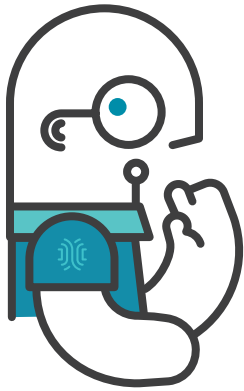




Simplified retail edge & critical remote access

Making deployment and management easy for a large retailer

A major retail company requires networking that can keep up with demand. However, having large distribution centers and enormous showrooms can push the limits of their connectivity. Internal operations rely heavily on data for logistics and inventory purposes, while customer-facing interactions need strong networking for product availability and order processing transactions. To accommodate rapid business growth, the retailer sought a branch networking solution that they could scale quickly and manage easily.



The Challenge

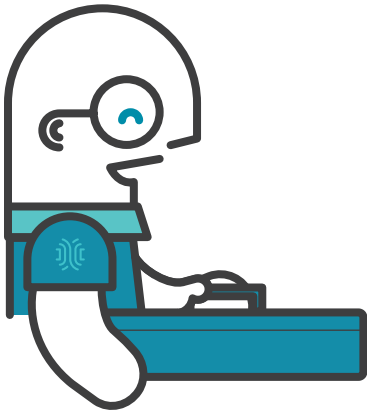
With traditional edge solutions deployed, the company became accustomed to high support & maintenance costs. However as business began to increase significantly, expansion became critical – but their existing system could not keep up.

At each retail branch location, the company's network consisted of cumbersome main distribution frame (MDF) and intermediate distribution frame (IDF) closets. In the MDF, their traditional solution required a network switch and a cellular failover device. In the IDF, of which there were many housed in each store, they required a separate cellular device that came with its own expensive service plan. Simply put, their existing solution forced them to juggle too many devices and cellular agreements.

Their disjointed backup connectivity proved difficult to manage, leading to frequent on-site support and slow resolution times. Further complicating their capabilities was their separate switch fabric, which introduced cable length limitations and forced them to find workaround solutions.

The company's edge network infrastructure was inadequate for existing locations, and would undoubtedly slow down any new deployments. The retailer sought a new solution that was simple and complete, and that could serve as a flexible platform to accommodate changing future requirements. The solution would have to:

- **Streamline infrastructure and reduce cellular backup costs**
- **Provide convenient remote access for support teams**
- **Support automated deployments and remote provisioning**
- **Remain flexible and open to host solutions of their choice**



The Solution

The company discovered that only Nodegrid could deliver the capabilities they needed for rapid growth. They chose a powerful combination of Nodegrid Services Router (SR) devices: the Net SR (NSR), Gate SR (GSR), and Link SR (LSR).

At each store's MDF, cellular signal strength was limited due to the physical location of the closet. To address this, the company deployed a single LSR in the area where reception was optimal. This served as the store's modem to provide internet connectivity along with two 5G/4G LTE backup links. One key reason ZPE was selected over any other solution is that LSR is the only device of its type that can span the vast distances between the equipment that a warehouse of this size requires due to its SFP long haul distances. This LSR was then connected via long-run fiber to the MDF, where the NSR was housed. From the NSR, the company used long-run fiber to reach all department IDFs. For less demanding departments, they deployed the LSR with serial dongle, and for larger departments they deployed the GSR capable of connecting to more infrastructure components.

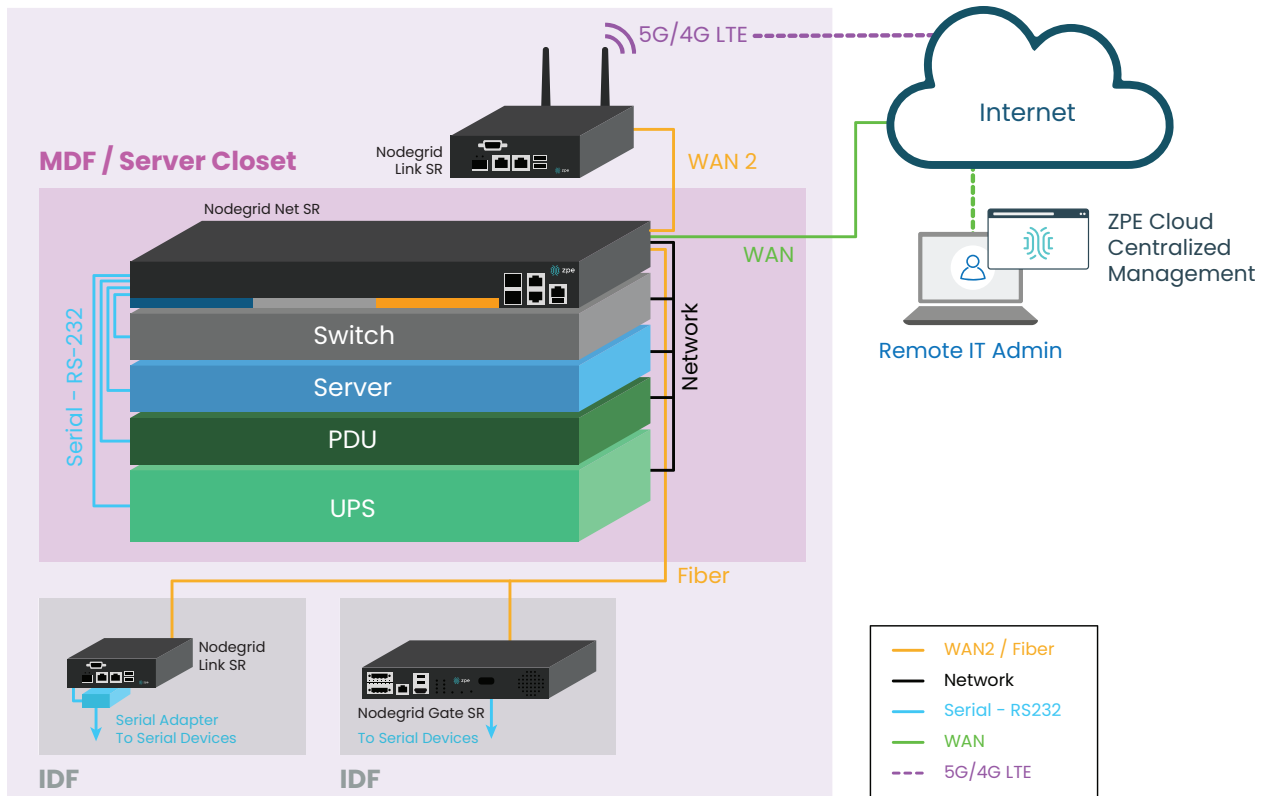
From a high level perspective, the LSR modem provided both main line and backup cellular connectivity to the MDF's NSR, which then fed every IDF closet in the store.



The Results

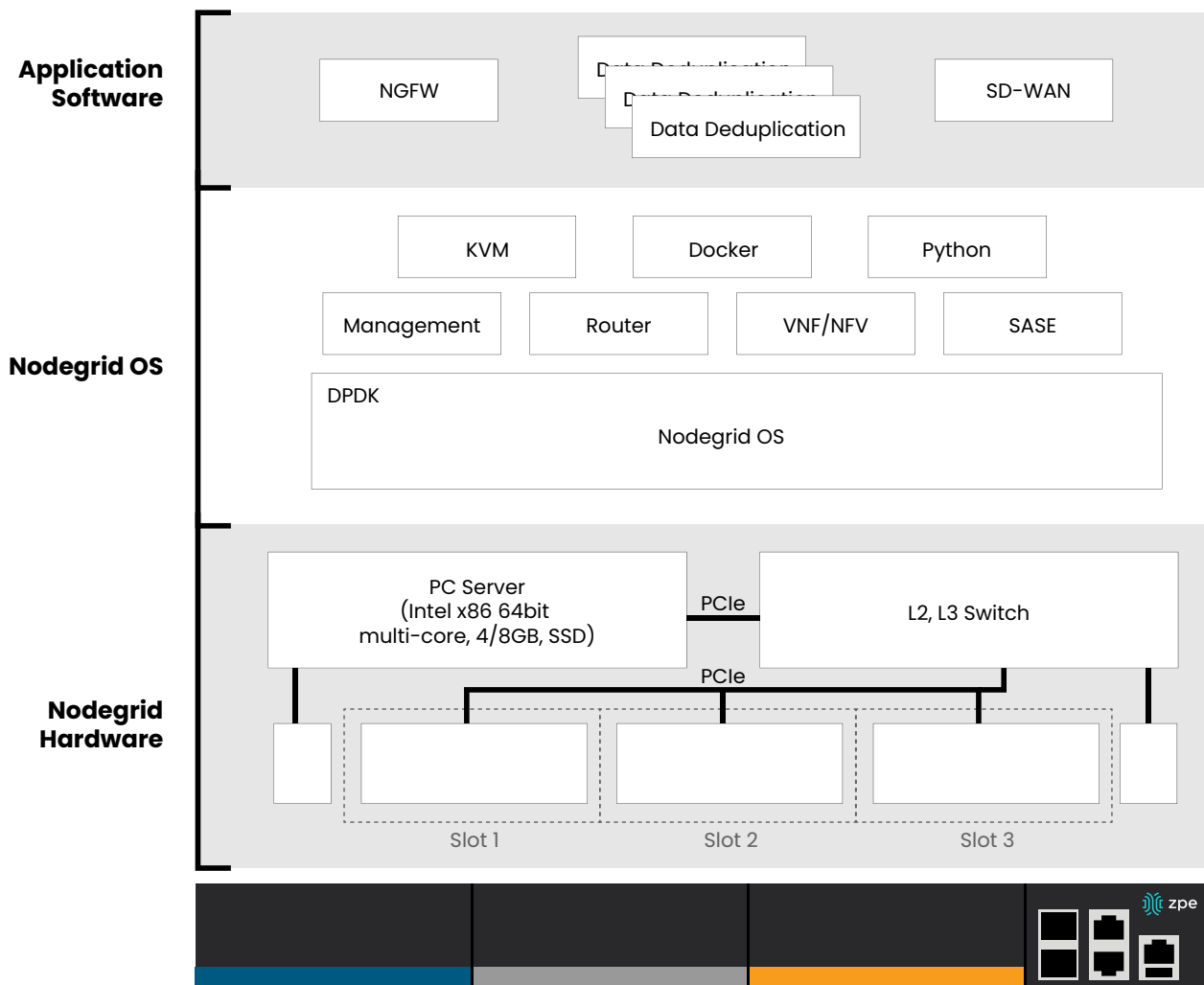
The combined Nodegrid solution streamlined the company's edge networks along with their management efforts.

Retail Store



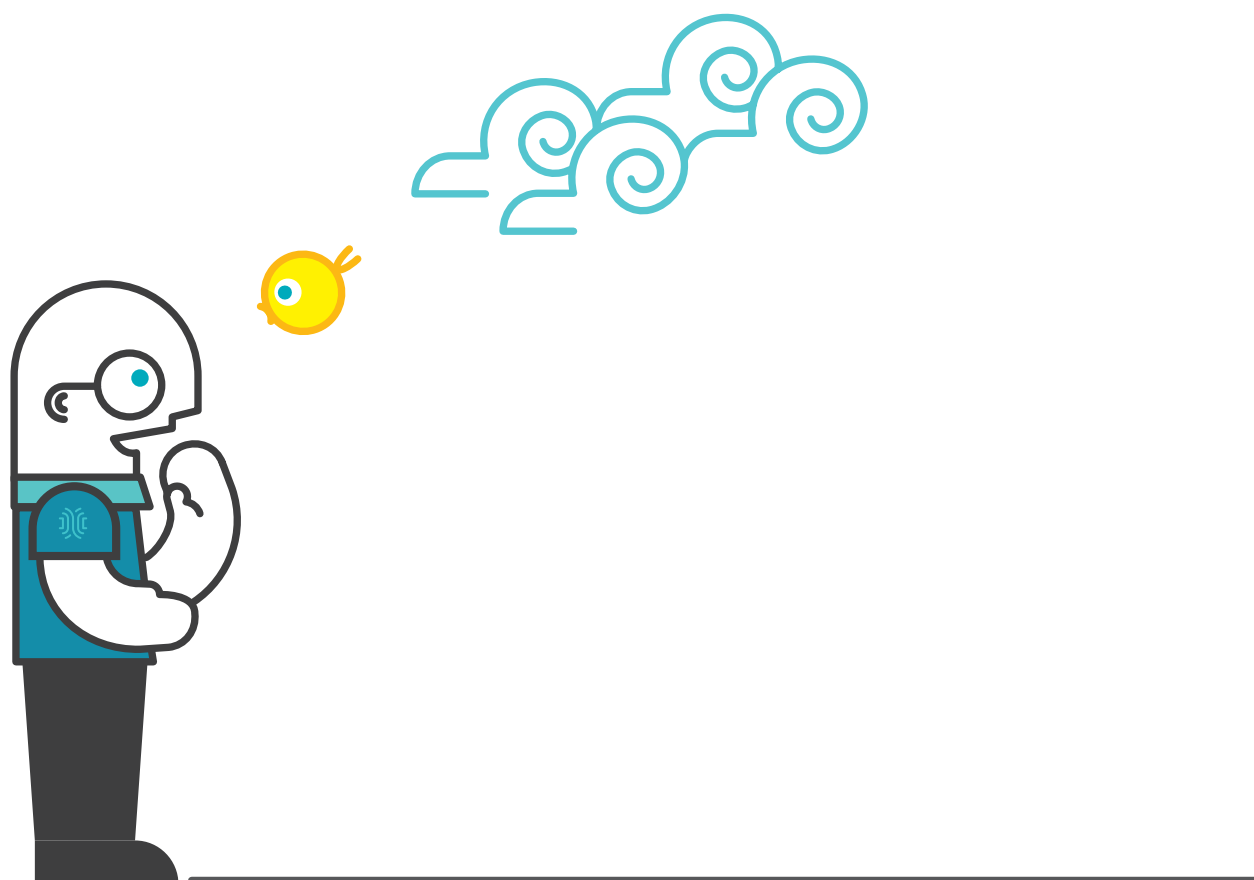
Instead of requiring a separate switch in the MDF and a dedicated cellular device in each IDF, the retailer needed only the NSR in the MDF. This all-in-one device eliminated the network switch and centralized these critical functions while extending capabilities to each IDF. Connecting the LSR or GSR at the department level also reduced their stack by eliminating the need for purpose-built cellular appliances throughout each store.

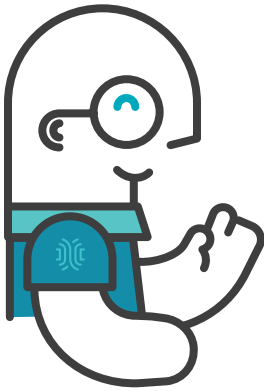
The company no longer had to juggle disparate cellular devices and service plans, nor were they forced to settle for limited cellular connectivity from their previous solution's lack of fiber capabilities. Support teams also gained convenient access to all connected assets, thanks to Nodegrid's built-in out-of-band management capabilities.



This streamlined infrastructure also simplified deployments. Aside from reducing the stack and making networks easy to set up with just a few devices, the SR devices also support automation thanks to the powerful Nodegrid OS. This Linux-based operating system can run Docker and LXC containers; common automation tools like Ansible, Chef, and Puppet; and orchestration processes via a rich, RESTful API library. These capabilities allowed teams to automate initial configurations, as well as provide ongoing provisioning and management tasks – all performed remotely via their out-of-band path.

By simply accessing the NSR, IT staff could provision, monitor, and manage all physical and virtual assets. Because Nodegrid OS is vendor-neutral, they could control devices regardless of manufacturer.





The Benefits

With Nodegrid, the company was able to revamp their edge network infrastructure with a simple and powerful solution. The NSR, GSR, and LSR provided a minimal form factor that delivered critical functions such as routing, switching, cellular failover, and Wi-Fi connectivity, along with automated deployment and remote management capabilities. These led to benefits like:

- **Fast deployments due to automation and having fewer devices**
- **Drastically reduced cellular costs by eliminating disparate devices and service plans**
- **More speed and reliability by having optimized cellular connectivity at each store**
- **Reduced managed device costs and support resolution times, due to having fewer boxes and remote out-of-band management of third party devices**
- **Space and energy savings at each MDF and IDF closet, and the ability to run additional workloads without having to add devices**

Nodegrid made room for savings across the company's network. When it came to physical savings, the company cut their IDF stack along with the hodgepodge of peripherals that used to address their cable length limitations. The pairing of long-run fiber with the LSR and GSR became the minimal solution, saving both rack space and power consumption.

Not only did this solution improve management for existing locations, but it also made new deployments push-button simple. The company took advantage

of Nodegrid's automation support, to eliminate the need for manual, on-site configuring. Instead of dispatching teams to spend days or weeks setting up new locations, they required only minimal staff who could install and boot their devices. Zero touch provisioning would then build the network, while IT teams could monitor and control configurations from afar.

More savings came with the elimination of many cellular service plans. Instead of deploying dedicated backup devices each with their own data agreement, they used a single LSR-to-NSR connection at each location to provide cellular failover for all departments. The LSR features redundancy with two SIM card slots, allowing the retailer to secure their peace of mind using their choice of service providers.

IT teams no longer needed to be on site to support MDF and IDF closets. Using Nodegrid's secure out-of-band management, staff could respond instantly to potential issues, with a fast connection via broadband or cellular. Slow, expensive truck rolls became a thing of the past, as Nodegrid allowed for in-depth remote control of all connected branch infrastructure, regardless of vendor.

On top of streamlining deployment and management, the Nodegrid solution provided a foundation to accommodate future scaling and changing requirements. Each device in the Nodegrid SR family comes with a powerful, multi-core Intel CPU. Paired with the onboard Nodegrid OS and its robust virtualization layer, the Nodegrid solution enables the retailer with plenty of hardware and software resources to serve as their uCPE gateway for years to come. As their needs change, they can deploy multi-vendor solutions of their choice – from SD-WAN and Secure Access Service Edge applications, to next-generation firewalls, IoT monitoring services, and edge compute workloads.

For the retailer, deploying and managing their distributed branch networks became easy with Nodegrid. Their simplified and powerful new infrastructure allowed them to take advantage of growth opportunities without the slowdowns they had become accustomed to. Suddenly, their network transformed into an efficient resource that added value to everyday operations.

If you're ready to expand and leave cluttered networking behind, count on the Nodegrid SR device family for the smoothest experience. Visit our website to get expert advice, walk through a reference diagram, or set up a free Nodegrid demo.