How RadioDNS Works

Explaining how RadioDNS and applications work together

This document is an explanation of how RadioDNS works to connect devices to broadcasters over IP, to deliver extended functionality. It should be read alongside the technical specification documents (RadioDNS Core Specification, RadioVIS, RadioTAG and RadioEPG).

The RadioDNS Project does two things:

1. We run the RadioDNS DNS server which resolves broadcast parameters into domain names
2. We specify (in our Working Teams) standardised functionality (applications) that uses IP to enhance broadcast radio.

Part 1 – RadioDNS

The RadioDNS Project runs a DNS server on the domain radiodns.org. This DNS server exists only to translate the broadcast parameters of radio stations into a domain. Broadcast parameters are information like the RDS PI-code of the radio station, or the DAB SID/EID codes, DRM SID code, or the HD Radio Facility Code, all of which provide a unique identifier for each station. The system is flexible enough to encompass most of the broadcast systems in use today.

The RadioDNS Specification explains how the broadcast parameters are collected together into a pseudo-domain-name format and sent to any DNS server.

The only response RadioDNS DNS servers give is a single Internet domain, such as: rdns.musicradio.com.

However, this process only works if the device is receiving broadcast radio. If the device is streaming, the usual RadioDNS Process can't be used, because there are no equivalent parameters standardised in IP streaming.

Therefore the RadioDNS Specification provides alternative means to provide the broadcaster's domain and a station identifier to devices if they don't have access to the broadcast parameters. The alternative methods include inserting the information into the audio stream, providing it as part of a file on the broadcaster's website, or providing it via the IMDA Service Information.

Once the device has the domain and the station identifier, it can contact the broadcaster via IP, and the core functionality of RadioDNS is complete.

Part 2 – Applications

Applications define standard functionality, and specify how the device should contact the broadcaster over IP.

If an Application is made FRNDZ (Fair, Reasonable, Non-Discriminatory and Zero-Cost), then it qualifies as a “RadioDNS Application” and the RadioDNS Steering Board can form a Working Team, with a Team Leader, to collate use cases and specify a solution that uses the RadioDNS Specification at its core. (Proprietary Applications can be defined, but then they are not overseen by RadioDNS, and do not qualify as “RadioDNS Applications”).

Each Application can define it’s own way to make the connection back to the broadcaster. To date, all the Applications have made use of a function called SRV records to provide information on exactly which server(s) to connect to. This allows the broadcaster to use different servers, or different service providers, to provide each application.

As an example, here’s how RadioVIS works.

The device uses Part 1 to find out the broadcaster’s domain (‘rdns.musicradio.com’) and create an identifier for the radio station.

The RadioVIS specification requires the device to look for an SRV record on the broadcaster’s domain, so the device queries DNS again, for RadioVIS SRV record. As it’s querying the broadcaster’s domain, this isn’t handled by RadioDNS, but by the broadcaster’s own DNS setup.

The broadcaster returns the specific server (or servers) that are providing RadioVIS, and the device connects accordingly.

Summary

The RadioDNS Specification uses the RadioDNS DNS server (or other methods) to provide the broadcaster’s domain and a station identifier. It does not provide any end-user functionality.

The various RadioDNS Applications use the information from the RadioDNS lookup to connect to the broadcaster to deliver specific functionality. There is less standardisation around applications.

Combined, they deliver new functionality using IP, alongside broadcast radio.

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