

# 4G Mobile Video Streaming



## 4G

4G is the short name for fourth-generation wireless, the stage of broadband mobile communications that will supersede the third generation (3G). **4th generation (4G) broadband wireless greatly increases the speed with which digital data is sent and received.** 4th Generation Wireless Technology (4G) is the first technology **designed from the ground up for data** and is perfect to meet the rapidly growing demand for mobile access driven by the explosion of wireless enabled devices.

The International Telecommunication Union (ITU) specifies that a 4G network requires a mobile device to be able to exchange data at 100 Mbit/sec. **Orthogonal frequency-division multiplexing (OFDM)** is one of the chief indicators that a service can be legitimately marketed as being 4G.

OFDM is a type of digital modulation in which a signal is split into several narrowband channels at different frequencies. This is more efficient than TDMA, which divides channels into time slots and has multiple users take turns transmitting bursts or CDMA, which simultaneously transmits multiple signals on the same channel.

When fully implemented, 4G is expected to enable simultaneous connections to multiple high-speed networks and will provide seamless handoff's throughout a geographical area. Coverage enhancement

technologies are being developed to address the needs of mobile users in homes, public buildings and offices, which will free up network resources for mobile users who are roaming or who are in more remote service areas.



**The increased speed with which digital data is sent and received over 4G, is enabling many new applications, including quite a few with exciting security implications.** The bandwidth delivered by 4G allows a security director waiting to catch a flight at Mumbai to monitor a video surveillance feed from the factory in Bangalore (or anywhere in the world) on his handheld as if he were there in person. Enough information (data) is being sent fast enough to enable facial recognition or fingerprint matching right from a mobile phone.

## Security Applications

### Asset monitoring from remote locations.

Even small business owners can now have the ability to quickly and easily monitor their business locations remotely using a smart phone or tablet. High-definition wireless cameras can be accessed in real-time and controlled from mobile devices. By integrating high-speed connectivity with security solutions, technology gives the small business information about their security landscape – whether it is activated by motion detection or a continuous feed.

### Mobile video surveillance.

At present recorded video on an on-board device is downloaded wirelessly when the vehicle returns to the station or depot. **4 G gives the capability to wirelessly stream video from a mobile video surveillance camera back to a control centre.**

This is very advantageous for a control room operator. The ability for a control room to view an incident live allows for an instantaneous assessment of the situation and more effective guidance for security personnel on the ground. This also provides a sense of security for lone workers on buses and trains. With video streaming IMS research forecasts that there will be renewed and greater emphasis on providing video surveillance on busses, trains, personnel vans and taxis.

### Aid to Traffic and Crime control

Typically a police department utilizes traditional methods of video surveillance to effectively fight crime and ensure the safety of residents and visitors. However, traditional cable, DSL and fibre typically incur large initial setup fees and lead times, large monthly service charges and last mile restrictions. Microwave systems are free of monthly fees, but the capital investment is often prohibitive. **4 G offers a more cost-effective method to transmit video from portable cameras around the city.** This offers a low-cost, remote connectivity alternative for video surveillance when compared to traditional landline and

microwave. With 4 G, video surveillance can be for operational awareness, special event management, short-term operations and criminal surveillance, **all while viewing the activity remotely in real time from the Control Centre or even en route to an 'incident'**. 4G broadband wirelessly links portable cameras placed at strategic locations around the city with a central monitoring and command station.

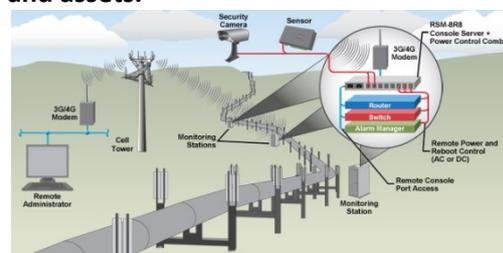


Viewing remote activity in real time

### Rapid deployment of CCTV for temporary events like VIP meetings or VIP movement.

Such an event requires the cameras, installed over long distances, to relay pictures back to the network control centre. Typically, for such temporary requirements the connection between cameras and control centre is achieved using fibre-optic cables strung along the roadside – often simply looped over the boundary fence posts. These are prone to damage and consequent failure. A 4 G wireless connection could simply and cost-effectively replace the traditional cabled approach, while maintaining picture quality.

### Surveillance of remote, unmanned sites and assets.



Gas or oil pipelines need round the clock video surveillance. The distances and hostile terrain quite often makes it difficult to lay cables. 4G offers a cost effective solution that can be rapidly deployed.

## Other applications

**Intelligent video also provides valuable analytical information for a business.** What are people doing inside your store? Are your displays in the right place and getting noticed? How many times did customers pick up that particular item on sale?

## State of the Art

**Several service providers are about to deliver wireless broadcast over 4G. True broadcast video, that is, a single stream sent to many viewers simultaneously, over 4G, is now possible. It is possible to deliver content over 4G in a cost-effective and efficient way.**

**Wireless CCTV manufacturers are also offering systems designed to operate on 4G networks.**



Wireless cameras



4G router

surveillance camera back to a control centre.

- 4G eliminates the need for fixed connectivity, thus allowing for easy and smooth deployment within a short span of time.
- 4G technology has embedded security features deterring any unauthorised access to any data.

## Summary

- 4th Generation Wireless Technology (4G) is designed for data and is perfect for meeting the rapidly growing demand for mobile access driven by the explosion of wireless enabled devices.
- 4 G enables the delivery of HD (High Definition) and real time video for centralised monitoring.
- A 4G network enables a mobile device to exchange data at 100 Mbit/sec.
- 4 G gives the capability to wirelessly stream video from a mobile video