CBRS (Citizens Broadband Radio Service)

Owned by Chris Griffin DISH (Deactivated) •••
Last updated: Aug 22, 2023 by David Cherney DISH • Initializing...

CBRS, the Citizen's Broadband Radio Service is 150 MHz of spectrum between 3.55GHz and 3.7GHz set aside by the FCC in the USA for unlicensed use. Historically this spectrum has been purely non-commercial and available for amateur radio operators to use for a variety of purposes.

However, in 2017 the FCC created rules for commercial use of CBRS. In each county in the US, the 150MHz of CBRS bandwidth was split into 10 separate 15Mhz bands; the maximum number of 15MHz bands that one entity can own within each county is four.

Tiers

Usage right of CBRS come in three tiers.

Incumbents

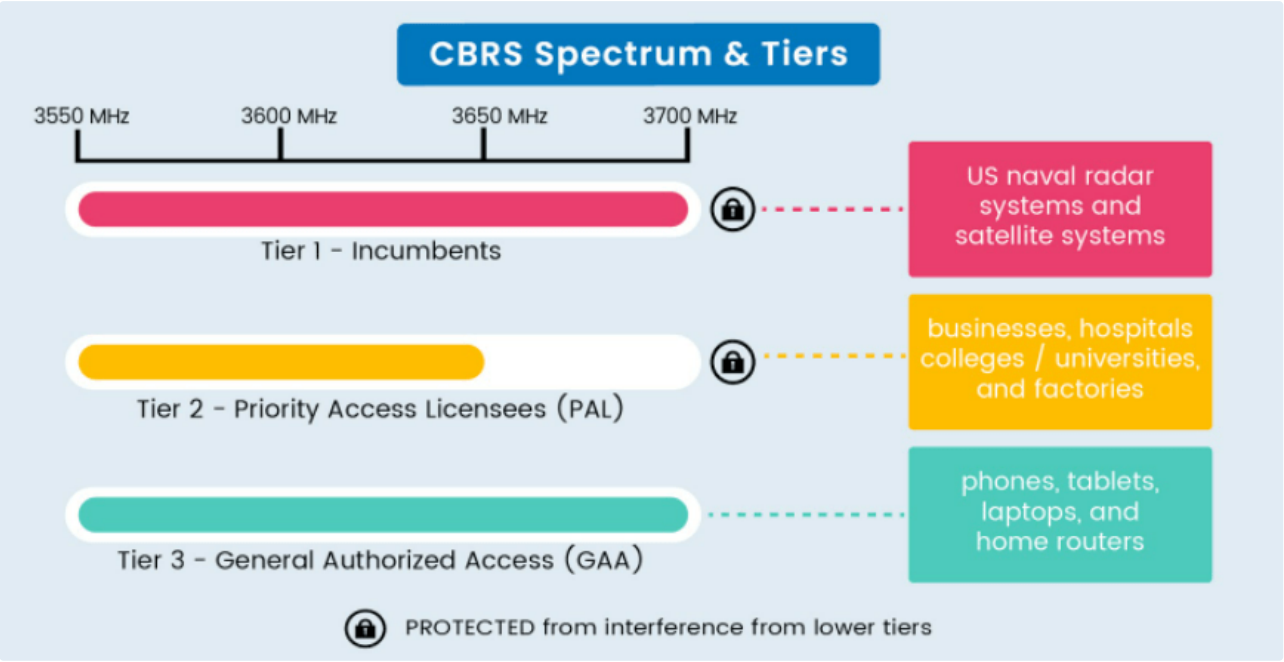
There are rules guaranteeing incumbency access; incumbent users are placed in a highest priority tier.

PALs

The FCC auctioned off private access licenses (PALs) to telecommunications companies, giving them access with the second level priority tier. DISH purchased nearly $1 Billion worth of spectrum, including at least some PALs in nearly every county in the United States. Verizon purchased over $1.9 Billion worth of CBRS spectrum across the nation.

GAA

Citizens still have access to use unlicensed spectrum for whatever use they see fit. This is referred to as general authorized access (GAA) because they must yield to the data traffic that is transmitted by operators from higher tiers; with PALs and incumbents.

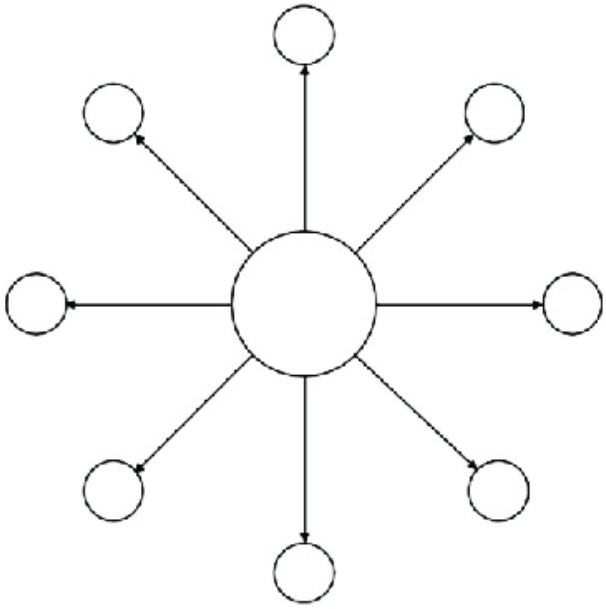


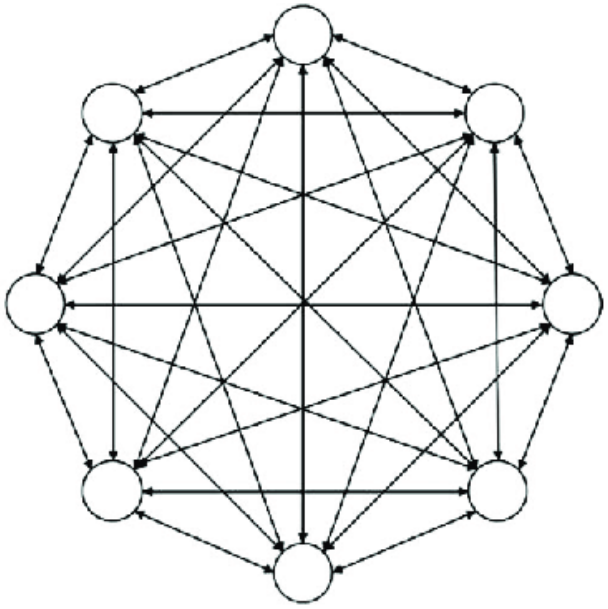
Spectrum Allocation Service

The entity that controls which attempts at use of CBRS spectrum is called a spectrum allocation service (SAS). All users of CBRS must pay the SAS for their service.

Characteristics

This CBRS frequency range can travel two to three miles, and with its high frequencies (relative to 600MHz) gives it a good data rate. This combination allows for the solution of a longstanding problem; IoT networking that has a large number of high data rate devices communicate with a central router (a gateway to the core network) can be very taxing on a conventional Wi-Fi network. However, a set of protocols called LoRaWAN (Long-Range Wide Area Networks), part of a family called LPWAN (Low Power Wide Area Networks), are specifically designed to operate IoT networks wherein many devices are connected together in decentralized networking; mesh style network map allows direct thing to thing communication, often sidestepping the central router.





Uses

At this time, it is most practical to employ this type of technology in places that are large and spread-out, where traditional WiFi may struggle to cover without boosters. The breadth and depth of applications is plentiful. The main use case for now is enterprise, smart warehouses, agriculture, and smart cities.