5G network slices create greater assurance complexity

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The promise of 5G is just around the corner as we see network deployments accelerating across the globe. GSMA Intelligence estimates that there will be 1.2 billion 5G connections by 2025, accounting for 40 percent of the global population, or approximately 2.7 billion people, giving them the network connectivity, speed and capacity to support applications in smart homes, smart factories, connected cars, or smart energy grids.

Network slicing is a key enabler of 5G, giving network operators the ability to allocate portions of their networks for specific customer uses cases and ensuring the network is optimized to specific SLAs required to support each application. Managing the wide range of specifications for each application per subscriber, however, creates revenue- and business-assurance complexities that need to be addressed to ensure customer expectations are met.

We're already seeing the seeds being planted for how 5G services will come to fruition in the near future. Today, consumers are getting a taste of what's to come as sports broadcasters, for example, increasingly offer virtual and augmented reality experiences to help fans feel like they are part of the action from the comfort of their home. Don't like your view of the game? Virtual reality allows viewers to change seats, be courtside or enter the team huddle. Just imagine being on the podium as the next Super Bowl winning team lifts the Vince Lombardi Trophy.

By enabling networks to be segmented to meet the requirements of specific services, such as guaranteed resilience, bandwidth or low latency, network slicing gives operators greater flexibility to meet specific service needs. While this flexibility will be vital in order to support the catalogue of new enterprise and consumer applications enabled by 5G, it comes with accompanying complexity. Different service-level agreements (SLAs) will apply to different slices, with different pricing depending on specific slice requirements, all of which will need to be tracked in order to accurately bill and charge for these services. This requires the ability to collect performance data from 5G networks and network functions in order to ensure SLAs are being met. Here it is essential to spend some time discussing the opportunities that 5G network slicing brings to operators to examine where specific challenges to revenue and business assurance can arise.

Following the Customer Journey

For a closer look, let's look at Grace's customer journey. Grace wants to purchase a live streaming pass for the 2020 Summer Olympic Games. She is especially interested because, as a Netflix subscriber, she gets a discount. Netflix is also offering premium passes that provide access to athletes' lounges as well as Augmented and Virtual Reality (VR) special features that Grace can add to her experience. After considering her options, she chooses the standard pass.

While this sounds like a straightforward use case, there are a few opportunities where a breakdown in BSS integration across the value chain can create major revenue and business assurance headaches for CSPs. Let's look at how.

1) **Grace's Netflix discount doesn't apply**. Because of a mismatch between the discount voucher and the configuration in the order management system, Grace doesn't receive her discount. For Grace, she may abandon her plans to purchase the

pass or demand a refund on the discount that she was due from the CSP, which they will need to reimburse. Either scenario creates a poor customer experience because of basic configuration errors—one that could have been avoided in the first place.

2) **Grace accesses premium content**. Due to configuration errors, Grace can gain access to the athletes' lounge and interact with the sports stars, which is premium content for passholders only—but is not included in Grace's standard-price pass. For the CSP, this will increase the cost of the event because it will deliver the premium content to Grace and will be charged by the content partner provider, but the CSP will not be able to recoup the costs from Grace for the additional services.

3) **Grace accesses premium experiences**. As the concert continues, Grace starts viewing the games using 4K video on her home TV. Later, she decides to experience part of the concert through Virtual Reality, but these premium services were not included in her standard pass. For the CSP, 4K video and VR run on different 5G slices, each with their own quality of service SLAs and pricing configurations. Not only has the CSP lost potential revenue when Grace accesses the premium experiences for free, the CSP also needs to ensure that the quality of service is met to provide a positive viewing experience. As Grace moves from 4K streaming to VR streaming, the CSP must provision the service upgrade in real-time, as well as measure and rate the content distribution at each level for accurate billing and margin analytics.

In scenarios #1 and #2, these errors can occur within the CSP's OSS but also within the partner's (in this case, Netflix) service inventory and service activation systems. Real-time correlation between the CSP and the content provider's OSS is needed in order to guarantee that there is no revenue leakage. When we move to scenario #3, in order to guarantee no revenue leakage when 5G slicing is used, the CSP will need to be able to drill down into the specific 5G slices to monitor the SLA metrics and ensure that the usage is accurately rated and charged back to the content provider.

As we can see, in Grace's scenarios, there are a multitude of opportunities for CSPs to experience revenue leakage as the digital ecosystem expands beyond traditional telecom providers.

A $582 Billion Opportunity in Jeopardy

Ericsson estimates that 5G will generate $582 billion in revenues for operators by 2026, injecting a 34 percent revenue growth opportunity for operators following years of flat revenues. Network slicing will be a key part of how CSPs monetize 5G. Therefore, CSPs must safeguard their new revenue streams and the customer experience from risks and losses that arise when implementing network slicing. This will require sophisticated risk management solutions and strategies to ensure that CSPs can provision and monitor usage to make sure that SLAs are adhered to, services are accurately charged and billed, partner settlement is managed, and fraud and revenue leakage risks are minimized. This will require the breakdown of legacy-driven siloes between OSS/BSS, security, and fraud management so that the different guises of fraud and instances of revenue leakage can be detected earlier.

There are additional pressures and considerations that apply here. Every day, the level of sophistication and organization among fraudsters increases. By relying on the traditional model of risk management governance, where the key auditing functionalities have been relegated to isolated selections of tactical technologies, management features, and operational procedures, CSPs will simply fail to assure network slicing. Gone are the days when a simple set of rules built on top of OSS/BSS data would be enough for CSPs to detect fraud and stop revenue leakage. This approach must change immediately if CSPs want to minimize their threats.

For all of these complexities, CSPs remain well-placed to act as the glue in the 5G network slicing risk assurance chain, bringing together the various participants and building on existing capabilities and experience. The key to fully monetizing 5G networking slicing is the deployment of flexible tools that enable service providers to monitor risk while still offering the flexibility needed to meet changing and diverse customer demands. To get the right risk management strategy in place, all devices, systems, networks, partners, and business models should be viewed holistically with

associated requirements and risks in mind. CSPs are in the best position to properly implement, with assurance by design, an end-to-end risk management approach that will guarantee the sweeping impact that the 5G will have on the way the world will work, while minimizing the risks it introduces.