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Total Value of Ownership
The New Metric for 5G-Driven Digital Transformation

A Microsoft Company

Total Value of Ownership

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Value, not cost, is the new metric of success

The arrival of 5G is a once-in-a-generation opportunity for mobile network operators (MNOs) to move beyond the role of communications enabler and monetize the applications that travel on the mobile network. This is a fundamentally different opportunity than 3G, which focused on reducing cost through IP technology, and 4G, which looked to meet consumer demand for broadband data services. While there are economies of scale to be realized in 5G as well—notably through cloud-native technologies and virtualized network functions—the ultimate goal of 5G network transformation is not simply to reduce the cost of the network but to increase the value.

Affirmed Networks refers to this as the total value of ownership (TVO), which we believe to be a more important metric for 5G success than the total cost of ownership (TCO). Historically, TCO-driven transformations have delivered incremental savings against a backdrop of flat-to-declining revenue for voice, text, and data services. During the same time, over-the-top (OTT) providers have adopted the role of mobile service innovators by creating new services to run on top of the mobile network—and reaping the financial benefits of the value those services bring to market.

With 5G, MNOs have an exciting opportunity to leverage a host of new technologies—cloud-native architecture, containers, Kubernetes, microservices, multi-access edge computing, Open-RAN, etc.—to create a new world of consumer and enterprise services. Smart factories, autonomous vehicles, virtual reality experiences, and remote healthcare are only a few of the 5G services on the horizon. And, this time, MNOs have a clear choice: get into the game by building a 5G network that helps them develop and deliver these services or watch from the sidelines while OTT providers "ride" the 5G network for free to higher profits.

In this white paper, we'll discuss how MNOs can build a value-driven network, where the innovation opportunities lie for the future, and how to measure TVO to ensure their 5G network investments not only drive down costs but drive up revenue.

How to build a more value-driven 5G network

For years, network equipment vendors have positioned network transformation through the lens of reducing CapEx and OpEx costs. The business case for 3G and 4G transformation, for example, was mainly based on the return on the investment potential of consolidating network architecture, reducing network management costs, and leveraging COTS-based servers. While these ROI objectives are still in play with 5G transformation, reducing TCO alone does not solve the biggest challenge facing MNOs in the future: meeting the rising demand for mobile broadband services within the framework of flat-to-declining average revenue per user (ARPU).

Shifting the focus of 5G transformation to increasing the total value of network ownership is a long-term strategy that ensures MNOs can maintain profitability and grow market share for the next 10 to 20 years. This is a very different approach from the cost-centric strategy of the past and requires a different view of the technology stack. Instead of the traditional telco stack, Affirmed Networks believes that MNOs need to view their transformation through the same innovation stack adopted by OTT providers (see figure 1).

The innovation stack places 5G applications and services at the top of the telecommunications value chain and network management, network functions, cloud architecture, and physical infrastructure supporting these goals. This isn't to suggest that containers and microservices-based network functions are subordinate to service creation. They should be implemented with an eye toward how they will ultimately support new 5G applications and services.
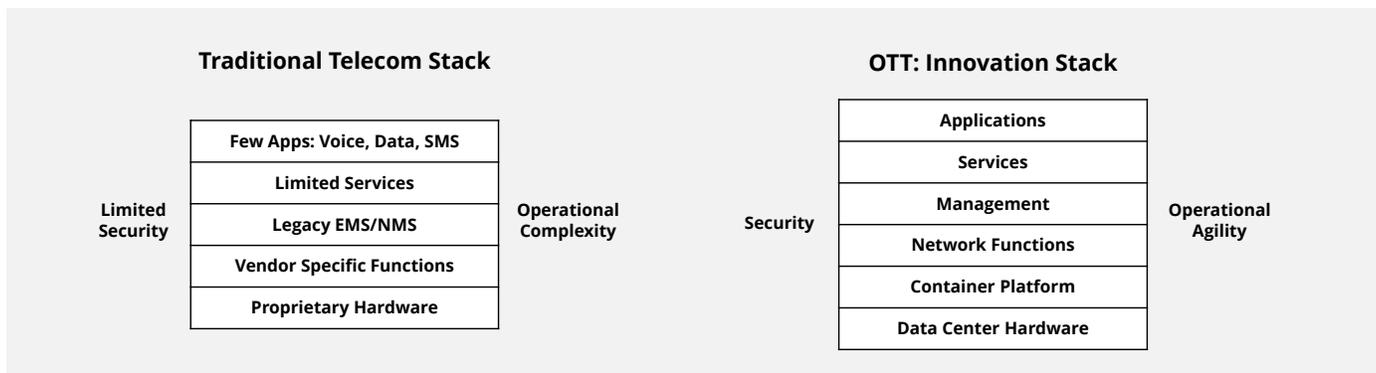
Operator Costs vs. OTT Value
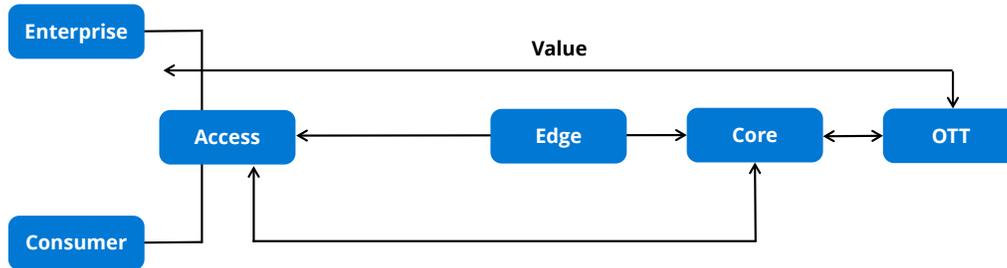
Figure 1. The traditional telecom stack vs. the new operator OTT innovation stack.

From the perspective of increasing TVO, 5G networks should be architected around a new set of business requirements that includes:

- **A flexible service creation environment** that leverages containers, Kubernetes, microservices, and other cloud-native technologies to accelerate and innovate new services.

- **End-to-end network slicing** that allows for differentiated services to potentially thousands of different business and consumer segments.

- **A plug-and-play app store** where developers and partners can host a robust ecosystem of consumer and enterprise applications.

- **The freedom to deploy** hardware, software, and network functions where they make the most sense in the network, whether distributed or centralized, on-premises or in the cloud.

- **Broad support for different devices** including 3G/4G/5G devices, IoT devices, and edge devices.

- **Dynamic and limitless scale** enabling the innovation stack to grow (or shrink) on demand without the need for a lot of upfront capital expense and planning.

The edge is the new center of innovation

One of the most significant differences between 4G and 5G is where most network functions and services will live. Instead of placing the service and network intelligence in the mobile core and using the RAN as a robust pipeline to the core, 5G moves much of the service and network intelligence to the network's edge. This shift is designed to support the new generation of compute-intensive, low-latency applications and services that 5G expects to deliver. Smart factories, for example, will look to the network edge to provide real-time processing of video and data. Augmented and virtual reality experiences will require that compute power to move as close to the consumer edge as possible to support seamless, high-bandwidth sessions.

In fact, in 5G, the edge is the new center of innovation (see figure 2). There will be essential nuances to the edge as well. Multi-access edge computing (MEC) applications for private 5G enterprise networks may be hosted on the operator or the enterprise depending on mobility, latency, processing, and security requirements. Edge applications may be hosted on premises-based physical servers or in the cloud. Applications may be deployed at the near edge or the far edge, depending on whether a service needs to be closer to the data center or the cell tower.

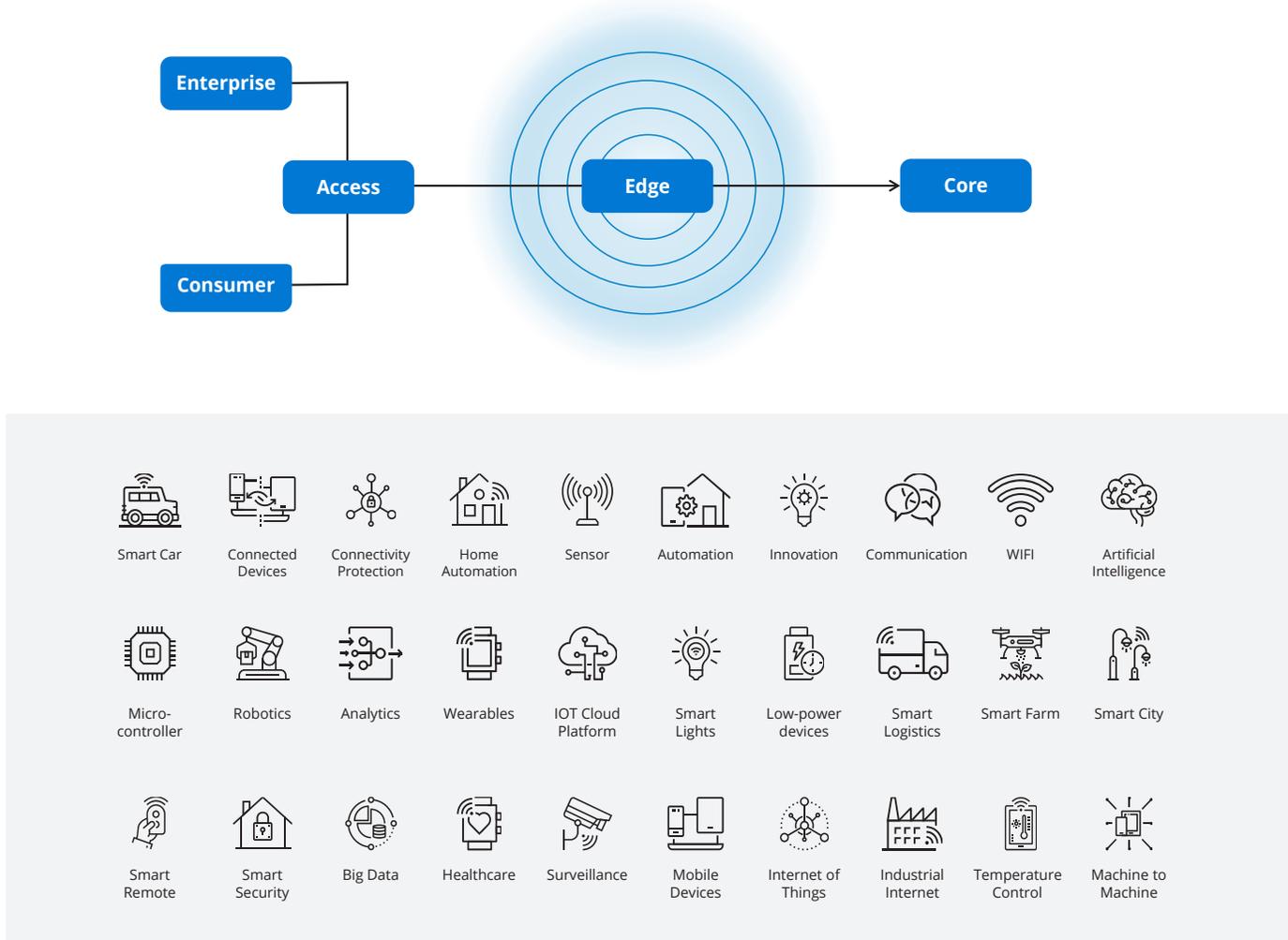### The New Center of Network Innovation

Figure 2. The edge is the new center of innovation.

While cost is one consideration in choosing an edge location, it is no longer the primary determinant under the TVO perspective. Operators should first ask themselves, "Where does it generate the most value?" when choosing the location of new services and network functions. For this reason, MNOs must have flexible deployment options. The ability to host MEC applications on the enterprise side, operator side, in a private or public cloud, etc., not only has an impact on total cost but also a significant effect on the value of the service itself to enterprises and consumers.

The future requires a cloud-native maturity model

Affirmed Networks believes that a cloud-native maturity model can help MNOs successfully shift from a TCO-focused to a TVO-centric strategy. Based on our experience with mobile operators worldwide, the most urgent need among MNOs is knowing where to start in assessing and identifying value in their network. A cloud-native architecture is necessary to foster 5G innovation and drive value across the network, yet it is a daunting path for most MNOs to follow. Operators that approach the cloud as a cost-cutting measure will miss the real business opportunities that a cloud-native architecture can deliver.

The cloud-native maturity model aligns 5G network investments with value in an ordered, logical way to ensure that 5G transformation efforts don't stop short of delivering meaningful revenue generation. In our experience, the model should consist of five distinct phases:

- An exploratory phase that allows MNOs to collect information, education, and training around cloud technologies.

- An experimental phase in which MNOs can test and validate different cloud-native network functions (CNFs) as well as begin re-alignment of the network operations teams to support these functions.

- An integration phase where CNFs are integrated with other network components and OSS/BSS systems to support new services.

- An operational phase during which MNOs shift to a SaaS-based operations model that features hybrid cloud and edge deployments for increased value.

- And a final transformational phase as the new SaaS-based network becomes the innovation platform for value-driven, revenue-generating services.

Calculating the cost of ignoring TVO

Affirmed Networks' internal analysis shows that focusing solely on TCO can cost mobile operators billions of dollars in lost revenue over time. Using the Affirmed UnityCloud Operations solution as the core foundation for 5G cloud-native transformation, MNOs can shift their business from a cost-centric, telecommunications stack vision of the future to a value-driven, OTT innovation stack vision. Affirmed's cloud-native 5G solutions enable MNOs to reduce the cost of their core, edge, and RAN components and, more importantly, deploy these components in a way that supports the creation of new, revenue-generating 5G services. In one study involving a global tier-one operator, we identified an additional $3X in new services revenue that can be achieved over five years in addition to the more than $2X in savings through CapEx and OpEx reduction (see figure 3).

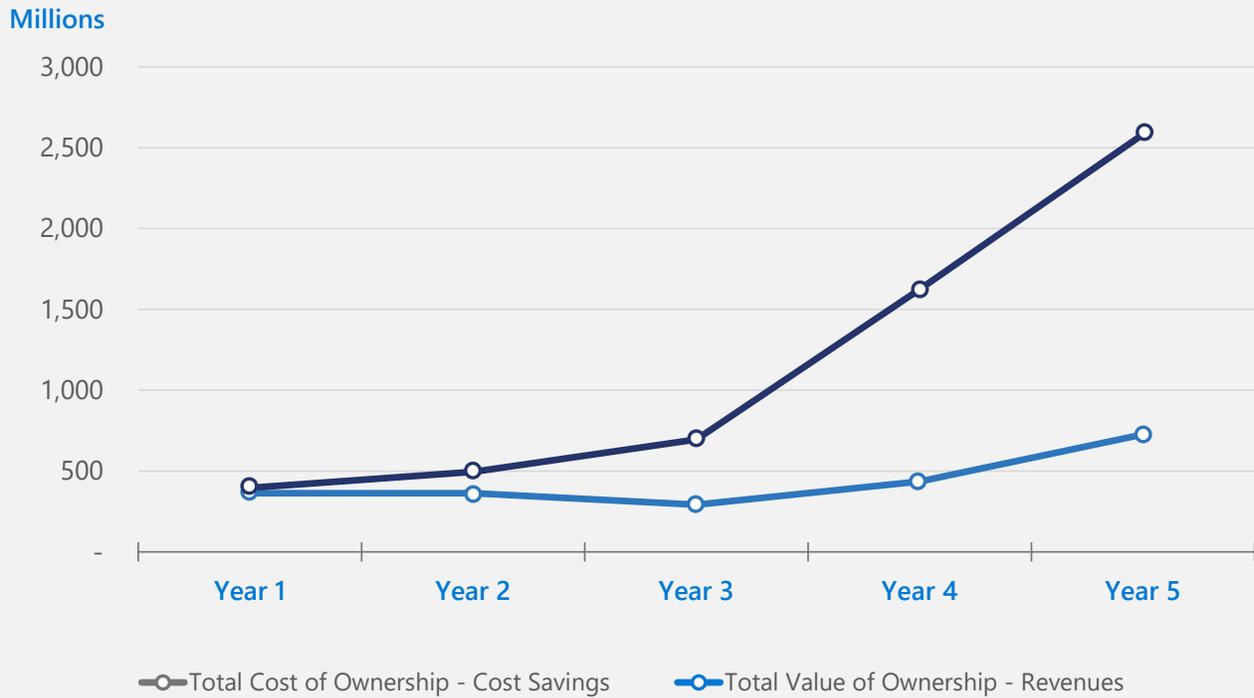## Affirmed Cloud Native Solution—TCO and TVO Benefits

Millions

3,000	
2,500	
2,000	
1,500	
1,000	
500	
-	

Year 1   Year 2   Year 3   Year 4   Year 5

○ Total Cost of Ownership - Cost Savings   ○ Total Value of Ownership - Revenues

Server Cost Savings
- Capital cost savings
- Power and cooling savings
- Maintenance cost savings
- Real estate cost savings

+

Staff Cost Savings
- Staff cost savings
- Staff count avoided

+

TVO New Revenues
- New revenue generation
- Total revenue potential

=

Total Value of Ownership (TVO)

Figure 3. The Benefits of TCO and TVO

The value of visionary partners

5G is a moment of truth for MNOs. After years of warning about the dangers of becoming merely "bit-pipe providers," operators now have an unprecedented opportunity to become genuine service providers and valued solutions partners. 5G services and the transformative power of cloud-native technologies are the keys to unlocking a world of revenue potential. Affirmed Networks can help you open the door to a profitable 5G future with an industry-leading portfolio of cloud-native 5G solutions for telecommunications providers.

If your 5G partners are only talking to you about TCO, you're missing half the story. Hear the other side of the story, the total value of ownership that cloud-native networks can offer, when you talk with Affirmed.

To learn more about our complete portfolio of virtualized mobile core solutions, visit us at affirmednetworks.com.

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