Cloud-based MVNOs:
Transforming the Mobile Landscape

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The telecommunications industry is no stranger to fast-paced change, but the continued rise of mobile virtual network operators (MVNOs) is now reshaping the mobile landscape at a rapid pace. The global MVNO market was worth $84.6 billion in 2023, and that number is set to jump to $116.8 billion in the next five years, with regions like Latin America, Asia-Pacific (APAC) and Africa now gaining on the US and Europe in terms of MVNO adoption.
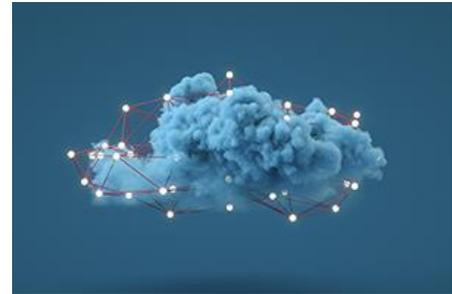
MVNOs have become pivotal players in the communications landscape. Instead of investing in network infrastructure, they lease network services from traditional "big player" operators and independently retail and brand their own wireless services. This gives MVNOs a great deal of agility, allowing them to target individual customer segments that are typically underserved by larger operators. Because MVNOs aren't weighed down by the need to invest and maintain physical network infrastructure, virtually any company can become an MVNO or launch an MVNO-based service.

For instance, Amazon recently made its first foray into this new market opportunity, partnering with US-based operator Dish to offer mobile services that can be bundled with Amazon Prime membership and other benefits. Supermarkets, energy companies, and other retailers are also launching MVNO services that speak directly to their own customer bases. If an energy company launches a mobile service, it can offer unique bundles and benefits that build customer trust and loyalty. But even solo MVNOs can offer unique tariff plans and bundled benefits that larger operators struggle to compete with. For instance, Ting Mobile is an independent MVNO that piggybacks off Verizon's and T-Mobile's networks. Its unique selling point is that it doesn't lock subscribers into any specific plan but instead bills users monthly for the least expensive plan

based on their usage. This is a perfect example of the type of dynamic models that MVNOs can bring to the market.

Digital Players in a Physical World

The standout benefit of MVNOs is that they are smaller and more agile than the larger operators they lease network services from. They are also true digital natives, meaning they can tailor their services with a high degree of flexibility and personalization. This requires smart use of their underlying digital infrastructure. MVNOs typically build cloud-native systems, meaning they develop applications or services designed specifically for cloud computing environments. It often involves the use of containerization. Instead of using a monolithic legacy platform to run their business, they use individual "microservices" that are contained in their own runtime environments and mesh those components together using APIs. Where a legacy non-cloud-native business might have to tear down an entire building to add upgrades and extensions, a cloud-native business will be able to swap bricks in and out without impacting the structure's overall integrity. In other words, cloud-native businesses enjoy a faster time-to-market for new or upgraded services without downtime.

However, this begs an important question for aspiring cloud-native MVNOs. They must choose the right digital infrastructure model to support their services. Do they opt for a multi-tenant MVNE (Mobile Virtual Network Enabler) hub or go for single-tenant infrastructure? The choice isn't just technical; it has implications for overall business strategy, market positioning, and long-term scalability.

The Difference Between Single-tenant and Multi-tenant Infrastructures

To understand which approach might benefit an MVNO, it's first important to understand the key differences between the two options. Single-tenant infrastructure is a bit like renting your own family home. You have complete control over your space, can customize it to your liking, and can enjoy privacy without the concern of sharing your space with others. Translated to MVNO terms, this means having a dedicated infrastructure solely for one MVNO. It offers greater control and customization options but typically comes with higher costs and maintenance responsibilities, not to mention the time it takes to negotiate the lease, move all the furniture in, set up utilities, and so much more. Time is not on your side.

On the other hand, a multi-tenant infrastructure is more like an apartment building with several units. Each unit is independent, offering some degree of privacy and control, but tenants might have to share communal facilities like laundry rooms or kitchens. In the MVNO world, this translates to sharing key infrastructure resources with other MVNOs. It is cost-effective and less burdensome in terms of maintenance, but it might limit how much each MVNO can customize its portion of the shared infrastructure.

Now, let's look at each scenario in greater detail to better understand the choice facing both new MVNOs and MVNOs already in the market and consider a fresh approach.

The Pros and Cons of Multi-tenant MVNE Hubs

Multi-tenant MVNE hubs are a compelling option for many MVNOs, primarily due to their cost-effectiveness. By sharing infrastructure resources, MVNOs can significantly reduce their operational expenses. It's an efficient use of resources in terms of physical infrastructure and the underlying technological framework, often cloud-native, which ensures scalability and adaptability. For MVNOs looking to enter the market quickly or expand their services without heavy upfront investment, multi-tenant solutions offer an accessible path.

However, this model isn't without its challenges. Data privacy and security emerge as primary concerns, as sharing infrastructure inherently means sharing the underlying network and systems. While each MVNO has its private "apartment" within the larger "building," the shared nature of the infrastructure could pose risks if not managed correctly. This is particularly concerning for MVNOs who operate across geographical boundaries and might be exposed to regional regulatory obligations around the use of data, for instance. Additionally, just as all apartments would be at risk if a thief broke into the block, all MVNO tenants in a hub environment are exposed to risk if the multi-tenant hub itself is breached. It's also worth mentioning that while multi-tenant environments offer some degree of configurability, they may not provide the same level of customization or control as a single-tenant infrastructure. This could be a limiting factor for MVNOs with highly specialized service offerings or those looking to differentiate themselves through unique technological capabilities.

The Case for and Against Single Tenant Infrastructure

Single-tenant infrastructure offers MVNOs a distinct advantage in terms of control and customization. Going back to our housing analogy, they have full control over their own, self-sufficient environment and have the freedom to design and modify the space to their own specifications. This level of customization enables MVNOs to offer unique, differentiated services, potentially giving them a competitive edge in the market. Moreover, having a dedicated infrastructure means that MVNOs can optimize their systems for peak performance, ensuring a high-quality experience for their end-users. Another significant advantage is enhanced data security and privacy. Since the resources are not shared with other entities, the risks associated with multi-tenancy, such as data breaches affecting multiple tenants, are heavily mitigated. This isolation of resources is particularly crucial for MVNOs handling sensitive customer data or operating in regions with stringent data protection regulations.

These benefits do, however, come at a cost. Single-tenant infrastructures require a higher investment in terms of both initial setup and ongoing maintenance. Additionally, the responsibility of managing and updating the infrastructure rests solely on the MVNO, requiring a dedicated team and resources, which might be challenging for smaller or newer players in the market.

Balancing Cost, Performance, and Security: A Comparative Analysis

If the choice between a multi-tenant hub and single-tenant architecture still seems unclear, that's because it isn't a clear-cut choice. Each approach has its merits and potential pitfalls. It's down to individual MVNOs to establish their own needs based on the services they want to offer and then make the appropriate choice. For guidance, MVNOs can look elsewhere in the industry to see what's working for other players. For instance, MVNOs like Boost Mobile and [Cricket Wireless](#) have effectively leveraged existing multi-tenant infrastructures. These companies have managed to provide competitive services by renting network capacity, demonstrating the viability and benefits of a shared infrastructure model. This approach allows for reduced operational costs and the ability to focus on customer service and market differentiation without the burden of maintaining their network infrastructure.

On the other hand, some MVNOs prioritize performance and security above all else, opting for single-tenant solutions. The rationale for choosing a single-tenant infrastructure often revolves around the need for enhanced control over the network and data security—particularly relevant for MVNOs targeting niche markets or offering specialized services that require high levels of customization and performance optimization. For instance, a fintech company might launch its own MVNO, offering safe and reliable communication services for banks, investment services and other fintech operations. In this sector, where data security and uninterrupted connectivity carry high stakes, a single-tenant architecture is ideal because it would allow the MVNO to offer highly secure, encrypted communication channels tailored to comply with stringent financial regulations like GDPR in the EU or SOX in the US. The trade-off here, of course, is the higher cost of deployment and maintenance, but for some MVNOs, this investment is justified by the need for a tailored, secure, and high-performing network environment.

Whichever path MVNOs choose for their digital transformation, it is essential to understand that no decision is final. Stepping from a multi-tenant MVNE hub to a single-tenant infrastructure isn't difficult if the right multi-tenant hub partner is chosen. While some vendors in the market offer multi-tenant platforms, they do not provide a seamless move to single-tenant when the need arises. This is a critical thing for all MVNOs to evaluate as they choose their path forward.

It boils down to three things: what services an MVNO is looking to roll out, who those services will serve, and their overall market positioning. Both options offer viable paths to scale and develop new services, but which option MVNOs choose will depend largely on their budget, their plans for monetization and growth, and how those plans tie in with broader environmental concerns such as regulation, security and data privacy.

Ultimately, the decision between multi-tenant and single-tenant infrastructures for MVNOs is not a matter of right or wrong but a strategic choice that hinges on a delicate balance of business objectives, customer needs, and market dynamics. As the telecom landscape continues to evolve, MVNOs must navigate these waters keenly, understanding that the best choice today might be the stepping stone for a different path tomorrow, always ensuring that the path they have chosen will lead them to a successful future.