

Why do airports need private 5G networks?

A conversation between Johan Bjorklund, CEO, Betacom, and
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Airports are on the brink of a transformation toward automation, increased operational efficiency, and more effective services for passengers and tenants, driven by the pressure for higher cost-efficiency, competitiveness, reliability and security. Private networks have a big role to play in this transformation.

In this conversation, I talked with Johan Bjorklund, CEO at Betacom, about how their 5G-as-a-Service (5GaaS) approach makes it possible for airports to deploy CBRS private networks without having to operate one on their own, yet retain full control.

Monica Paolini: Johan, Betacom has been in wireless for a long time. Can you tell us what is special about what you do?

Johan Bjorklund: Betacom has been around for 30 years, doing mostly large wireless construction projects. Today, we design, we build, and we operate wireless private wireless networks for airports and for other enterprises. We do everything in-house.

Our customers do not have to be experts at building or running wireless networks. They do not have to be experts in 4G or 5G. We are the experts, so they do not need to add one single headcount to get their own private wireless network working.

We do everything from soup to nuts, and deliver a turnkey solution to our customers to make it very easy for them.

Monica: How does the recent work you are doing in airports fit Betacom's activities?

Johan: We have worked with many airports, and we have built the wireless infrastructure in several of them. In the last nine months, we have ventured into something we call 5G-as-a-Service (5GaaS), where we are offering enterprises, including airports, a wireless private network using CBRS spectrum. We are enabling airports to take advantage of 5G services – or 4G services, for that matter – using dedicated spectrum and a private network within their own firewalls.

Monica: What makes airports one of the best environments to prove the viability of wireless technologies?

Johan: Airports are like small cities – there are so many different applications within an airport. And those applications need a robust and secure network to run properly.

Today, most of them use Wi-Fi. And Wi-Fi comes with many challenges. There is often quite a bit of congestion in Wi-Fi networks. Sustainability can

also be an issue – Wi-Fi was not built with sustainability in mind.

With private wireless, we can address many of these challenges and make business-critical airport applications run smoother.

Monica: From a technology point of view, airports are the perfect showcase environment because there you face most of the challenges you find in wireless deployments, and you need to support almost any use case you can think of.

At the same time, an airport may want to deploy one or more wireless networks, but they may not want to do it themselves. They may not have the capability in-house, and they may not want to hire people to run their networks. In fact, this could be a showstopper. So having someone who can do that for them can be crucially valuable to the airport, and also accelerate the adoption of private networks in airports.

We have recently seen a sudden growth in interest from airports to test and deploy private wireless networks. What is driving the change?

Johan: There are several reasons. One reason is that with COVID, everything went from being very, very busy to everything shutting down more or less

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overnight. During this period, airports and airlines have restructured and, in some cases, have been forced to reduce personnel. Now that traveling has started to pick back up again, there are many areas that are understaffed. This creates a huge need for automation, for both above-wing services and below-wing services – for instance, for baggage and cargo handling and tracking, or for boarding services.

With the currently tight labor market, hiring new people and training them to take care of this onslaught of demand can be challenging. After the COVID shutdowns, there is a big need to effectively automate many processes. You need to connect everything wirelessly, and, to do so, you need a robust network.

One of the challenges we are seeing is that airports are struggling with the capacity limitations of Wi-Fi. I was at an airport a couple of weeks ago, and the Wi-Fi network was working just fine. But then a large aircraft came in from Japan. You could see almost everybody on that flight powering up their phones at the same time and logging into Wi-Fi. And the network went down.

The airport has business-critical applications that require reliable connectivity, and Wi-Fi is insufficient to provide that capacity for operations.

The ability to have separate networks where the airport can run these business-critical applications is something that has been getting more attention from airports, and the new challenges brought on by COVID have only escalated the need.

Monica: And when the passengers all get to check their phones after they land, it is also a peak time of activity for the airport. This is also the time when

the luggage comes in. The increase in passenger traffic is correlated with an increase in airport activities.

But would not it be sufficient – as well as cheaper and less complex – to expand the Wi-Fi network, rather than building a private network using CBRS or licensed spectrum?

Johan: Upgrading the Wi-Fi network to meet all the airport requirements is not necessarily easy to do. You only have a few unlicensed spectrum bands that you can run Wi-Fi on. You can always add another Wi-Fi network, but eventually you run out

of spectrum resources.

When you suddenly have all these passengers coming in and they are firing up their phones at the same time, they are all competing for the same spectrum, even though it may be over different Wi-Fi networks.

There are many challenges with optimizing Wi-Fi networks. And airports – especially large ones – are so dynamic because they have so many people coming and going for hours and hours each day.

Monica: To meet high traffic demand, airports need

more than a Wi-Fi network. But can they shoulder the costs of the initial deployment?

Johan: Private wireless networks, the way we are pricing them, are not much more expensive than Wi-Fi. And bear in mind that Betacom offers a turnkey service. The airport does not need to add any staff. It is pretty easy for the airport IT organization to add a private wireless network if they use Betacom's 5G-as-a-Service because we are doing everything end-to-end.

Monica: What, then, are the overall cost savings and revenue opportunities for an airport to deploy a wireless private network?

Johan: There are many cost savings and revenue opportunities. To give you a concrete example, biometric scanning systems for passenger boarding are becoming an increasing trend with COVID as airports pursue touchless technologies. In some Wi-Fi biometric scanning systems, the problem is that after about 16 or 17 scans, the scanner has taken up so many resources from Wi-Fi that it causes the Wi-Fi network to shut down. And the way the system is configured, the application has to restart, and that takes about 30 minutes. So if you can only scan 16 or 17 people to board an aircraft, and then you have to wait 30 minutes to restart the application to continue boarding, the value is completely lost. So you need to be able to fall back to the old system, and this means going back to having many gate agents again. In this situation, there are no cost savings.

If instead you have a private wireless network that works 100% of the time, or close to that, you do not need as many gate agents – maybe you need one instead of three – and you do not need to fall back to the old system when you use this reliably



automated onboarding process.

In fact, the current situation may add costs. The airport may have this new, cutting-edge biometric scanning system, and it needs a new person at the gate to take care of the system and restart it all the time, as well. So the airport has to add a gate agent, and this is quite counterproductive.

In addition to cost savings, operational efficiency is a key business driver at airports. For instance, what matters is how fast you can run your processes – what is your turnaround time. When you have to manage planes at the gate, the cost savings go beyond reducing the number of agents at the gate.

Monica: In an airport, the value of getting things done on time is huge. If a plane departs late, there may be a domino effect on other flights as well.

What role does CBRS play in making a private network much easier and more compelling for an airport or other enterprises to have a private network? With CBRS, airports now have midband spectrum they can use without paying for a license or even applying for it.

Johan: The CBRS midband spectrum dedicated by the FCC in the 3.5 GHz band is ideal for airports. Opening up that spectrum allows enterprises such as airports to have their own networks without having to purchase licensed spectrum because it is public spectrum that is shared and managed to ensure that the airport is not going to have performance issues because they do not use licensed spectrum. And this allows airports and other enterprises to own their private wireless networks in a way they could not before.

Monica: With CBRS, airports have access to unlicensed, but protected spectrum. With Wi-Fi, anybody can plug in an AP – tenants, but also passengers. This is not something that can happen with CBRS, because you need to be granted use by a SAS.

Let's consider the use cases. It is not just the airport that can benefit from a wireless network: airlines and all the other tenants can benefit from it too. What do you hear from airports on CBRS?

Johan: Airports want to launch business-critical applications on CBRS spectrum on their own private wireless networks. By business critical, I mean applications that need to be up and running all the time, such as baggage tracking.

Airports need to track baggage all the way from when you check in your luggage to when it gets loaded onto the aircraft. But right now, a bag gets scanned when you check in and again when it gets on the aircraft, but it is not scanned from the time it leaves the belt to when it goes into the aircraft. And that is when there is a risk for luggage to get lost. There are IoT applications that can make that tracking continuous. And for that, you need a wireless network that is available without interruption as the bag moves from the belt to the ramp to the plane.

The ability to track baggage and cargo continuously is quite important for the airport and for the airlines. And to do so, you need those applications to be up and running all the time. If those applications have a lot of downtime, they are not going to be useful to you.

Automated boarding and credit card payments are other examples of applications that need to run

continuously to be useful.

These are the operational applications that we see airports migrating to private wireless networks.

Monica: What do you recommend to airports that want to have a CBRS private network? Should they go for LTE or 5G?

Johan: It depends on the end-user devices. At this point in time, many devices are not available for 5G, so 4G may be the better option to start with, and then upgrade the network to 5G once the 5G ecosystem matures.

Really low latency is the biggest advantage of 5G. But LTE latency can be quite low, especially when you have everything, including your core, on-prem. So we do not see a latency issue for most of the applications that airports want to run.

However, once airports get used to the capabilities of 4G, there will be a lot of innovation, with more applications requiring 5G, both for speed and latency. And as that happens, there will be more and more demand for 5G.

And we see the ecosystem for devices catching up within the next year or so for 5G, and then we will see more 5G versus 4G CBRS networks.

Monica: And airports can gradually transition their CBRS networks from 4G to 5G when it is time. And that may take some time for devices not only to support 5G but also to reach 4G-level price points.

How can an airport get some revenues from giving access to its CBRS network – or to applications running on it – to airlines, retailers, or other tenants?

Johan: Airports have to be careful. They have to work closely with their biggest customers – the airlines. To support this, we get SIM cards for the airports, and they can distribute them to airlines and other tenants. So for airports, it is pretty easy to give them access to their own network.

At the end of the day, though, the network is owned by the airport, and the airport controls who gets on that network through the SIM cards. Because the applications run on its network, it has better control of the performance of applications.

Monica: You mentioned the work you are doing with major US airports. What are some of the new applications and use cases you are deploying for the private networks with airports and airlines?

Johan: We are working with several airports and airlines across the country right now, with a focus on improving efficiencies for baggage and cargo handling, and for airplane maintenance.

Terminal gates are sometimes owned by the airlines and sometimes owned by the airport. That poses a potential problem because the responsibility of airlines and airports can differ from airport to airport. This is why we are working closely with both the airlines and the airports to roll out our solution and to evaluate the technology and the applications they would like to put on to the private wireless network.

So far, it is looking very promising. There is much interest out there, and we are keeping extremely busy. We would like to thank these airport leaders for pioneering private wireless technology and paving the way for other airports to innovate in this space.