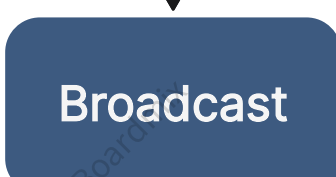


transmitting data **wirelessly through the air** using radio frequency (RF) or satellite signals, without the need for physical cables.

communication uses **light signals** (via glass or plastic fibres) instead of radio waves. It's fast, high-capacity, and more secure than over-the-air (OTA) transmission.



Secure authentication keys.

Communication directly via **satellites** in orbit. Covers remote or rural areas where mobile towers aren't available. Works on specific frequency bands (Ku, Ka, C bands, etc.).

Wireless delivery of **firmware or software** updates to devices. Eliminates the need for manual/USB updates. Essential for keeping devices secure and functional

Communication via **cellular networks** (2G, 3G, 4G, 5G). Uses **cell towers** and licensed frequency bands. Core of modern mobile services.

One-way transmission of **radio and TV signals**. Anyone with a receiver can access. Used for **public communication and entertainment**.

PKI (TLS/HTTPS) for secure sessions. VPN tunnels to mask traffic from ISPs. Zero-trust architecture in enterprises.

Strict physical security (locked rooms, guards, CCTV). Access controls & multi-factor authentication. Data diodes (hardware enforcing one-way flow of data).

Dedicated **closed fibre networks**, physically isolated from the public internet (air-gapped). Used for **critical infrastructure, military, financial institutions, and data centers**.

Fibre infrastructure that connects to the **public internet**, usually managed by ISPs or telecom operators. Relies on **Public Key Infrastructure (PKI)** for encryption and authentication.