

PRIVATE LTE NETWORKS



**PUSHING THE LIMITS OF
COMMUNICATION TECHNOLOGY**



MCS Connects Healthcare Facilities with Secure and Stable Baicells Private LTE Network

The Netherlands deals with an aging population. The baby boom generation, people roughly born between 1945 and 1955, make up a large part of the population, making modernized care centers more crucial than ever. Not only for the residents but also for the employees' constantly growing workload. A reliable Internet connection is a requirement for residents and their visitors to improve their daily lives, and for employees to deliver the right care.

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But how does a care institution provide voice and data connections for their work processes, while building a stable Internet network? MCS an expert in private LTE networks and IoT deployments in the BeNeLux area, was called by a residential care center that was struggling with this problem and helped them resolve it. In the end, MCS determined that the best solution for the care facility was a stable and Future-proof private LTE network, built using of Baicells Neutrino 224s and a hybrid CloudCore/physical EPC solution. This would provide a reliable and secure network for data, voice, and other systems to run simultaneously and do so without interruption.



Neutrino 224

Why Wi-Fi Networks Are Not the Best Solution for Primary Care Facilities

In 2018, the healthcare facility in question underwent a major renovation. The facility seized this opportunity to evaluate their existing Wi-Fi network. A Spokesperson

for the facility explained, "The question arose because our Wi-Fi solution was not easy to manage. We did not want to create a Wi-Fi access point for two Wi-Fi networks in the residents' rooms due to interference. Besides, a network construction with two Wi-Fi networks would be a dragon to manage. Wi-Fi has limitations with Voice over Wi-Fi or roaming. And individual Wi-Fi cells for the residents' combined with a Business Wi-Fi solution for the Health organization will interfere in any circumstances. Therefore, it is certainly not a suitable solution when you have to rely on a Quality of Service IP Network for primary function and applications in the healthcare sector."

Stability of the Network is Crucial

In healthcare, the stability of the network and extensive indoor coverage is crucial. Private LTE networks allow for both voice and data to be combined in a single network. By combining a stable and reliable data connection that allows for voice, data, and other systems to run, a private LTE network that utilizes Baicells equipment can provide a singular end-to-end solution that would otherwise require several different systems to work effectively.

Private LTE with Stable, Good Indoor Coverage

The healthcare facility needed to find a solution for their network problems. After extensive evaluation with MCS and various consultants, building a private LTE Network using Baicells Neutrino 224 was determined to be the best and most reliable solution for the facility.

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MCS stated, "We are familiar with private LTE technology. Baicells solution's features perfectly matched the needs of the facility, so after some deliberations, we decided to go down this road."

A project leader at the healthcare facility was convinced that a private LTE network was the right solution. "Private GSM and Wi-Fi are more popular than LTE, but when you look more closely, you see that those solutions aren't the obvious answer. They need a lot of management, and Wi-Fi did not offer the essential indoor coverage that we required. Baicells private LTE solution is good, particularly for locations where the infrastructure between the residential and business networks are separated."

Why Private LTE?

The main reasons that the care facility opted for a Baicells private LTE network are:

- Dedicated LTE spectrum limits interference to the network from other sources.
- 4G is reliable and transmits voice and data effectively.
- An affordable alternative to Wi-Fi and Private GSM networks.
- The ability to build a custom network to meet the needs of specific organizations.

Private LTE – What Does It Mean?

Private LTE solutions are ideal for organizations with high demands for reliability, security, and flexibility. It operates the same way as a public 4G network but allows a business to build a fully shielded private network on their premises. Users can always reach the Internet from inside the building, even if the public 4G network is no longer functioning. Finally, it prepares the organization to set up a 5G network in the near future.

The most important advantages of a Baicells private LTE network are:

- Safe and reliable: Private LTE networks allow for 100% self-control over the users on a network and operates similarly as public 4G networks.

- Customization: The network coverage can be fully tailored to the organization's needs, depending on their situation.
- Future-proof: The networks are 5G ready.
- Scalable: A private LTE network is easy to expand as an organization grows and allows for quick additions of new functions.
- Voice and data: The data is sent over the network at 4G speed and it allows for calls to be made via a company switch board (SIP client).
- Cloud-based Solutions: The ability to utilize Baicells CloudCore lowers network costs without sacrificing the networks reliability for the organization's critical wireless functions.

Users Can Rely on a Baicells Private LTE Network

The residential care center has had its private LTE network in place for its primary care process for several months now. Thirty-one Neutrino 224s provide extensive network coverage over 20,652 square meters, covering both the main building and service apartments. The care system contacts the recipients via the private LTE network 350,000 times every 24 hours.



Baicells Neutrino 224 is a small 2x125mW, indoor LTE base station that utilizes System on Chip (SoC) technology to insure efficient connections. This base station is incredibly easy to deploy and makes it easy for operators to improve indoor coverage and offer higher capacity while improving the stability of the network.

MCS recommended the use of a hybrid EPC model that used a combination of Baicells Cloud-

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Core and Baicells local EPC to insure the network's stability. The CloudCore would be used by the facilities residents to access the internet while the local EPC would be reserved for use by facilities critical functions and staff. This lowered the cost of the network's deployment while maintaining the stability for all necessary communications.

The organization's experience with the new network has been incredibly positive. A spokesperson stated that, "the network is incredibly reliable. The employees who work with it can rely on it blindly and are all enthusiastic about it. One of the nicest things we see is that our residents do not even think about how their devices are connected. It works seamlessly, so they have zero complaints and it just works. They can do their thing, and because the network is so stable, they can continue doing it unhindered. From the moment it has been implemented, it has functioned well. In healthcare, security is the most important thing – it must work, and it must work well."

What MCS Provided

MCS brought extensive knowledge and expertise of Private LTE networks to this project. By quickly, and successfully, implementing a reliable and stable communications network for the health-care facility, MCS expanded upon and continued to maintain an excellent customer service reputation. Now the care facility has a stable communication connection that requires relatively little management and maintenance. This is the primary reason that MCS continues to choose Baicells products in its Private LTE network deployments.



Prepared for Future IoT Deployments

When asked if the care facility would recommend private LTE networks to other organizations, a spokesperson stated, "This will provide you with a stable network for your primary processes. It will allow you to build up a degree of security within your organization. Our healthcare facility is now well prepared for IoT developments that will occur in the future."

"The network is future-proof, so we're not committed to a restrictive technology. The facility is ready for future IoT applications, such as room observations, and tracking and tracing smart sensors on their network. This way, we can keep up with technological developments on both a technical and organizational level."

Go for It

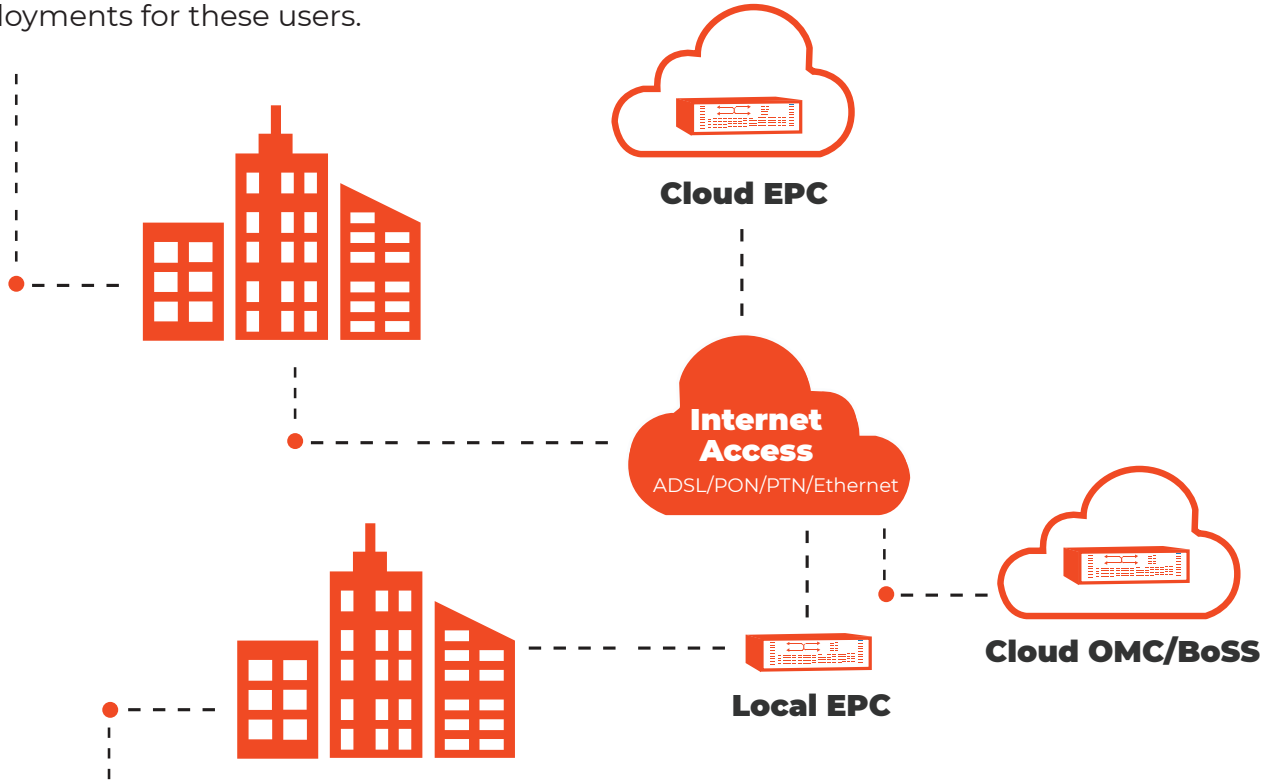
A couple of other points for organizations interested in building a private LTE network:

- Focus on good indoor coverage. This might mean you may need more small cells than you would normally need, but constant grumbling about a network dead zone is worse in the long run.
- If you have a lot of incoming and outgoing personnel, they recommend you use a dual-sim device. This will allow you to work on the private LTE network and a public 4G network.
- Take a good look at the devices you work with, such as the type of smartphone or laptops in your organization, and make sure you will be able to connect them to the network.
- Weigh the pros and cons of the different network types. If you are looking objectively at the developments in frequency and data traffic, there are strong arguments for using a Baicells private LTE network.

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Site 1:

Delivering service to a small number of users in a concentrated area. The CloudEPC allows for rapid deployments for these users.



Site 2:

The local EPC provides Internet connectivity for critical infrastructure and workers while maintaining the network's security and stability.

The combined features of Baicells plug-and-play small cells, along with the CloudEPC, insures quick deployments for select users in a dedicated area. To service a large amount of users, the care center used a local core that allowed for secure data transmissions.

MCS was able to quickly deploy, then remotely control and maintain the whole network via the hybrid CloudCore/Local EPC model deployed as displayed above

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About Baicells

Baicells is an international company, providing disruptively priced and technically innovative 4G LTE and 5G NR Access Solutions that connect more than 50 countries across the globe. Our ever-expanding goal to "Connect the Unconnected" has led to the establishment of offices across five of the seven continents and the development of over 300 patents since our inception in 2014. Baicells currently boasts over 700 private LTE networks across the world. Baicells production has been booming to meet the growing demand for increased connectivity.

About MCS

Making complex technology simple. That is our mission. In this way, everyone can make use of innovative IoT-solutions carefree. And we make people's daily work and life easier, safer and more sustainable.

Since the establishment of MCS in 1997, we have specialized in Managed IoT devices and secure and reliable communication solutions with great flexibility. We provide several customized private networks, such as Private GSM (2G), Private LTE (4G & 5G) and Private LoRaWAN. The necessary hardware and software components for these networks are also provided by us. We work together with carefully selected partners and support them in setting up and delivering successful Managed IoT solutions and Private Networks.

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