Köln Bonn Airport | Germany | Travel & Transportation

Köln Bonn Airport looks to leverage private 5G connectivity to drive innovation

Client profile

Köln Bonn Airport is an important commercial airport in Germany, both for passengers and for cargo. In 2019, before the outbreak of COVID-19, around 12.4 million passengers passed through the gates. Air cargo expanded during the pandemic. In 2020, around 863,000 tons of goods were handled.

Which technologies?

- Private 5G

Which services?

- Managed services, Consulting

Which partners?

- Cisco
- Microsoft
- Airspan

Köln Bonn Airport

> “Partnering with NTT has allowed us to take advantage of their extensive experience as we advance our modernization strategy. With the network provided as a service, we’re able to focus on co-innovating new use cases to improve safety and operational efficiency.
>
> **Sebastian Müller,** CIO, Flughafen Köln Bonn

Summary

As a commercial airport in the passenger and cargo sector, Köln Bonn Airport wants to modernize its wireless network in order to connect the entire airport areas, improve efficiency and be able to process large amounts of data in close to real time. Once we put the private 5G network in place, we’ll innovate together to create use cases that will improve visibility and tracking and, in future, improve the efficiency and safety of the airport, as well as reducing its carbon footprint.

Business need

Creating connections with secure, wireless technology

Köln Bonn Airport's area of operations is a city in miniature. It stretches over 1,000 hectares – an area that includes the runways, terminals, airport buildings and hangars – and can accommodate 14 million passengers a year. The leadership team's aim is for the airport to be completely climate-neutral by 2050.

Communication is essential to managing airport, getting plans safely into the air and ensuring safety on the ground. Things change fast, so the underlying network solution must have the agility to support operations while also contributing to the climate protection strategy.

Maintaining an airport is labor-intensive and many routine tasks are done manually, such as inspecting the runway to make sure it's clear of debris, inspecting airplanes before they take off and checking fences. Because of the size of the airport, employees drive to these locations to do inspections, taking up time and fuel. Manual inspections also come with the risk of hazards not being spotted.

To counteract this, the airport wants their network to enable applications that provide the departments with a quick and comprehensive overview of the current security status on the site and thus support the necessary controls.

As the operational area makes wired infrastructure impractical, we explored the implementation of a private 5G network.

> "Having continuous connectivity and our own high-speed mobile network will open up a range of completely new possibilities for our processes and services. This will not only be of benefit to our airport operations but also to the businesses that are based here and to our passengers.

Sebastian Müller, CIO, Flughafen Köln Bonn

Solution

Early adoption of private 5G sparks innovative use cases

As one of the first airports to adopt private 5G, Köln Bonn Airport has a unique chance to explore the opportunities that the network offers. We worked with the airport, Cisco, Airspan and Microsoft not only to implement the necessary infrastructure but also to build use cases that explore what's possible with secure, low-latency, high-bandwidth data transmission – in real time – over 1,000 hectares.

We supported the airport for the entire project, from applying for a license and coming up with different use cases to designing the architecture and implementing the necessary software and hardware. This included surveying the site and buildings and strengthening the network signal with additional antennas to achieve perfect mobile phone coverage across the airport.

The first use case studied was sharing data from smart meters that monitor the water and electricity consumption of tenants at the airport, including service providers and retail stores. This allows the airport to monitor usage and plan future consumption. The second use case combines handheld devices with software to perform quality inspections. This information can be shared directly with all stakeholders without additional manual effort.

Private 5G is secure and can connect IoT devices to the rest of the airport. These features form the basis for future potential use cases. The airport is now exploring the use of video equipment to monitor the 20 km fence around the airport. Combined with AI and machine learning, this technology warns of changes to the fence in real-time, supporting and simplifying the necessary controls.

Unlike traditional network infrastructures, the private 5G network can transmit large amounts of data across the entire area of the airport at any time.

In the future, this will create the foundation for enabling seamless digital processes even on their busiest days – benefitting air freight handling and travelers.

Future use cases include automated runway inspections and monitoring the runways for any foreign objects or damage to further improve overall safety.

Outcomes

Modernization overcomes the limits of cabled networks

Private 5G provides a secure, wireless network that can handle large volumes of data in real-time. It also guarantees bandwidth even when the public network is congested. 5G enables better connectivity and improved processing of rapidly growing data flows, which enables the airport, airlines, ground staff as well as other companies to work together more effectively.

Reliable and secure network coverage for the entire airport

Private 5G offers coverage where no cables can be laid – and this with full data control. It connects the entire airport, including runways and fences that are far from the terminals. Since the use of the network is not dependent on cabling, changes can be implemented quickly.

Using data to boost efficiency

Connectivity allows the airport to share information (for example, about inspection results) in real-time. This means that possible issues can be shared and addressed right away.

It also reduces the amount of driving needed to perform routine tasks, which assists with sustainability.

Setting the stage for further innovation

The network covering the airport provides the base on which many applications can be built to improve safety and monitoring in future. With a connection and the IoT, anything is possible; from intelligent luggage checking to automated vehicles on the runway.