



Monetising the

5G

Opportunity

cerillion

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Introduction

After years of build-up and growing anticipation, the first consumer services based on 5G were finally launched around the world during 2019. In the UK, EE, O2, Three and Vodafone all launched 5G services to some degree¹, whilst the big four carriers of the US – AT&T, T-Mobile, Verizon and Sprint – have also rolled out commercial 5G services in various cities across the country². These launches have made one thing clear – telcos need to think differently about 5G services by ditching the traditional mindset around pricing and come up with more innovative ways of monetising their services. Radical improvements in bandwidth, speed and latency offered by 5G mean that telcos can leverage the opportunity to offer richer digital experiences and find new ways to engage their customers.



However, telcos need to approach 5G in a different way if they want to truly capitalise on this fledgling technology. Rather than acting only as connectivity providers, operators need to position themselves as ecosystem enablers, spread across the 5G value chain. The real opportunity will come through synergies offered by high growth areas such as the Internet of Things (IoT), Augmented Reality (AR) and Virtual Reality (VR), alongside immersive content.

It goes back to something that we have been saying for a long time now³ – Communications Services Providers (CSPs) have to transform into Digital Services Providers (DSPs). However, a vital aspect of this journey is putting 5G monetisation at the heart of their strategies. In the past, the industry has thought about new business models only when challenged by more nimble competitors or changing consumer dynamics; telcos that start thinking about monetisation now will be in a much better position to capitalise on the 5G opportunity as market penetration increases.

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5G and IoT Convergence

In many ways, the rollout of 5G services is good news for the IoT industry, which hasn't truly taken off despite all the hype. The fifth generation of networks comes with the promise of helping to realise the full potential of IoT innovation. Current IoT products and services have relied more on asset tracking and remote monitoring data, but the convergence with 5G will make it possible for innovators to build more data-hungry IoT applications. 5G technology will ensure that overall network capacity can deal with the profusion of IoT devices and the resulting data surge.

The lower latency of 5G networks will also be a boon for mission-critical applications such as self-driving cars⁴. Furthermore, 5G's ultra-reliable low latency communication will ensure uninterrupted data transmission for critical applications built for IoT.

5G-powered IoT applications will drive some of the biggest industries and hold the potential to truly revolutionise them by delivering massive benefits at scale. Important sectors such as energy will benefit as 5G paves the way for smart grids, allowing automation to run the right level of supply at any time. 5G will help with effective monitoring of power consumption, efficient power generation to meet real-time demand and integration with off-grid sources such as windmills and solar panels to the energy supply ecosystem⁵.

The convergence of 5G and IoT may also clear the way for Industry 4.0, which promises cyber-physical systems with smart manufacturing. Remote-controlled industrial robotics, plant telematics and Industrial IoT services are all expected to flourish with 5G. Healthcare is another critical industry that will get a boost, with the high reliability and low latency of 5G reducing the chances of errors. It will also help healthcare providers with greater opportunities to collaborate remotely, share resources and reduce costs.

This will put CSPs in an enviable position of being at the centre of this large ecosystem and create opportunities to monetise the data collected by sensors and devices in multiple ways. Telcos will also be able to develop new revenue models by deploying specialised virtual networks for specific enterprise use cases.

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The Three Pillars of 5G

1

Network Slicing

The Key Value Driver for 5G

5G technology brings in a few unique architectural features that improve performance and enable new ways to monetise the network. Network slicing is an important characteristic that enables telcos to offer service-oriented networks by 'slicing' the network into virtualised and independent logical networks on the same physical infrastructure⁶.

Network slicing allows telcos to create multiple logical networks for a plethora of different services. Each slice can be defined to meet the different requirements of the services which will run on it, as well as optimising the spread of resources across the physical infrastructure. This helps to differentiate network services and offers new areas for growth.

CSPs can think of using network slicing as a service or as a way to differentiate themselves through application-driven slices. For instance, they could create opportunities through multiple slices, such as enterprise slice-on-demand or Industrial IoT slices. Moreover, network slicing allows for custom networks that utilise key 5G attributes such as latency, speed and security, which can then be configured to deliver multiple services according to the needs of the organisation. For example, while low-latency communications would be critical for businesses in the autonomous vehicle space, other businesses might require a private 5G slice that allows them to be secure with made-to-order authentication⁷.

Network slicing will ultimately enable operators to offer reliable performance and deliver an enhanced customer experience for specialised applications. Automation and the ability to quickly create slices will help operators to dynamically package and repackage network capabilities for their enterprise customers.

Operators have to also look at 'charging' as a critical piece of the network slicing business model. For instance, the default position is likely to be one of using a single convergent charging engine for services across all slices, however it's possible that some may opt for in-slice charging, whereby dedicated charging engines are deployed for specialised or high intensity use cases. As ever, the

choice will come down to striking a balance between the operational efficiency of a convergent approach and the business flexibility provided by separate charging engines. Clearly, leveraging network slicing will be critical to the 5G monetisation piece.

2

Edge Computing

An Exciting 5G Paradigm

Edge computing is another IT architecture that holds a lot of promise in the 5G era and will be critical to handle the data explosion that will stem from the proliferation of 5G-powered IoT devices. At the most basic level, edge computing enables computation and data storage closer to the devices where it is being gathered, instead of being transmitted to a data centre, which can often be located far away. It enables data-stream acceleration, including the processing of real-time data without latency issues.

Edge computing can be used to create new vertical business segments and services for consumers and enterprises. The beauty of edge computing doesn't just lie in hosting data close to the end users; it is also about new use cases made possible by this architectural construct at the edge. It opens up an entirely new ecosystem and value chain as businesses now have the option to authorise third parties, allowing them to flexibly and rapidly deploy innovative applications and services toward mobile subscribers, enterprises and industry verticals.

This brings in some unique capabilities in building and delivering innovative applications. Existing distributed applications may also get a large capacity and performance boost; for instance, multiplayer online gaming can be considerably enhanced when a part of the logic is processed at the edge, i.e. closer to the players⁸.

Edge computing will also benefit critical applications such as smart city systems by reducing lag times, bringing in data processing efficiencies and reducing costs. It also adds a useful layer of security by mitigating the need to transfer data to a public cloud.

3

NFV and SDN

5G Enablers

5G network deployments are characterised by complex architectures and pose enormous challenges in terms of network infrastructure and traffic management. Operators need technologies that can help them with:

- Seamless and flexible management of physical and virtualised resources
- Agile end-to-end service orchestration for each service vertical
- End-to-end connectivity for each service instance, which is also programmable⁹

Two technologies that are considered key enablers for network architecture, design, operation and management are Network Function Virtualisation (NFV) and Software Defined Networking (SDN).

NFV uses the technologies of IT virtualisation to virtualise entire classes of network node functions into building blocks that may connect or chain together to create communication services. Simply put, NFV is an approach whereby network entities that previously used dedicated hardware are now replaced with software that provides the same functionality and can run on shared resources. NFV makes it easier to expand and modify the network, build in more flexibility and reduce costs¹⁰.

Software-Defined Networking (SDN) is a network architecture approach that enables the network to be intelligently and centrally controlled, or 'programmed,' using software applications. This helps operators manage the entire network consistently and holistically, regardless of the underlying technology¹¹. It enables the creation of multiple network hierarchies which will be critical for 5G networks. SDN will allow traffic flows to be dynamically steered and managed to gain significant performance benefits.

Together, NFV and SDN will help operators to scale and launch new 5G services more efficiently.

New Business Models for 5G

One of the biggest challenges for telcos in the 5G era is to find the business models that will give them the edge. The next-gen architecture and superior performance that 5G brings to the table will count for nothing if they are unable to home in on the new B2C, B2B and B2B2X business models that will fit the ever-evolving 5G use cases. According to TM Forum's CTIO Outlook 2020¹², operators need to address many uncertainties and variables to be successful:

Price

Since there is no precedent for the prices that can be charged for advanced 5G applications, operators will need to be careful with their pricing strategies. For instance, the big four US carriers have converged on around \$70-\$80 per month as the right price point for 5G access, despite their different consumer offerings. Going forward, end users will likely pay for apps that embed connectivity rather than buying connectivity on a standalone basis, which lends itself more to the B2B and B2B2X business models.

Innovation

Operators will have to innovate to ensure that they can reduce the time taken to go 'from concept to cash'. Legacy systems and processes cannot deliver the speed or agility required for 5G.

Use cases

We are still too early in the 5G race for there to be clear killer apps, and it remains to be seen which enterprise use cases will become commercially viable. While vertical use cases are also much hyped, the timeline and visibility are still not apparent.

Services

5G services will have many components such as connectivity, application, hardware, platform and system integration. While CSPs will definitely provide the connectivity component, they will need to develop their own broader capabilities or partner with third parties to provide complete end-to-end services.



“ The promise of 5G can be achieved only if telcos can zero in on their monetisation and pricing strategies, be it through targeted enterprise solutions based on network slicing, new tiered pricing schemes or innovative subscription bundles. ”

Dominic Smith

Marketing Director, Cerillion

From subscriptions and usage-based fees for data speed and volume, to specialised networks for applications and even the simple fixed wireless broadband, there are a number of ways operators can think about 5G business models. More near-term 5G opportunities are those that can combine legacy business models with 5G use cases – for example, the traditional MVNE model can be enhanced through network slicing.

As the technology and use cases evolve, telcos will require innovative models that look radically different from today's typical consumer and enterprise approaches. Here are a few models that telcos are likely to adopt and then adapt as the technology matures¹³:

Connectivity business model

Of course, connectivity will continue to be one of the core business models for operators. Apart from basic connectivity, enhanced connectivity solutions including QoS and differentiated feature sets such as latency will add value to 5G services. Wholesale will also play a key part in this model, with 5G infrastructure sharing leading to more wholesale / retail relationships and continued growth in the number of MVNOs for apps that embed connectivity rather than buying connectivity on a standalone basis, which lends itself more to the B2B and B2B2X business models.

Partnership business model

Partnerships, in which telcos join up with other specialists to offer complete solutions, will be critical in the 5G era. One approach is an integrated partnership services model, where the telco's own offerings are enhanced by partner content and applications. Another is a third-party business model, where partners are empowered to make offers to end customers and they are supplemented with superior network capabilities. The partnership business model is explored further in the next section.

Digital business model

Under this model, the role of the traditional CSP evolves from a core connectivity solutions provider to a digital services provider, leveraging the unique capabilities of 5G to offer content, smart home, smart city and even financial services. Digital services enable operators to generate new revenue streams, re-positioning themselves as new-age service providers and capitalising on changing consumer behaviour, such as the preference towards video streaming services over traditional cable or satellite TV. AT&T's acquisition of WarnerMedia has taken this to the next level, opening up new opportunities such as targeted advertising and content subscription models¹⁴.

Platform business model

A variant of the digital business model is the platform model, whereby rather than creating their own content, operators provide open access platforms that leverage their digital assets to offer a base set of enabling services to anyone – for example, identity management, entitlements, billing and payment services. This can be viewed in the same way as an app store or marketplace (e.g. Amazon), with the operator taking a cut of the revenue going through the platform. TM Forum Open APIs¹⁵ will have a key role to play in this model, providing an industry standard set of REST APIs to enable seamless integration with ecosystem partners.

The Importance of Partnerships

5G will impact a wide range of industry verticals and bring in a huge market opportunity which will be difficult for telcos to address alone. Operators will need to specialise in certain verticals or offer horizontal capabilities marketed as sector-specific applications by aligning with vertical specialists¹⁶.

A lot of telcos are thinking about technology and use cases, but not many are paying attention to the stakeholders whose cooperation will be essential for 5G success. Operators have always had to cultivate supplier relationships with vendors, but these relationships will become ever more critical as 5G unleashes multiple technology choices and capabilities. Operators can be easily caught on the wrong foot if their vendors choose other technologies or standards. Moreover, NFV and SDN will open up the market to a broader range of vendors, as we are already seeing with OpenRAN, for example¹⁷.

Close B2B partnerships will enable telcos to experiment with use cases, helping them sharpen their 5G offerings. For instance, AT&T has tied up with The Washington Post to “weave 5G technology into the paper’s reporting operations” and experiment with new digital storytelling formats¹⁸.

Telcos may even need to build closer ties with their traditional rivals, as it could be extremely critical in the world of network sharing. Telcos who are not part of strong alliances will suffer higher 5G costs and slower rollouts as a result. In addition, relationships with government

agencies and regulatory bodies will also be important to keep tabs on industry economics, long-term commitments and policies that can impact profitability in the long run¹⁹.

Clearly, a long-term 5G strategy cannot be built in isolation. Ideally, operators need to establish strategic partnerships as early as possible and build the trust and communication required for uncovering new services and business models with the evolution of the technology. It is also important to be flexible in setting up these partnerships to ensure a win-win for all parties involved.

A long-term 5G strategy cannot be built in isolation.

5G: A Strong Case for Resetting BSS/OSS

Much of the industry focus thus far has been on the 5G networks themselves, but a critical piece of the 5G puzzle is the business and operational support systems needed for successful monetisation. Robust and agile BSS/OSS systems will be critical to enable, sell, provision and operate new 5G services, and address new use cases.

Interestingly, the rollout of 4G had a minimal impact on core BSS. Peripheral products were sometimes required, but an enterprise-level BSS should have already had a catalogue platform capable of supporting new product design and rollout; business as usual for telcos. Similarly, new network elements needed to be provisioned, but a good service orchestration layer should have been able to incorporate these additional provisioning changes through straightforward configuration.

However, a next-gen BSS will be required to support the 5G value chain management and marketplace that enables partners and resellers to embed price components within each other's offerings. The BSS will then need to evolve in order to manage the underlying catalogue and the overlying billing and settlement relationships²⁰. According to a TM Forum report²¹: 67% of the potential revenue from 5G is reliant upon BSS/OSS transformation.

It is therefore imperative that telcos plan their BSS/OSS transformation initiatives now, in order to capitalise on the revenue opportunities 5G will offer.

It is becoming increasingly clear that 5G is going to have a much larger impact on BSS/OSS roadmaps than any previous network technology evolution since the introduction of 3G nearly 20 years ago. Migrating from legacy systems towards a next-gen BSS/OSS platform will be critical to supporting opportunities arising from network slicing, dynamic pricing, premium services based on latency and bandwidth, geozone-based services, blockchain-based solutions and convergence with IoT.

67% of the potential revenue from 5G is reliant upon BSS/OSS transformation.

Source: TM Forum

Monetise 5G with Cerillion

Cerillion's 5G monetisation solution delivers a pre-integrated BSS/OSS platform that enables telcos to rollout 5G services fast and move up the value chain. The Enterprise BSS/OSS suite enables convergence, delivers operational efficiency and empowers telcos to adapt rapidly in a fast evolving 5G market. **Key benefits of the Cerillion 5G monetisation solution include:**

Rapidly build and launch new 5G products

Cerillion Enterprise Product Catalogue is an intuitive product management solution that helps you to quickly build, test and deploy new 5G products and packages, based on reusable components and templates.

5G-ready online charging

Cerillion Convergent Charging System (CCS) delivers the next generation of convergent services, supporting session and event-based online charging with multiple monetary and non-monetary balances. Built around the 3GPP charging specifications, CCS comes with a fully compliant Diameter interface for integration with 5G networks and upstream applications.

Digital first 5G customer experience

Cerillion Self Service and Mobile App provide versatile platforms on which to offer a range of online self-service features including: viewing and paying bills; managing spending controls and automatic top-ups; buying new services and bolt-ons; available as a web portal and through native iOS and Android apps.

Rapid on-boarding of 5G MVNOs

Cerillion Enterprise Service Bus provides a standards-based integration layer with TM Forum Open APIs to create an efficient on-boarding process for new 5G MVNOs.

Robust 5G fulfilment and service orchestration

Cerillion Service Manager provides a complete closed-loop service fulfilment solution, which enables efficient network resource utilisation and turns 5G service capabilities into new revenue streams, fast.

Sell 5G services through any channel

Cerillion CRM Plus offers a streamlined sales management system and quotation engine to accelerate your sales and customer management processes, using powerful business rules to determine the mandatory and optional steps required to complete a new 5G sale or service change.

Billing and settlement for 5G value chain

Cerillion Revenue Manager is fully equipped to manage the sophisticated B2B2X business models associated with next-generation data and IoT services. Individual events can trigger a number of separate transactions for each member of the value chain. Each transaction can be calculated using a flexible combination of flat rates, percentage commissions and other charges.

Cerillion is pioneering 5G enablement by supporting Three's 5G rollout in the UK. Three leveraged the Convergent Charging System, Revenue Manager, CRM Plus, Service Manager, Self Service, Output Streamer and Information Manager modules from Cerillion's pre-integrated product suite, providing a digital BSS platform with the operational efficiency and customer-centric service needed to fully exploit the 5G opportunity²².



“ Cerillion's pre-integrated Enterprise BSS/OSS suite provides us with seamless integration across all back-office systems and processes, meaning we can focus on our 5G rollout, with a robust and reliable platform to support our business. ”

Ros Singleton

Managing Director, Three Broadband

5G is a great opportunity for telcos to stand up and be counted again. Partner with Cerillion now and charge ahead on your 5G journey with confidence!

For more information about the Cerillion Enterprise BSS/OSS product suite, please visit:
<https://www.cerillion.com/Products/Enterprise-BSS-OSS>

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