# Scalable Edge DHCP Services for Complex Networks

How Younity turned to FusionLayer Inc. for scalable Edge DHCP services to centrally manage WAPs over multiple buildings in New York.

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Comments relating to the material contained in this document may be submitted to:

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# Introduction

Each time you set up a hotspot to run your Edge, cloud, or IoT applications over the internet, you need an IP (Internet Protocol) address. We're looking at about 75.4 billion devices with internet connectivity by 2025. That's a lot of IPs to manage.

If you're not okay with the idea of juggling a bunch of gnarly settings for every hotspot manually, then imagine having to manage something like 200 to 700 of them at once. That's what Younity, a cutting-edge wireless service provider for residential buildings powered by software-defined network technology empowering building owners in New York to accelerate digital transformation., had to do. To scale its technology to tens of thousands of clients on each location, Younity has partnered up with FusionLayer, a Finnish technology company specializing in next-generation DDI services (DHCP, DNS, and IPAM).

As each building has anywhere from 200 to 700 subnets, the average number of connected devices in a single building ranges between 3,000 and 10,000 per edge node.



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## Every Building in New York City is a Potential Edge Point

Younity.io is a fast-growing startup serving commercial buildings, offices, and residential clients in the New York metropolitan area. Their business model involves populating large buildings with Wireless Access Points (WAPs) to provide fast internet connectivity to accommodate all the digital things that require network access.

Setting up an individual Wi-Fi network at the office premises isn't a hassle. The complexity comes from the number of Internet connections that each building must accommodate. In that case, the DHCP service must cater to every building populated with dozens of Wireless Access Point (WAP) devices and each device with vendor-specific configurations.

For Younity, it's like a snowball effect. Every new building they add to their service introduces an additional Edge point with a multi-vendor WAP scenario. As each building has anywhere from 200 to 700 subnets, the average number of connected devices in a single building ranges between 3,000 and 10,000 per edge node. And once you multiply that number with the number of potential structures in the New York metropolitan area, we start looking at some huge numbers.

Add in the requirement to operate each edge node with 24x7x365 availability and the need to scale out operations fast in a true unicorn style; what we find ourselves with is a genuine business challenge.

This blueprint architecture allowed Younity.io to self-provision, proactively monitor, manage, and maintain all the integrated DHCP service nodes and connected devices centrally.



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Rapid growth for Younity translates into multiple sites to manage, each with different WAP types, multi-vendor WAP scenarios, and a whole lot of devices to accommodate. Say the company was to scale up quickly to 100 buildings. That would translate to 300,000 - 1 million devices whose Internet connectivity is dependent on the Younity service.

From the tech angle, vendor-specific options from different WAP vendors are something most DHCP vendors do not support. To set up these multi-vendor WAP sites quickly, Younity.io needed a solution that provides overlay management for up to hundreds of edge nodes, a large number of IP addresses, and supports the multiple vendor-specific WAP profiles implemented at each site.

Having to manage the DHCP services at all these sites manually was a no-go. But that's what would have happened with the other DHCP systems that Younity researched. They also wouldn't have provided centralized management capabilities, falling short on the scalable operating model for Younity.io.

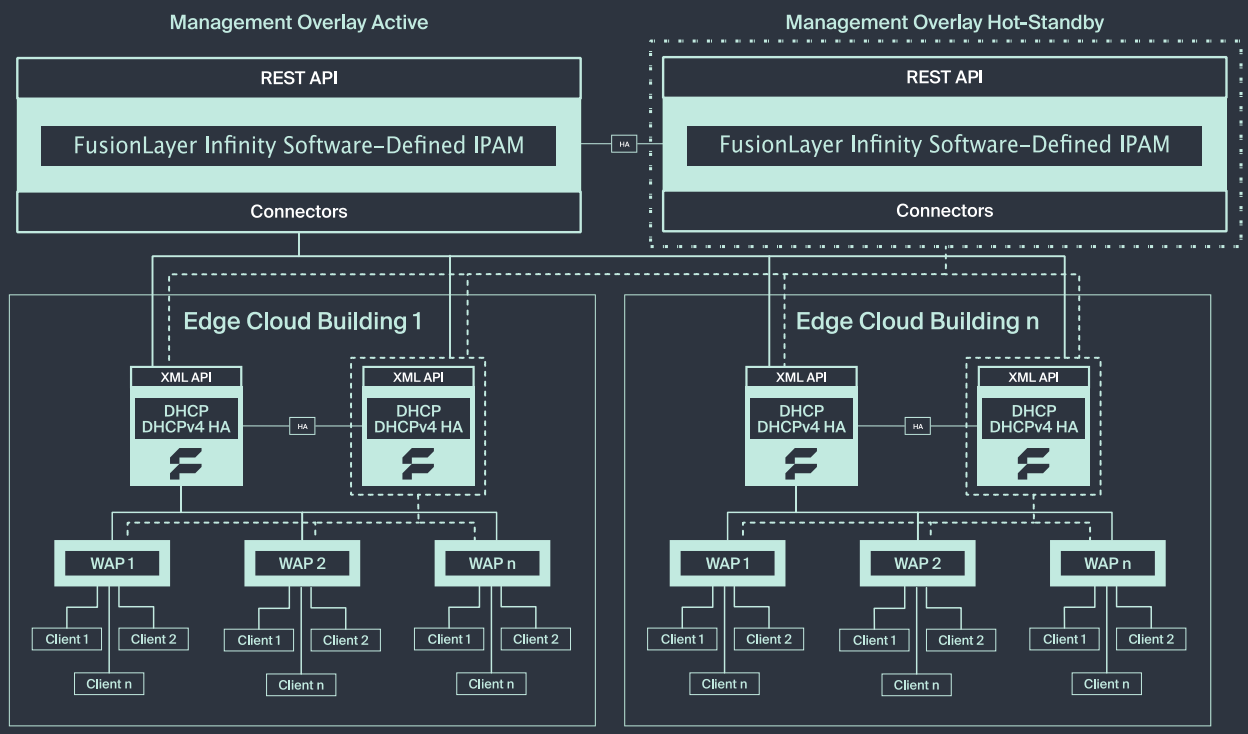
Think about it: with 100 HA sites, they'd have 200 DHCP servers and 500k-1M devices overall. In that kind of situation, centrally managing and monitoring the DHCP server base is an absolute must. So Younity partnered with FusionLayer, a technology solutions provider with a proven track record of DHCP services with centralized overlay management.

Younity.io needed a solution that only does overlay management for up to hundreds of edge nodes and a large number of IP addresses, but also supports the multiple different vendor specific WAP profiles that must be supported at each site.

# A Centrally Managed SD-IPAM + DHCP Solution

Each building implemented with Younity's multi-component platform now includes a DHCP HA cluster from FusionLayer serving out vendor-specific configurations for each WAP type. The servers run on physical mini-PCs, which are easy to locate in the buildings. Yet thanks to FusionLayer DHCP's high-performance design, even a mini-PC can serve a large number of WAPs and 3,000 -- 10,000 connected devices. Essentially, it's like running multiple rural Internet Service Providers using mini-PCs.

## Edge Cloud DHCP Architecture with FusionLayer




To establish centralized and scalable management for the DHCP services in each building, Younity.io deployed a centralized FusionLayer Infinity management overlay. To simplify the operations, Younity.io deployed the SD-IPAM solution into their scalable cloud solution running on Amazon Web Services (AWS), removing the need to set up and operate a private Data Center.

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This blueprint architecture allowed Younity.io to centrally self-provision, proactively monitor, manage, and maintain all the integrated DHCP service nodes and connected devices. Besides the ability to set up new service edge nodes quickly,  it also helps to comply with today's information security requirements that necessitate role-based  access control with audit trails, centralized authentication of users, and integration with critical  operational elements such as SIEM, SOC, and NOC

Result: a scalable, centrally managed DHCP setup capable of handling multiple WAPs, multiple IP addresses, and a host of Edge, cloud, and IoT applications.

## About FusionLayer

Managing complex corporate and telecom networks is a challenge where the cost of failure is enormous. FusionLayer collates all network information into a single Network Source of Truth, accessed securely by both engineers and automation to eliminate the chance of network downtime – on-premise, at the Edge, and in the public cloud. This provides our customers with reassuring real-time information, so their digitalized operations can connect 24x7x365.


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