



Overview of RF Code Technology, Air Protocol, and Security Concerns

RF Code employs intelligent sensor technology designed to broadcast only to RF Code gateway collectors. The gateway collectors are receive-only devices; they do not broadcast or “interrogate” their surroundings. RF Code’s proprietary Active RFID technology is not the same as passive RFID, and does not ascribe to the ITU’s ISO/IEC 18000-7:2014 specification which defines the air interface and protocol for (passive) RFID.

RF Code’s intelligent data center technology has been purpose-built for data centers. Like other IoT technologies, RF Code’s intelligent sensors are battery-operated (CR2032 coin cell), wireless transmitters operating in the 433MHz band.

Each device consists of an on-off keyed (OOK) radio, microcontroller, battery, and sensor. The various on-board sensors are capable of measuring temperature, humidity, dry contact status, air pressure and infrared signals. The gateway collectors’ function is to receive broadcast data of short duration, manage collisions, eliminate redundancies, and report change-only information to the CenterScape software platform. The gateway collectors do not broadcast or interrogate wirelessly. The wireless system is exceptionally secure.

The operational settings on the gateway collectors are password-protected and the data once received is encrypted. The gateway passes the encrypted data to the CenterScape platform via SSL (Secure Sockets Layer) – the data received cannot control or impact the behavior or configuration of the gateway. Data received is only sent to CenterScape and is never broadcast or otherwise sent to arbitrary destinations. The device is not, and cannot be made to act as, a bridge or wireless access point, or other conduit to access the wired LAN via the wireless interface. It is physically incapable of wirelessly transmitting any data from the LAN outward.

RF Code’s asset management technology employs intelligent infrared emitters and sensors to identify with near 100% accuracy where a server, network appliance or storage unit may be in the data center using coded infrared locators. The sensors detect an infrared signal affixed to a known location point and broadcasts that signal to the gateway collector. The network topology is a star network with the gateway collector acting as a hub and capable of receiving approximately 2,000 sensor data packets from its surroundings (~30-foot radius). Transmission power is strictly regulated by government – Part 1 of US FCC Part 15 mandates that a certified wireless device may not cause harmful interference.

RF Code systems do not have any negative effect on IT equipment in a data center. Over three million RF Code intelligent sensors have been deployed, many directly mounted on IT servers. There has never been a report of disruptive or harmful RF interference, data loss, or degradation in any storage device.

RF Code has designed a patented time-shifted bit air protocol which decreases transmission power and provides battery life of greater than five years. Data packet lengths vary from 8 bits in length to 24 bits in length depending on the data being broadcast. When not broadcasting sensors remain in sleep mode. Each sensor includes its unique ID number and a short status indication (for example, infrared code or location, sensor status and/or low battery condition).