

# With end-to-end 5G coverage, CommScope joined hands with operators to add luster to the Ethnic Games

## Zhengzhou Olympic Sports Center

- Total building area: 570,000 square meters
- Maximum capacity: approximately 60,000 people

## Country/region

Henan Province, China



## Current demand

Commercial 5G service is just around the corner. Large venues and conference centers in China are paving the way for 5G applications and pilot programs. Taking advantage of the Ethnic Games, Zhengzhou Olympic Sports Center also tried out 5G applications.

The Ethnic Games has received attention from all sectors, providing an opportunity for Zhengzhou to show its new image. The Games coincided with the official release of 5G licenses this year, and operators also used this opportunity to launch the 5G network directly and realize full coverage of 3G, 4G and 5G networks while providing 5G services. Zhengzhou Olympic Sports Center is the first project applying large-scale 5G coverage for

both Zhengzhou and China itself. Full 5G network coverage was achieved for the grandstand area in the stadium of Zhengzhou Olympic Sports Center and it fully met the needs of audiences, athletes and media reports for 5G networks.

Zhengzhou Olympic Sports Center has a total building area of 570,000 square meters and a maximum capacity of approximately 60,000 people. In such a large and densely populated place it is truly difficult to achieve full 5G coverage while ensuring smooth access. 5G mobile phone terminals have not yet been placed on the market on a large scale, and most operators' existing mobile phones use 4G. Thus, operators face another major difficulty when they seek to satisfy the existing demand of 4G users for coverage and network capacity and consider new 5G needs to ensure a smooth transition and upgrade of the network in the future.

To avoid repeated investment, Zhengzhou Olympic Sports Center required antenna and supporting equipment to meet all communication bands of 3G, 4G and 5G systems for the three major operators. Meanwhile, the customer has clear requirements for the installation position of the antenna as well as the size and weight of the antenna and supporting equipment—and also stated that the antenna appearance should be as unified as possible, with the lighter the better.

On September 16, 2019, the 11th National Traditional Games of Ethnic Minorities (hereinafter referred to as the “Ethnic Games”), which lasted over a week, came to a close at the Zhengzhou Olympic Sports Center, where the opening and closing ceremonies—and many other important events—were staged. The stadium accommodates about 60,000 spectators (and it was almost entirely full in these events), so providing spectators the ability to continuously upload live pictures and videos to the internet placed high requirements on the network. Reliable 5G coverage makes it easier.

## CommScope earned trust with its experience and expertise

After multiple comparisons and tests, the Zhengzhou Olympic Sports Center project finally chose CommScope’s 5G shaped antenna, special 5G combiner, and its complete set of integrated wireless coverage solutions.

### CommScope advanced another step in the 5G era

[From the perspective of brand](#), CommScope represents the high quality of products and the expertise of technology.

[From the perspective of technology and solutions](#), CommScope meets customers’ needs with one-stop services and a full range of end-to-end integrated solutions—from antennas to jumpers to combiners and connectors. It avoids issues of equipment index matching and confusion among multiple suppliers so the customer does not have to worry about after-sales services and maintenance.

[From the support for operators and communication networks](#), the antenna and supporting equipment provided by CommScope can cover all the communication bands of 3G, 4G and 5G systems for the three major domestic operators. It fulfills the communication requirements of the existing 3G and 4G and direct 5G services without the need to change the antenna and supporting equipment in the future—greatly reducing operators’ construction cost.

[From the perspective of customer accumulation and experience](#), CommScope boasts rich experience in wireless network coverage at large venues, including the 2008 Beijing Olympic Games and 2012 London Olympic Games. These successful experiences have been applied to the wireless solutions of Zhengzhou Olympic Sports Center and achieved great results.

## The solution: Full-band, full-area coverage without dead ends

All customers who have used CommScope’s 5G shaped antenna and integrated wireless coverage solutions agree it was a job well done. CommScope antennas and supporting equipment are reliable, high quality, and cost effective. In addition, CommScope can provide reliable, rich, and diverse technical services.

Every time it meets a new customer, CommScope first fully understands the customer’s needs, then fills those needs by analyzing how to provide superior end-to-end solutions and services. To ensure the full coverage and good experience of the Zhengzhou Olympic Sports Center wireless network, CommScope provided high-quality narrow-beam antennas, ensuring the dense partition of coverage (increasing signal frequency spectrum utilization to provide a wider bandwidth for the covered area) and achieving dense coverage with high capacity and low interference. Antennas with high-quality radiation field patterns can maintain high SINAD in the case of dense partition, enabling the network to achieve high-level modulation mode, improve the data flow per unit bandwidth, and provide a higher capacity for the network.

In addition to antenna products, CommScope provided the Zhengzhou Olympic Sports Center project with all the products needed on the RF path, such as high-quality combiners that can be used for equipment combination in multiple frequency bands to increase the bandwidth. In addition, it provided low-intermodulation RF jumpers, which provided quality assurance for RF connection and helped speed construction at the same time.

The 5G network of Zhengzhou Olympic Sports Center adopted the [4x4 MIMO](#) antenna and CommScope configurations. When the 5G network was tested, it reached a speed of 850 Mbps for a single user—quite fast in terms of the 4x4 antenna configuration and the 100 MHz of 3.5 GHz band. To ensure better use of 5G mobile phones anywhere in the venue, CommScope has deployed 32 5G cells for each of the two operators in the stadium, gymnasium and swimming pool of Zhengzhou Olympic Sports Center, each with a 5G bandwidth of 100 MHz. Both operators use CommScope’s 5G band combiners to share antennas with their respective LTE systems, thus saving space and reducing the load on the stadium track. Covering 4G and 5G simultaneously also laid the foundation for the use of a large number of 5G mobile stations and voice services in the future.



In terms of the implementation of the whole project, the customer has achieved savings in budget investment and reduced the future cost of maintenance services. The most difficult issue encountered by Zhengzhou Olympic Sports Center in deploying wireless solutions was to meet the requirements of all frequency bands of 3G, 4G and 5G simultaneously while reducing construction costs as much as possible. If the customer chooses antennas that can only meet the requirements of 3G and 4G coverage, the antennas will have to be replaced after 5G achieves widespread adoption—a problem solved by the CommScope antenna and its supporting equipment, which can meet all 3G, 4G and 5G frequency band requirements simultaneously. This avoids the trouble of replacing the antenna again when 5G technologies mature in the future, and helps customers save on construction cost.

## CommScope: Constant preparation for commercial 5G services

In terms of 5G applications, CommScope has been at the forefront of the industry. CommScope's 5G combined solution has been proven in the market of Japanese operators, who are among the first commercial 5G operators. In fact, CommScope has a more comprehensive combined solution, with both a dual-band combination and a three-band combination, and it can accommodate all mobile frequency bands below 6G. CommScope's combined solution provides users with a broad and flexible upgrade space.



In terms of products and solutions, CommScope is also fully prepared for commercial 5G services. In terms of antennas, CommScope has 8TR/16TR passive antenna solutions, massive MIMO solutions, antenna solutions for densely deployed street stations, and N+1, 1+1, and all-in-one solutions with metro cell deployments. In terms of filters, CommScope can provide the combined solution of 5G frequency band and other existing frequency bands to create conditions for the combined base stations. In terms of indoor coverage solutions, CommScope can provide a multi-operator digital coverage system as the infrastructure for seamlessly introducing indoor 5G coverage. In terms of radio frequency transmission, CommScope's radio frequency cables transmit a variety of radio frequency signals in the 5G band over obstacles.

In general, 5G technologies use higher frequencies and are thus more sensitive to interference. Therefore, the application of 5G requires antennas to be more consistent and reliable. Users should adopt antenna solutions suitable for their business scenarios according to the specific requirements of capacity and scenarios, such as the scenarios for the use of massive MIMO, and the scenarios suitable for passive antenna systems, etc. These require in-depth study and consideration by customers.

Zhengzhou Olympic Sports Center is the first large stadium in the country that has achieved large-scale 5G coverage, and is also the first large stadium to adopt a full range of end-to-end CommScope wireless coverage solutions. Zhengzhou Olympic Sports Center has set an example for the industry in antenna selection and 5G coverage.

**Customer evaluation: Customers who have experienced 5G agree it was a job well done.**

**As the main venue of the Ethnic Games, Zhengzhou Olympic Sports Center has hosted the opening and closing ceremony and many important events. Network operations were safe and stable throughout the event, and on-site calls were clear. Video and other data services were also smooth, and the customer experience was great. All who were there agree the 5G experience was a job well done.**

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