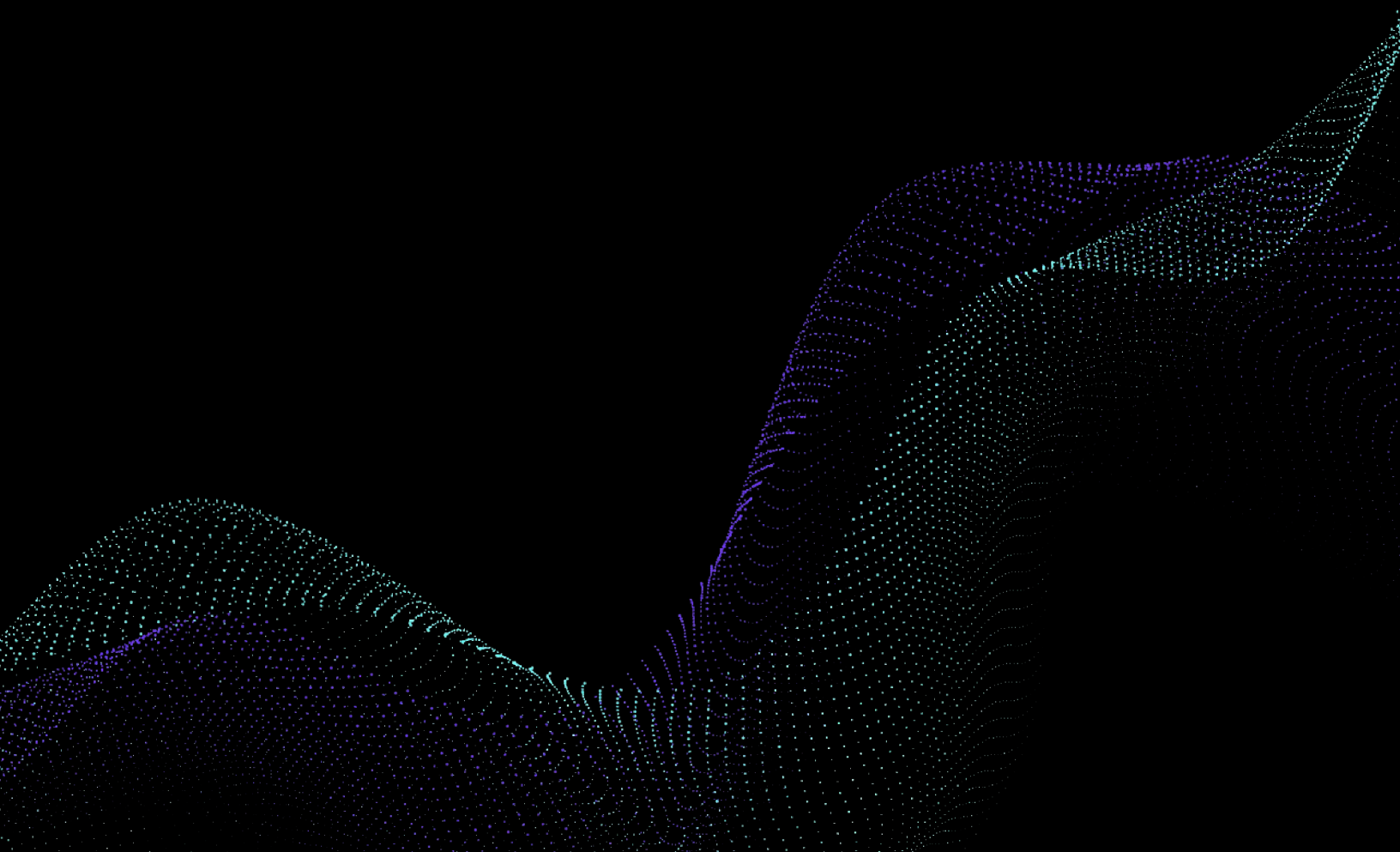
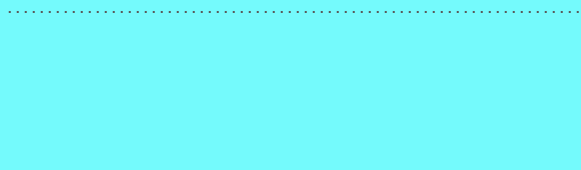




# Accelerating Smart Amenities Opportunities for MDUs with Private Mobile Networks





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**A surge of investment dollars has ignited construction of multifamily dwelling units (MDUs), outpacing single-home construction<sup>1</sup> with sales at levels higher than were recorded prior to the pandemic<sup>2</sup>.** Demand is on the rise as single-family home costs have skyrocketed along with interest rates, making apartment and condo life more attractive than ever. And the growing geriatric population is shifting toward retirement and assisted living MDUs, with the number of Americans aged 65 and above to grow from 52 million in 2018 to 95 million in 2060<sup>3</sup>.

The emergence of innovative **smart devices**, appliances connecting over IP, present MDUs the opportunity to offer “smart” living solutions that improve comfort, lower costs, reduce environmental impact, increase residential safety, and generate revenue opportunities and competitive differentiators for building owners that attract and retain residents.

Ready availability of reliable high-speed internet access is at the core of Smart MDU deployments. However, access to fiber is not readily available at all MDUs. Alef built its Private Mobile Network-as-a-Service (PMNaaS) solution leveraging key advancements in cellular technology. It is an ideal wireless solution to deliver reliable high-speed internet access to bring Smart MDU technologies to life without laying fiber to the building. The Alef PMNaaS is a cloud-based edge network that doesn't require expensive and bulky on-premises servers and, within days, can connect smart devices in residential units, MDU common spaces, and even outdoor areas like parking lots.

Smart Amenities for MDUs attract and retain higher revenue residents while delivering improved comfort, safety, and lower management and maintenance costs

*Alef's Private Mobile Network-as-a-Solution rapidly deploys reliable high-speed wireless connectivity to power smart MDU technologies without fixed wiring to units or backhaul*

<sup>1</sup><https://www.nar.realtor/blogs/economists-outlook/the-trend-is-clear-multifamily-construction-on-the-rise>

<sup>2</sup><https://www.multihousingnews.com/2022-multifamily-outlook-robust-growth-to-continue/>

<sup>3</sup><https://www.grandviewresearch.com/industry-analysis/us-assisted-living-facility-market>

# The Opportunities for MDUs

Park Associates reports that installed smart home devices in MDUs is very important to nearly 70% of prospective residents, and a growing number of properties, both greenfield and brownfield, are poised to install smart home and home automation solutions.

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**Over a third of MDU residents are willing to pay an additional 15% per month in rent for smart amenities.<sup>4</sup>**

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MDU managers and owners adopting smart building technologies have experienced increased rental revenues and competitive advantage to attract and retain residents. And their costs are lowered through management efficiencies and reduced energy and maintenance costs.

Many of the smart MDU applications give residents customized control over their living quarters, with the ease of managing comfort levels from their phones. MDU managers likewise can lessen direct property oversight with many of the autonomous maintenance and management features delivered by smart MDU management solutions.

## Environmental Sustainability

It is reported that buildings cause 40% of global emissions, and regulations are appearing that will require building owners to fix and manage emissions. Smart MDU technologies, especially paired with autonomous capabilities through artificial intelligence, can detect leaks, monitor energy consumption and emissions, prevent wasteful power usage, and potentially predict problem areas. These smart features also offer building owners the near-term benefit of lowering utility costs and avoiding expensive repairs.

<sup>4</sup><https://online.flippingbook.com/view/918855447/6/>

# The Opportunities for MDUs (Continued)

## Innovations in Smart MDUs

There is tremendous momentum in the smart MDU device market, predicted to hit \$4 Billion by 2030<sup>5</sup>. Paired with advanced technologies like artificial intelligence, demand for smart MDU will continue to drive investment and innovation.

### Smart Amenities for Residents

- Smart security with door locks, video doorbells, and community gate access
- Smart climate control and indoor air quality monitoring
- Smart lighting that senses when rooms are occupied, and smart blinds that open and close based on times of day

### Community Management & Productivity Solutions

- Smart monitoring of lighting and climate control in common areas based on occupancy
- Autonomous parking availability and access, smart meter management, and smart EV charging stations
- Pushed security alerts to residents
- Digital signage
- Secure autonomous self-guided tours with unit access granted through a mobile app

### Building Automation Solutions

- Autonomously adjust lighting, temperature, and power distribution based on occupancy or capacity to lower costs and carbon emissions
- Facial recognition enhanced video surveillance
- Leak detection sensors to alert maintenance to potential issues before disaster strikes, which is expensive to repair and remediate.
- Predictive maintenance and repairs and automatic fault alerts
- Autonomous utility management for waste and water management

<sup>5</sup>[https://www.youtube.com/watch?v=71562\\_Km4zM](https://www.youtube.com/watch?v=71562_Km4zM)

# Challenges in Deploying Smart MDUs

While residents have expressed demand for smart home amenities, and smart management and maintenance solutions can lower costs and improve return on investment for MDU owners, there are technical issues to consider.

Connectivity is critical to fulfill the vision of smart MDUs, however ensuring reliable data connectivity to smart home and smart building amenities is one of the biggest challenges for MDU owners. The challenges are multifold:

1. Due to lack of quality assurance and control, MDUs cannot rely on the Internet that is managed by the residential users for personal use from the Internet Service Provider (ISPs) of their choice.
2. Many MDUs do not have the required broadband infrastructure to connect MDU-provided smart IoT devices in residential units and everywhere in the building.

Internet hardwiring is an expensive and disruptive undertaking requiring digging and laying cables over long distances. As demands for higher speeds and bandwidth increase, it's costly for MDU owners to upgrade, maintain, and repair fixed wired connectivity solutions or extend them into new areas, such as parking structures for smart metering and smart electric vehicle (EV) charging stations, which are potential revenue opportunities.

With an expanding list of smart device options supported by a variety of inter-device and internet connectivity options, technology integration can be challenging. Vendor lock-in is expensive, particularly with hardwired hardware solutions, as it can limit MDU owners from future-proofing their smart amenities offerings. And with the rapid pace of innovation in internet access speeds, connection technologies, smart home devices, and expanding bandwidth demands from applications like video, it is beneficial for solutions to be agnostic and support multiple technologies while also having the ability to scale and grow with demands on smart MDU applications.

## **Alef Edge's Private Mobile Network-as-a-Service is a rapidly deployed and cost-effective solution for establishing Smart MDUs**

Alef's Private Mobile Network-as-a-service (PMNaaS) delivers a private, dedicated mobile network to connect IP-enabled Smart devices using the high speed, low latency, high capacity, and high reliability of 4G and 5G cellular technologies running on Citizen Broadband Radio Service (CBRS), dedicated spectrum for private network use. As dedicated networks separate from costly and congested public cellular networks, private mobile networks are highly secure, with coverage area and capacity larger than Wi-Fi - most MDUs, including off-base military housing and senior living facilities, can have complete coverage indoors and outdoors, with just a few radio access points.

Alef's software-based private mobile network resides in the edge cloud to direct, prioritize, and manage network traffic and doesn't require expensive wiring or bulky on-premise hardware infrastructure. With its rich API library, the Alef PMNaaS is highly customizable to each MDU's unique requirements. It is offered on a subscription basis, which readily scales as occupancy rates and demand grows, with costs typically covered entirely by the premium rental rates that smart amenities can achieve.



# Case Study: Integrated Smart MDU solution from Alef and LittleBird

Alef Edge and LittleBird have partnered to deliver integrated Smart MDU solutions that equip new or existing MDU units with innovative capabilities in a matter of days. LittleBird offers a suite of smart solutions, including door entry access control, gate operations, telephone entry, and interactive video intercoms, and connects residents with community staff, neighbors, and local businesses. Combined with the Alef PMNaaS, these smart applications are supported by high-speed, high-bandwidth wireless connectivity, deployable within resident units and around MDU properties.

With either Fixed Wireless Access (FWA) or a fiber endpoint at the MDU complex, access to all the residential units and the shared MDU indoor and outdoor spaces are connected via the Alef PMNaaS and its CBRS-based private mobile network. Each residential unit has its own LittleBird controller installed, each with a dedicated SIM. Each controller then communicates with the smart devices in each residential unit. Residents can manage their devices through the LittleBird mobile app, whether at home or while away, for temperature control, gate access, or any of the intelligent amenities provided by the MDU. Likewise, shared spaces in the MDU can operate their smart management and maintenance applications with dedicated LittleBird controllers and SIMs. And because LittleBird and Alef solutions are radio-agnostic, the CBRS private mobile network supports both 4G and next-generation 5G, supporting orders-of-magnitude greater speeds and bandwidth to scale support for higher usage demands and expanded smart applications in the future.





# No Fiber Backhaul? No Problem!

For rural and remote MDUs and greenfield developments that don't have access to fiber backhaul (or don't want to wait weeks for installation), Alef supports high-speed broadband connection through FWA gateways. Non-line-of-sight FWA gateways are a cost-effective solution for broadband access to underserved areas where installing cabling is cost prohibitive or unavailable.

Whether you have a greenfield or brownfield MDU development, Alef Edge can turn your MDU into a Smart MDU in a matter of weeks. Visit us at [AlefEdge.com](https://AlefEdge.com) or contact a solution specialist at [Partners@AlefEdge.com](mailto:Partners@AlefEdge.com)



**Contact us:**

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