Ovum

New MNO Opportunities Enabled by IoT Cloud-Native Platforms

Unlocking MNO opportunities in low-cost, low-bandwidth IoT

Summary

In brief

As the consumer market for cellular services has become highly competitive and highly saturated, the Internet of Things (IoT) market is providing an attractive opportunity for mobile network operators (MNOs) to build new revenue streams.

However, the IoT market is very fragmented; even within individual verticals, solutions and technology requirements often vary greatly. The challenge this fragmentation presents is compounded by the reality that most MNOs have resource constraints, limiting the time and effort they can put into winning and provisioning new IoT business. In Ovum's view, MNOs are leaving some IoT opportunities on the table.

This is particularly the case for low-bandwidth, high-volume types of IoT connections and use cases; examples include environmental monitoring, smart metering, and asset tracking. MNOs have typically struggled with the economics of building, delivering, and managing solutions for these low-bandwidth, low-margin IoT use cases. The emergence of new IoT platform-as-a-service (PaaS) offerings, which support low-cost connectivity, onboarding, and management of IoT devices, could prove to be the solution MNOs need, allowing them to maximize their ability to address this segment of the IoT market without having to invest significantly in additional resources.

Ovum view

As IoT becomes part of everyday business parlance, the number of potential use cases is growing exponentially. The pool for potential IoT business is both widening and deepening, creating important opportunities for MNOs.

However, MNOs cannot proceed with a mindset of business-as-usual. Securing high-volume and high-ARPC (average revenue per connection) IoT business is at the forefront of most MNOs' IoT strategies, and to support this, many have built IoT platforms that are highly customizable. For example, an automotive original equipment manufacturer (OEM) approaching an MNO may not just be seeking wholesale connectivity but also for the MNO to create a customized Wi-Fi solution for its end users. While such multi-element contracts for high-bandwidth and customized IoT solutions are likely to be highly valuable, winning the contract and maintaining the appropriate service level requires significant investment and resources.

At the other end are high-volume, low-bandwidth, and low-ARPC IoT opportunities, which MNOs have struggled to tackle economically. While MNOs have promoted the benefits of Cat-M/LTE-M, NB-IoT and other low-power wide-area network (LPWAN) connectivity technologies to make low-cost IoT solutions widely viable, bringing these solutions to market on their existing IoT platforms can be problematic. The flexibility and customizability of major players' IoT platforms come with high costs and can be overkill when addressing these lower-end low-bandwidth opportunities. More "lean" platform solutions are needed to drive down costs, increase scalability, and improve time to market for low-bandwidth IoT-connectivity and solutions opportunities (see Figure 1 for examples).

Figure 1: Massive IoT use cases
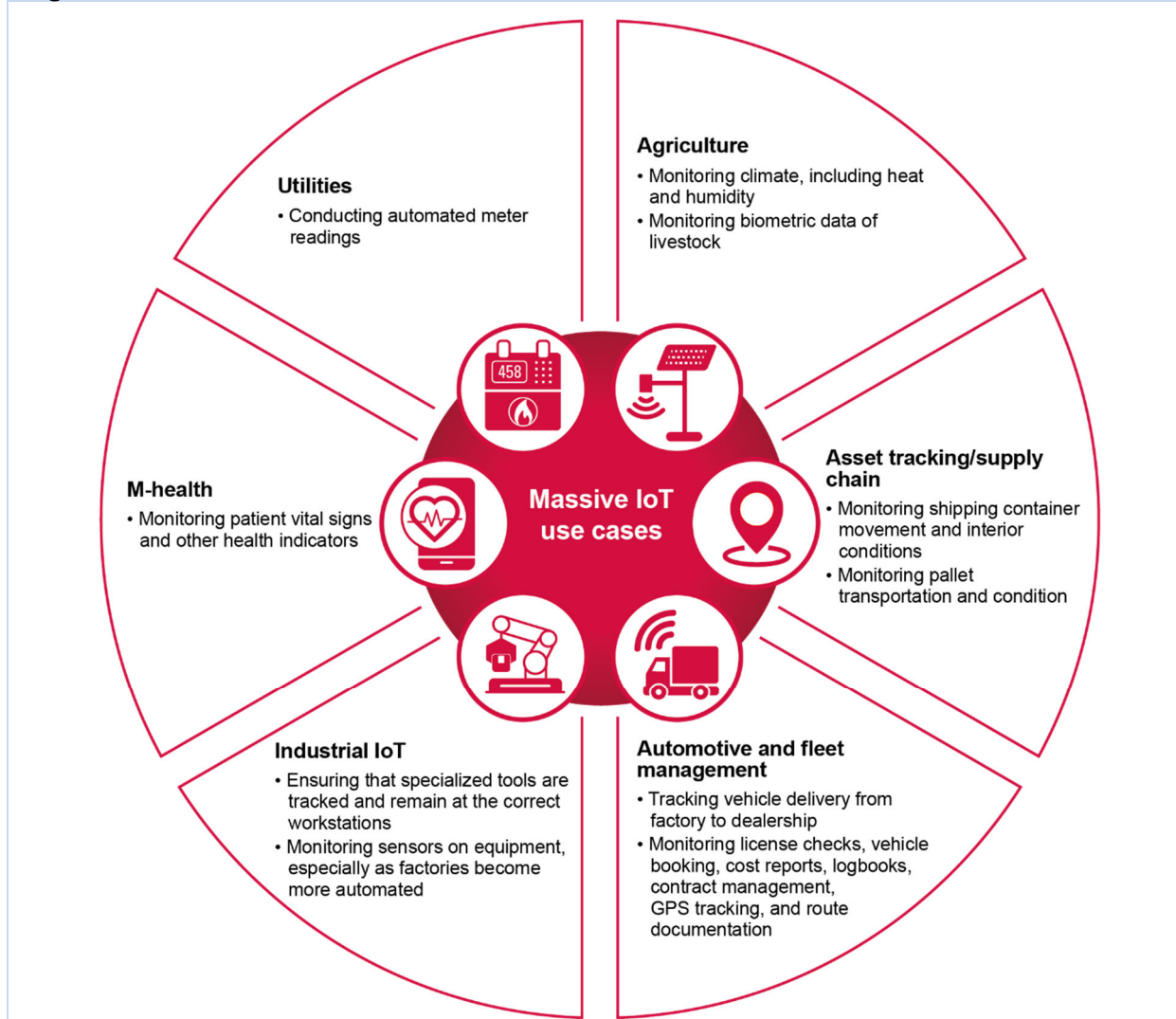
Source: Ovum

One way for MNOs to address this disconnect is through working with new IoT-platform entrants offering cloud-native platform (CNP) services. By providing MNOs with a secure, lean, virtualized platform and network to support fast and simple onboarding and management of "massive-IoT" customers, CNPs can save MNOs' costs on network spending, free up internal resources, and enable MNOs to easily address scalability requirements as needed, with solutions designed specifically for this type of IoT opportunity.

Key messages

- MNOs should take a two-pronged approach to their IoT strategy in order to capture a wide range of IoT opportunities. First, they can utilize their own (or third-party) full-feature IoT platform to deliver and manage IoT solutions that are high ARPC and/or high bandwidth and require a high level of customization and greater customer support. In parallel, MNOs should consider working with a CNP provider, to support demand for high-volume, low-bandwidth, low-ARPC solutions.

- Benefits of working with CNPs can include reduced upfront cost for network buildout and maintenance to support IoT customers as well as potentially reduced ongoing costs from

using a simpler virtualized IoT-platform approach rather than paying expensive fees for licensing and customizing standard third-party IoT platforms.

- Further benefits of partnering with a CNP provider to support massive-IoT customers include rapid scalability and the ability to free up internal resources to focus on higher-value IoT customer groups and use cases.

- Overall, MNOs should consider working with CNPs as an economical and easily scalable way to effectively target additional streams of IoT business.

What is a cloud-native platform?

Most major MNOs have their own IoT platforms, typically developed from a connectivity management platform provided by one of the handful of major providers in the market. While these platforms may be highly capable and highly customizable, they are often difficult to scale cost-effectively and cannot be used to bring new solutions to market quickly. As MNOs move forward with their own digitization journeys, their strategies for launching and supporting new IoT (and other) services, and for effectively managing their networks and other assets to do so, will increasingly require more virtualized approaches (see Figure 2).

Figure 2: Network virtualization benefits and journey
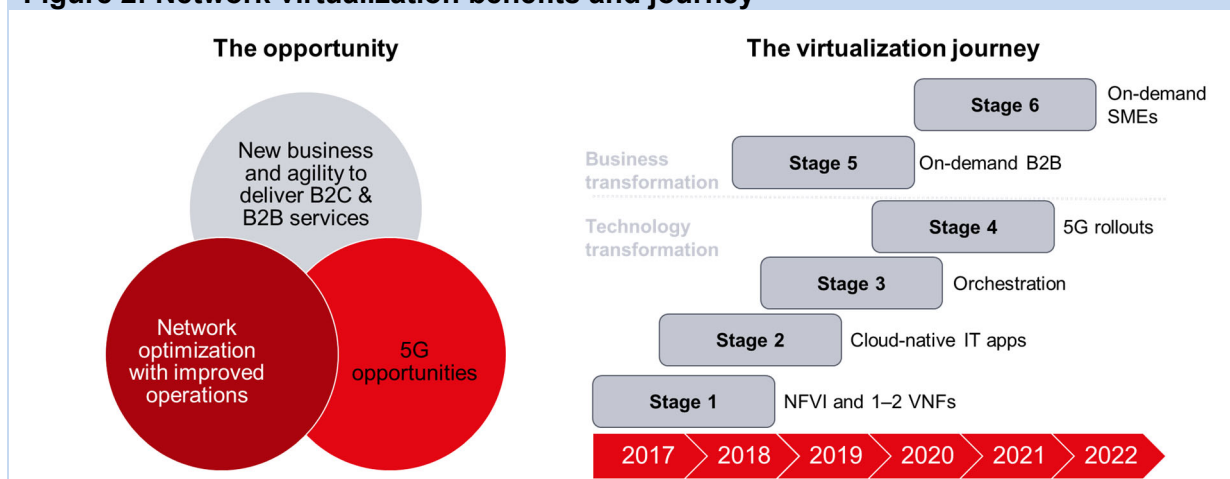
Source: Ovum

CNPs provide a software-defined IoT-connectivity management platform including a cloud-hosted core network (components such as home location register and home subscription server as well as business support services (BSS)).

By marrying lean BSS with a secure virtualized core, CNPs can solve many of the challenges of serving low-margin IoT use cases and verticals. MNOs running these platforms either on top of or alongside their own IoT platforms or networks can better and more efficiently address new and existing use cases. Since the platform is virtual, there are significant cost savings and scalability advantages. Solutions can be deployed locally on servers across the world. Another benefit is that because the MNO is leveraging the CNP's network, there is no need to spend on building out its own network capabilities.

One of the key advantages of a CNP is that the solution is standardized rather than customizable. By providing standardized hardware and standardized tariff plans and supporting very specific feature

sets, CNPs can keep costs low enough to specialize in providing managed connectivity services for low-bandwidth IoT applications such as asset tracking, tank monitoring, vehicle telematics, smart metering, and waste management.

Unlocking the benefits of using a CNP

IoT connectivity today presents many hurdles. MNOs have traditionally focused on connecting consumers, not things. The plans offered often reflect a consumer-centric view of voice and data usage. In addition, these plans and activation processes have been built on legacy systems that have injected some rigidity into tariff schemes. This rigidity extends to the network and limits how agile MNO businesses can be in responding to opportunities.

CNPs are in many ways more similar to cloud platforms such as Amazon Web Services (AWS) and Microsoft Azure than to traditional MNOs or standard third-party IoT-platform providers. Since they are not tied to legacy systems and infrastructure, working with CNPs can allow MNOs to rapidly and virtually provision and update services, which offers major efficiency gains. CNPs can enable MNOs to scale IoT offerings in a more agile way, delivering "instances on demand." Also, CNPs provide a better means of interoperability across multiple clouds and application platforms, which is critical for IoT given the diversity of environments (ranging from major cloud services providers to IoT- or industry-specific platforms such as PTC ThingWorx or DevicePilot).

CNPs offer a number of potential advantages to MNOs looking to address low-bandwidth/massive-IoT opportunities:

- **Reduce required investment/ongoing costs:**
    - *Avoid the massive operating cost of having to build and support a broad set of features to appeal to businesses across multiple IoT verticals.* MNOs can instead enlist a CNP provider to keep a very tight focus on the features needed to support specific use cases. For instance, an MNO may have an IoT platform that supports many types of billing arrangements and may possibly even support its own commerce engine. These features are simply not needed in a use case such as tank monitoring and add complexity and cost that are unnecessary and reduce scalability.
    - *Shift from a capex to an opex model.* The MNO can leverage the CNP's network and thus avoid the high upfront costs on additional infrastructure investment as well as the costs of maintaining the network:
        - Some CNP's offer a pre-paid pricing model spanning several years and also covering SIM costs, access point name (APN), virtual private network (VPN), data, and SMSs.
- **Improve agility and flexibility, speeding time to market:**
    - *MNOs are not typically highly agile organizations, and time to market for new offerings can be slow.* Since CNPs tend to be leaner organizations, there is much less of an issue (compared with MNOs) with building consensus before acting and with permission and organizational hierarchy. Combined with the highly standardized nature of the CNP offering, this can speed up time to market for new IoT offerings targeting low-cost, low-bandwidth opportunities.
- **Reduce integration effort:**

- *Effectively, CNPs can act as an easy "plug-in" IoT-platform solution for the MNO's current environment.* The virtualized nature of the CNP's capabilities can help MNOs avoid having to undertake full integration of a new IoT platform with their legacy systems in order to support additional features or ways of managing this particular IoT market segment. CNPs have built their offerings in a virtualized way that is specifically designed to enable low-cost, low-bandwidth, massive-quantity IoT solutions.
  - **Focus on higher-margin opportunities:**
    - *Partnering with a CNP can help MNOs to make more efficient use of staff and budget.* For example, it can enable the MNO to dedicate its staff to higher-margin IoT opportunities, without ignoring low-bandwidth/high-volume IoT business. MNOs can use their strong brand and business relationships to basically act as a reseller of the CNP.

Case Study: 1NCE

European IoT connectivity and platform provider 1NCE serves as an excellent case study of the innovative CNP proposition. Headquartered in Cologne, Germany, 1NCE provides an IoT PaaS offering as well as Tier-1 carrier–grade connectivity across EMEA, Africa, Asia, Australia and the Americas. It partners with Tier-1 network operators such as Deutsche Telekom and China Telecom Global and utilizes their underlying mobile network infrastructure as well as their roaming agreements.

Within its first five months of activity, 1NCE provided 1 million+ connections and now provides its service to more than 2,100 customers in Europe. Business development trajectory remains strong, with more than 100 new customers coming to the platform each month. However, 1NCE still has plenty of room to grow, because the total addressable market for high-volume, low-bandwidth IoT is significant.

As shown in Figure 3, 1NCE offers MNOs the ability to tap into its highly targeted CNP IoT platform via an API. The proposition is that 1NCE provides MNOs with a proven CNP solution to support high-volume, low-bandwidth IoT connectivity at low cost and on an as-a-service basis. Focusing on key business services, 1NCE's platform offers more than 340 features including key features such as customer management, billing, and reporting in addition to a product catalog.

For its CNP proposition, 1NCE reports the following features and key performance indicators (KPIs):

- *Usability:* more than 340 feature enhancements and more than 450,000 workflows have been processed within 12 months that relate to the 1NCE Shop and Customer Portal since launch, with nearly 80% of those related to usability and customer experience
- *Customer care and technical support:* every month, 1NCE solves more than 130 customer tickets and requests, usually within 24 hours.

Figure 3: 1NCE IoT PaaS architecture
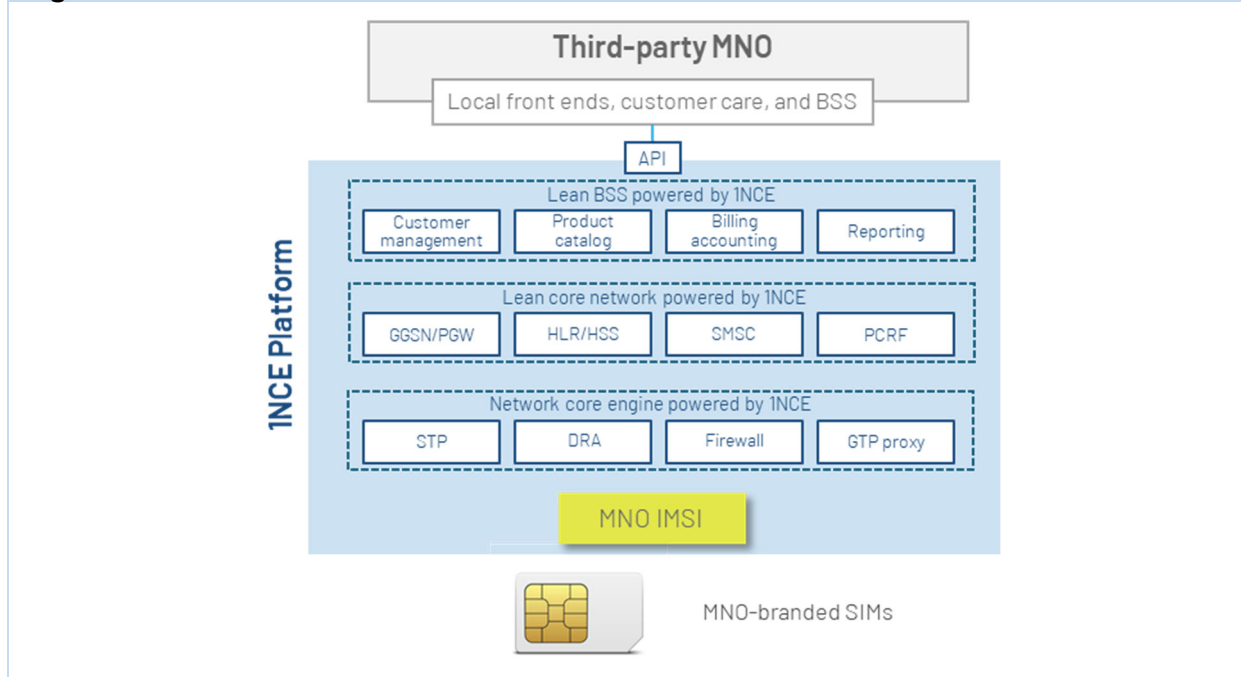
Source: 1NCE

PaaS from 1NCE is a 3GPP compliant cloud platform and provides MNOs with cloud-native microservices to run and operate their IoT networks:

- The platform supports wireless connectivity on 2G, 3G, 4G, and 5G as well as LTE-M and NB-IoT.

- Supported form factors: 4-in-1 SIM (1FF, 2FF, 3FF, 4FF) as well as eSIM (MFF2).

- The SIM operates network-agnostic and supports multi-IMSI capabilities for profile changes.

- Allows for long-term pre-paid pricing, such as the 1NCE IoT Flat Rate:

  - €10 for 10 years with 500MB data allowance and 250 SMSs included:

  - There are no monthly recurring charges, no cost for activation or suspension, no fees for APN or VPN setup, and no licensing fee for the connectivity platform.

  - MNO customers for the 1NCE CNP are, of course, free to set their own pricing schemes.

- Strong ecosystem synergies thanks to several partnerships with platform providers such as AWS, Cumulocity IoT, and DevicePilot, as well as security providers such as G+D and others.

Propositions for a wide variety of verticals, including agriculture, automotive, industrial IoT, m-health, and smart city, have been successfully launched by 1NCE.

Recommendations

Recommendations for MNO network management/IT teams:

- **Compare your costs.** Compare the cost of adding new IoT connections using your current platform setup - especially in low-bandwidth, high-volume use cases - with what can be

achieved by using a CNP. Additionally, consider and compare the effort level needed around onboarding and provisioning in these cases.

- **Think ahead about scalability.** Increasing support for flexible, on-demand scalability in the world of massive IoT as the number of connected devices grows is likely going to be a necessity. As a cloud-based offering, a CNP can offer a simple way to enable this while easily integrating with a legacy network.

- **Consider your 5G roadmap.** Would working with an IoT CNP be practical as a step on the path to 5G and becoming a more digitalized MNO? For example, utilizing a CNP's virtualized core could help MNOs more successfully deploy in the cloud on 5G.

Recommendations for MNO product teams

- **Evaluate your product offerings for specific IoT use cases.** Would the economics of some of your products, particularly high-volume and low-bandwidth products, work better if you used a CNP? For most MNOs, the setup costs of their proprietary platform are largely sunk. Working with a CNP does not invalidate the creation of a proprietary platform; instead, it allows the flexibility to better address new use cases.

- **Consider LPWAN use cases.** Will using your own in-house IoT platform or a proprietary IoT-platform solution from one of the main suppliers truly be able to deliver the low costs promised by these technologies?

- **Think ahead to propositions around areas such as Industrial IoT and private networks.** IoT customers are diverse, and the solutions needed to meet their needs must be easily integrated, must support multiple technologies, and must be 5G-ready. A CNP can enable MNOs to relatively easily develop and integrate new IoT products into their portfolios, particularly for massive-IoT use cases, as the environment and technologies evolve and as demand grows.

Recommendations for MNO strategy and finance teams

- **Consider the benefits of shifting from a capex-led model to an opex-led approach.** Could you extend your IoT capabilities by leveraging a CNP provider's network and PaaS offering, rather than building and supporting your own?

- **Examine the economics of supporting high-volume, low-bandwidth use cases.** How does the cost of your existing network and IoT platform for high-volume, low-bandwidth use cases compare with the cost of working with a CNP's solution?

- **Determine if working with a CNP would improve competitiveness.** Would working with a CNP make it easier to keep up with agile competitors (e.g., MVNOs, unlicensed LPWAN providers), and address new markets without cannibalizing existing business?

Appendix

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Ovum Consulting

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