's always the latest version and consumed purely on demand through a subscription.

- » **Lower capital expenditure (CAPEX).** Requires limited upfront investment and no additional hardware or physical space.
- » **Simplified maintenance.** Eliminates financial risk related to software maintenance and upgrades.
- » **Cost savings.** Provides improved cost management, lower total cost of ownership (TCO), and compelling economies of scale.
- » **New opportunities.** Lowers entry barriers to market evaluation and bridges knowledge gaps.

Telecom SaaS enables the next frontier of business transformation.



REMEMBER

# Leap to the next level with telecom software as a service

Telecom service providers have traditionally run their operations and business software on complex, custom-built, on-premises infrastructure. This approach can no longer keep pace with today's rapidly changing customer expectations. Now that network software can be hosted literally anywhere, it's time to bring the software as a service mindset to telecoms and seize dynamic new 5G market opportunities.

*Telecom SaaS For Dummies* explores the vast business opportunities and benefits of this transformative technology. Dive in to discover how it can improve and enhance your organization today.

## Inside...

- Understand the capabilities of telecom SaaS
- Enjoy a fully digitalized business experience
- Achieve SLAs with unrivalled reliability
- Be inspired by real-life use cases
- Reap the benefits of telecom SaaS

The Nokia logo is displayed in a blue, sans-serif font within a white rectangular box.

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