

FROM THE INDUSTRY

# Enabling new experiences

AS AIR TRANSPORT AND DATA  
TRANSPORT COME TOGETHER

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MOST OF US ARE CONCERNED WITH THE HIGH SPEED OF OUR BROADBAND WITHIN OUR OWN FOUR WALLS, BUT HAVE YOU EVER CONSIDERED THE LEVEL OF NETWORKING INVOLVED IN MAKING AN AIRPORT FIT FOR PURPOSE IN 2024? LEWIS WHITE REPORTS ON AN EXTRAORDINARY FEAT OF ENGINEERING IN CHINA.



For most professionals working in broadband and networking, the pandemic will have represented a period of peak activity. Never have societies been so reliant on the technologies we deliver, and never has the need to upgrade, transform and expand how we accommodate users been so urgent. Of course, every industry's experience of that global disruption was, in its own way unique, but one which stands out most clearly as the opposite of ours might be the travel sector. Overnight, border closures left planes grounded and airports standing near-empty.

As ABTA, the British travel industry association, explains in the most recent edition of its annual Holiday Habits report, that bottoming-out of the industry was not followed by an entirely challenge-free path back to full capacity, as economic headwinds and international uncertainties added further pressure onto the sector.

Nonetheless, a recovery is now happening at pace: surveying UK travellers, ABTA found that 52% of people took a holiday abroad in the 12 months to August 2023, and that 64% expected to take a holiday abroad in the following year.

Similar recoveries are happening in other markets, with global passenger numbers expected, according to one estimate, to exceed their pre-pandemic level for the first time in 2024. As that happens, though, it's fair to speculate that this won't be simply a 'return to normal' for the travel industry and the vast infrastructure that it relies on, and that the various parties that enable travel experiences will be looking to return to an evolved, even transformed way of operating. Five years is, after all, a long time in consumer trends – and a very long time in what consumers expect of technology.

### A NEW NETWORK FOR A NEW AIRPORT

That whole story might be found in microcosm in Beijing Daxing International Airport – and its approach to networking sits at the heart of a significantly modernised approach to air travel.

"Microcosm", in truth, feels like an odd word to use for the airport. Constructed over the course of five years, the facility's 700,000m<sup>2</sup> main structure (nicknamed 'the starfish' for the long arms housing its gates) is the world's largest single-building airport terminal. The overall complex, meanwhile, includes four runways in its

initial phase and sits on 47km<sup>2</sup> of land. Coming in at a cost of over £8bn, the airport began operations in September 2019.

As a consequence, it's possible to see Beijing Daxing International Airport as being uniquely of its time for the industry, a major greenfield installation, built around up-to-the-minute technology, perfectly positioned to show how travel can work in the post-pandemic era. Aptly, for a major hub in the international air transport network, the airport's internal connectivity formed a key consideration in its overall architectural design. Considering what a modern airport's networking solution has to enable, it's not difficult to see why that's the case.

**Its approach to networking sits at the heart of a significantly modernised approach to air travel.**





The first aspect here is sheer scale. Besides the central terminal structure itself, real-time links are needed between the data centre infrastructure and a variety of connected facilities including freight operations, the air traffic control centre, storage facilities for aviation fuel and other resources, runway operational technology like lighting, and hubs connecting the airport with local and regional ground transportation.

Those long-distance cabling links are also often serving safety-critical functions. Radar and air traffic control, of course, demand a zero-failure rate for safe operations.

The threats to uptime and reliability common to all networking infrastructure are relevant here, but an airport is also a hazardous physical environment with dangerous or corrosive substances – aviation fuel, in particular – which is a clear challenge for traditional PVC-sheathed cable and may pose fire risks.

At the same time, those safety-critical systems are sharing space with services that have high and growing bandwidth requirements. Pervasive digital signage, streaming video applications, multi-user wireless offerings and a rapidly growing range of network applications all place additional pressure on the airport's outdated network technology infrastructure.

Finally, there is the fact that an airport is not, in any real sense, a fixed installation. While the structures may stand for decades, its tenants are in constant flux, as retailers move in and out, airlines reallocate resources and passenger flow changes based on flight cancellations, delays, gate changes, poorly performing security queues and more. All that means that the network must be adaptable, ensuring that all travellers have access to a reliable network that provides the technological speed and efficiency they expect. The endless potential of networking.

The basis of these exceptional travel experiences is a stable and smooth communication network and

CommScope was chosen for the deployment of the network cabling system at the Beijing Daxing International Airport project. The project encompassed its new airport terminal building and field communication optical cabling, as well as the Information Technology Centre at the heart of the airport's communication network.

Many of those solutions were developed specifically for the unprecedented challenges of the site, including a dedicated indoor/outdoor universal cable solution which is resistant to hazardous liquids, as well as being low-smoke, halogen-free and flame-retardant to meet stringent safety requirements. Likewise, a single-mode fibre system was developed which far exceeds the standards established by the relevant TIA, ISO and CENELEC specifications.

Ultimately, of course, the proof of the solution lies in the experiences of users who may not ever consider the networking solutions that are hard at work behind the scenes.

The vast majority of Beijing Daxing International Airport's users, for instance, enjoy a highly automated customs clearance process, eliminating most queuing, baggage handling and security checks – which is only possible thanks to the highly integrated, high-bandwidth communications network knitting systems together. This principle is repeated across customer touchpoints, with everything from self check-in, to electronic boarding, intelligent course lighting, biometric security/entry checks and more being made significantly smoother by background infrastructure that can keep up with how people expect to use airports.

What this all demonstrates is that, while trends outside of our control might variously put us in the spotlight or cause us significant resets, networking technology always can evolve and revolutionise everyday experiences – particularly when it is done with a deep degree of expertise in the specific needs of the sites where it is operating.

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