
RadioTAG 1.00 specification, draft 5

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Front matter

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 - Consistent capitalization of headers
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 - 'anonymous' changed to 'unidentified'
 - 'unpaired' changed to 'receiver (identity)'
 - 'paired' changed to 'user (identity)'
 - 'client' changed to 'receiver'
 - 'can_register' changed to 'identity'

URL

<http://radiotag.prototyping.bbc.co.uk/docs/radiotag-api-proposal-v1.00d5.html>

Abstract

This document specifies version 1.00 of the RadioTAG protocol.

The RadioTAG protocol defines how a receiver (e.g. an IP-enabled radio) discovers whether a broadcaster supports RadioTAG and if so how it then communicates with a broadcaster-provided web service to record the time and station being listened to.

The protocol defines how a receiver obtains authorization to store data on the server and how it can become paired with a user account so that data can be accessed via the web.

The protocol also defines the format and content of the requests and responses that pass between the receiver and server.

How to read this document

The document starts with an overview of the concepts underlying the RadioTAG protocol. These concepts are summarized in the glossary.

To get an idea of how the RadioTAG protocol works in practice, read the two narratives in the Appendix. These step through the two most common scenarios to show what is communicated between the receiver (radio) and the tag service at the HTTP level. This section is particularly useful for developers who want to understand how the various bits of the API hang together.

For full details about each endpoint provided by the tag service, read the API section.

Finally, to see how the Atom format is used in tag responses, what each element contains and what limits apply, see data formats.

Concepts

A receiver sends a tag request to a tag service, specifying a time and station. The tag service responds by sending a tag entry containing relevant metadata. The tag data may be stored on the server and may be viewed on the receiver or on the web or be used for another application.

Service discovery

[TODO] RadioDNS lookup.

HTTPS

[TODO] All API calls must use HTTPS.

Tag requests

A tag *request* specifies a time and station. The time is specified using seconds since Jan 1 1970, i.e. the Unix epoch. The station is specified using the RadioDNS broadcast parameters.

How that information is interpreted is up to the broadcaster.

Tag responses

The content of the *response* to a tag request is up to the broadcaster but must follow the Atom Syndication Format as specified below. A tag response could contain programme, now playing metadata, an advertising message or the response to a call for action.

Receivers, radios and devices

In this specification, the **receiver** is any device or software program that implements the receiver side of the RadioTAG specification. While this would most commonly be an IP-enabled radio, it could also be, say, an application running on a mobile phone or in a web browser.

The tag service

The **tag service** is the web service provided by the broadcaster to respond to receiver requests. It must implement a number of endpoints depending on the level of service it provides.

Levels of identity

There are three levels of identity a tag service can provide:

- anonymous
- receiver
- user

User in this context refers to an authenticated user account.

The levels of identification are distinguished by whether or not tags are retrievable on the

device or on the web and by whether you need a user account on the broadcaster's web service. The table below summarizes the differences:

Level of identity	Tag list on device	Tag list on web	Account needed
Unidentified	No	No	No
Receiver	Yes	No	No
User	Yes	Yes	Yes

These levels of identification can be provided in a number of combinations. For example, a service may offer anonymous tagging by default which can be upgraded to user tagging or it may support tagging out of the box (receiver) with no option to pair the device to an online user account. These are the possible combinations:

- Unidentified only
- Unidentified upgradeable to user
- Receiver only
- Receiver upgradeable to user

No identity

Unidentified tagging is the minimal level of service. The broadcaster must provide the following endpoint:

- POST /tag

A POST to this endpoint should return metadata relevant to the station and time specified in the request. Tags are *not* stored on the server so it is not possible to retrieve a list of tags on the receiver.

Receiver identity

Receiver identity is designed to provide an "out-of-the-box" experience without the user having to create an account and pair the receiver. The protocol enables the receiver to become authorized to store tags on the server without being associated with an authenticated user account.

To indicate that it supports receiver identity, the server must issue a `receiver` grant in response to an unauthorized request to POST /tag. It must provide the following endpoints:

- POST /tag
- POST /token
- GET /tags

Tags are stored on the server. The server must be able to store at least 10 tags per receiver. There is no upper limit. A typical implementation would store the tags as a FIFO list. When the list is full, a new tag would replace the oldest in the list.

A receiver should implement an interface to display the current list of tags associated with it as returned by the GET /tags method.

Note that with receiver identification, the receiver stores a token which uniquely identifies it to the tag service for the lifetime of that token only. If that identity is reset by the receiver deleting the token, any tags which have been submitted against it are effectively orphaned.

User identity

User identity is where the receiver has been paired to an authenticated user's account on a tag service. The same limits apply as for receiver identification, though a typical implementation will not put any limit on how many tags a user can create.

A tag service that enables tagging with a user identity must provide the following endpoints:

- POST /tag
- POST /token
- GET /tags
- POST /registration_key
- POST /register

Authorization

Authorization is based on OAuth 2.0. The central concepts here are **tokens** and **grants**.

To store or retrieve anything at the tag service, a receiver needs a **token**. A valid token authorizes the receiver to perform a specific set of actions. In the case of RadioTAG, those actions are to create a tag or get a list of tags for either a receiver identity or user account identity.

To obtain a token, the receiver must use the **grant** passed back from the server in a response header.

A **token** is like a key. If you have it in your hand, you can open the door. A **grant** is like a chit giving you permission to request a key. In the RadioTAG protocol, you can't do anything with a grant except attempt to obtain the corresponding token.

Glossary

Term	Definition
Receiver	The device or user agent which interacts with the RadioTAG service
Receiver identity	A RadioTAG identity associated only with a specific receiver and <i>not</i> with a user account
User identity	A RadioTAG identity where a receiver has been associated with a user account, and which can then be accessed from any receiver which has been similarly associated
Grant	Temporary permission to request a service
Scope	What a grant applies to
Auth Token	An authorization token which permits you to create a tag
Unix Time	The number of seconds elapsed since midnight Coordinated Universal Time (UTC) on January 1, 1970, not counting leap seconds

Some general points

Requests pass information in a combination of HTTP headers and form encoded POST parameters.

Responses pass data back in a combination of HTTP headers and XML.

While headers are shown here in a canonical form, due to the fact that proxies and other intermediaries may adjust HTTP headers, both receiver and server implementations should be prepared to accept header *keys* in any mixture of upper and lower case. One common way to handle this is to downcase all header keys on reading. Header *values* on the other hand should not be changed by intermediaries and should be read as is.

UTF-8 is the only supported character set.

Common response headers

Name	Value
RadioTAG-Service-Provider	The display name of the tag service provider
RadioTAG-Account-Name	The display name of the associated user account
RadioTAG-Auth-Token	The authorization token for a receiver or user identity

The RadioTAG-Service-Provider header should be returned in all responses.

The RadioTAG-Account-Name should be returned in all responses to requests made by a receiver that is paired with a user account.

The RadioTAG-Auth-Token header is returned when the receiver has been granted authorization. It also enables the tag service to issue a new token to replace an old one - see the next section.

Updating tokens

The tag service can change the RadioTAG-Auth-Token in response to any authorized request (i.e. one which contains a valid Auth Token). The receiver should *always* use the last received Auth Token and update any stored value from that. This provides a way for a tag service to expire tokens.

We recommend that tag service implementations allow a period of grace in which an expired token can co-exist with its replacement. This will address the case where the token was updated but the response was not received by the receiver.

POST /tag

Request

Headers

Name	Value
RadioTAG-Auth-Token	Empty OR receiver token OR user token

Parameters

Name	Value
station	RadioDNS broadcast parameters joined with dots, e.g. "o.c224.ce15.ce1.dab"
time	Whole number of seconds since 00:00a.m Jan 1 1970 UTC (Unix Epoch)

Response

Status

HTTP Status Code	HTTP Status	Explanation
200	OK	The service does not store tags but has returned metadata in Atom format
201	Created	The service has stored the requested tag
401	Unauthorized	Unidentified tagging is not supported and the token is blank or does not match either a receiver or user identity

Headers

Name	Value
RadioTAG-Service-Provider	The display name of the tag service provider
RadioTAG-Auth-Token	The token to use from now on.
RadioTAG-Account-Name	The display name of the associated user account.
RadioTAG-Grant-Scope	"receiver" or "identity". See Authorization.
RadioTAG-Grant-Token	The token to use when exercising the grant.

A grant header is *not* returned in the following cases:

- the server supports only unidentified tagging

- the receiver is already using a user identity token
- the receiver is using a receiver identity token and the tag service doesn't support user accounts

Body

On a successful request (status 200 or 201), the body contains an Atom feed containing a single entry representing the tag. See Data formats below.

On an unsuccessful request, the body may be blank or may contain a short explanation of why the request failed.

Example 1 - POST /tag with no token

Request

```
POST /tag HTTP/1.1↵
RadioTAG-Auth-Token: ↵
Content-Length: 43↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
station=0.c224.ce15.ce1.dab&time=1312301004
```

Response

```
HTTP/1.1 401 Unauthorized↵
Date: Tue, 02 Aug 2011 16:03:24 GMT↵
Status: 401 Unauthorized↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Grant-Scope: receiver↵
RadioTAG-Grant-Token: b86bfdfb-5ff5-4cc7-8c61-daaa4804f188↵
Content-Type: text/html; charset=utf-8↵
Content-Length: 18↵
↵
Must request token
```

Example 2 - POST /tag with a valid receiver token

Request

```
POST /tag HTTP/1.1↵
RadioTAG-Auth-Token: be222d22-4cef-439e-a77c-c867441dcb33↵
Content-Length: 43↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
station=0.c224.ce15.ce1.dab&time=1312301004
```

Response

```
HTTP/1.1 201 Created↵
Date: Tue, 02 Aug 2011 16:03:25 GMT↵
Status: 201 Created↵
RadioTAG-Service-Provider: BBC↵
```

```

RadioTAG-Grant-Scope: identity↵
RadioTAG-Grant-Token: ddc7f510-9353-45ad-9202-746ffe3b663a↵
Content-Type: application/xml; charset=utf-8↵
Content-Length: 957↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>PM</title>
  <link href="http://radiotag.example.com"/>
  <link href="http://radiotag.example.com" rel="self"/>
  <updated>2011-08-02T17:03:24+01:00</updated>
  <author>
    <name>BBC</name>
  </author>
  <id>urn:uuid:fb669d2c-63b3-420b-9dd6-131f5d58e68a</id>
  <os:totalResults>1</os:totalResults>
  <os:startIndex>1</os:startIndex>
  <os:itemsPerPage>1</os:itemsPerPage>
  <entry>
    <title>PM</title>
    <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
    <radiotag:service>BBC Radio 4</radiotag:service>
    <link rel="image" href="http://node1.bbcimg.co.uk/iplayer/images/epis
    <link rel="canonical" href="http://www.bbc.co.uk/programmes/b012wj3?
    <id>urn:uuid:fb669d2c-63b3-420b-9dd6-131f5d58e68a</id>
    <updated>2011-08-02T17:03:24+01:00</updated>
    <published>2011-08-02T17:03:24+01:00</published>
    <summary>Eddie Mair presents the day's top stories.</summary>
  </entry>
</feed>

```

Note that the response header contains the RadioTAG-Grant-Scope identity. This will be present only if the service supports user tagging.

Example 3 - POST /tag with a valid user token

Request

```

POST /tag HTTP/1.1↵
RadioTAG-Auth-Token: b48bf7ed-14a6-429e-b5c8-35f7a4c094b7↵
Content-Length: 43↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
station=0.c224.ce15.ce1.dab&time=1312302129

```

Response

```

HTTP/1.1 201 Created↵
Date: Tue, 02 Aug 2011 16:22:09 GMT↵
Status: 201 Created↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Auth-Token: b48bf7ed-14a6-429e-b5c8-35f7a4c094b7↵
RadioTAG-Account-Name: sean↵
Content-Type: application/xml; charset=utf-8↵
Content-Length: 958↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns

```

```

    xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
<title>PM</title>
<link href="http://radiotag.example.com"/>
<link href="http://radiotag.example.com" rel="self"/>
<updated>2011-08-02T17:22:09+01:00</updated>
<author>
  <name>BBC</name>
</author>
<id>urn:uuid:8facc0c0-ce13-4349-8664-dc71d55c6c97</id>
<os:totalResults>1</os:totalResults>
<os:startIndex>1</os:startIndex>
<os:itemsPerPage>1</os:itemsPerPage>
<entry>
  <title>PM</title>
  <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
  <radiotag:service>BBC Radio 4</radiotag:service>
  <link rel="image" href="http://node1.bbcimg.co.uk/iplayer/images/epis
  <link rel="canonical" href="http://www.bbc.co.uk/programmes/b012wj3?
  <id>urn:uuid:8facc0c0-ce13-4349-8664-dc71d55c6c97</id>
  <updated>2011-08-02T17:22:09+01:00</updated>
  <published>2011-08-02T17:22:09+01:00</published>
  <summary>Eddie Mair presents the day's top stories.</summary>
</entry>
</feed>

```

Note that the response header does not contain any grants but does contain the paired user account name.

Example 4 - POST /tag against a service that does not provide receiver tagging

Request

```

POST /tag HTTP/1.1↵
RadioTAG-Auth-Token: ↵
Content-Length: 43↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
station=0.c224.ce15.ce1.dab&time=1312195118

```

Response

```

HTTP/1.1 200 OK↵
Date: Mon, 01 Aug 2011 10:38:38 GMT↵
Status: 200 OK↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Grant-Scope: identity↵
RadioTAG-Grant-Token: ddc7f510-9353-45ad-9202-746ffe3b663a↵
Content-Type: application/xml; charset=utf-8↵
Content-Length: 992↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>Meet David Sedaris</title>
  <link href="http://radiotag.example.com"/>
  <link href="http://radiotag.example.com" rel="self"/>
  <updated>2011-08-01T11:38:38+01:00</updated>
  <author>
    <name>BBC</name>

```



```

</author>
<id>urn:uuid:5001c814-7a28-42a4-b35a-eef17abc7249</id>
<os:totalResults>1</os:totalResults>
<os:startIndex>1</os:startIndex>
<os:itemsPerPage>1</os:itemsPerPage>
<entry>
  <title>Meet David Sedaris</title>
  <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
  <radiotag:service>BBC Radio 4</radiotag:service>
  <link rel="image" href="http://node1.bbcimg.co.uk/iplayer/images/epis
  <link rel="canonical" href="http://www.bbc.co.uk/programmes/b01211y4?
  <id>urn:uuid:5001c814-7a28-42a4-b35a-eef17abc7249</id>
  <updated>2011-08-01T11:38:38+01:00</updated>
  <published>2011-08-01T11:38:38+01:00</published>
  <summary>'Me Talk Pretty One Day' and 'It's Catching'.</summary>
</entry>
</feed>

```

Example 5 - POST /tag against a service that provides only unidentified tagging

Request

```

POST /tag HTTP/1.1↵
RadioTAG-Auth-Token: ↵
Content-Length: 43↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
station=0.c224.ce15.ce1.dab&time=1312195118

```

Response

```

HTTP/1.1 200 OK↵
Date: Mon, 01 Aug 2011 10:38:38 GMT↵
Status: 200 OK↵
RadioTAG-Service-Provider: BBC↵
Content-Type: application/xml; charset=utf-8↵
Content-Length: 992↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>Meet David Sedaris</title>
  <link href="http://radiotag.example.com"/>
  <link href="http://radiotag.example.com" rel="self"/>
  <updated>2011-08-01T11:38:38+01:00</updated>
  <author>
    <name>BBC</name>
  </author>
  <id>urn:uuid:5001c814-7a28-42a4-b35a-eef17abc7249</id>
  <os:totalResults>1</os:totalResults>
  <os:startIndex>1</os:startIndex>
  <os:itemsPerPage>1</os:itemsPerPage>
  <entry>
    <title>Meet David Sedaris</title>
    <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
    <radiotag:service>BBC Radio 4</radiotag:service>
    <link rel="image" href="http://node1.bbcimg.co.uk/iplayer/images/epis
    <link rel="canonical" href="http://www.bbc.co.uk/programmes/b01211y4?
    <id>urn:uuid:5001c814-7a28-42a4-b35a-eef17abc7249</id>

```

```
<updated>2011-08-01T11:38:38+01:00</updated>
<published>2011-08-01T11:38:38+01:00</published>
<summary>'Me Talk Pretty One Day' and 'It's Catching'.</summary>
</entry>
</feed>
```

Note that no grant headers are issued.

POST /token

Request

Headers

None.

Parameters

Name	Value
grant_scope	The value of the RadioTAG-Grant-Scope provided in the previous request
grant_token	The value of the RadioTAG-Grant-Token provided in the previous request

For more information, see Authorization.

Example

```
POST /token HTTP/1.1↵
Content-Length: 69↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
grant_scope=receiver&grant_token=b86bfdfb-5ff5-4cc7-8c61-daaa4804f188
```

Response

Status

HTTP Status Code	HTTP Status	Explanation
204	No Content	The token was successfully created
401	Unauthorized	The grant is missing or invalid
403	Forbidden	The grant is valid but the receiver is not allowed to make this request

Headers

Name	Value
RadioTAG-Service-Provider	The display name of the tag service provider
RadioTAG-Auth-Token	The newly issued token to use for future requests.

Body

The /token endpoint should not return any content (as denoted by the 204 status code).

Example

```
HTTP/1.1 204 No Content↵
Date: Tue, 02 Aug 2011 16:22:08 GMT↵
Status: 204 No Content↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Auth-Token: cf7ce9dc-7762-4b4c-970a-d194c5aa03ed↵
↵
```

GET /tags

Request

Headers

Name	Value
RadioTAG-Auth-Token	receiver token OR user token

Parameters

Name	Value
startIndex	(Optional) the 1-based index of the first result
itemsPerPage	(Optional) maximum number of entries to return

If the caller does not specify `startIndex`, it defaults to 1.

If the caller does not specify `itemsPerPage`, the number of entries returned is determined by the server.

The server specifies the total number of entries that can be returned in the result set using the `totalResults` element (see below).

Note: the `startIndex`, `itemsPerPage` and `totalResults` parameters are based on the OpenSearch specification.

Example

```
GET /tags HTTP/1.1↵
RadioTAG-Auth-Token: cf7ce9dc-7762-4b4c-970a-d194c5aa03ed↵
Host: radiotag.bbc.co.uk↵
↵
```

Response

Status

HTTP Status Code	HTTP Status	Explanation
200	OK	The request was successful
401	Unauthorized	The token is invalid or the service does not allow storing of tags

Headers

Name	Value
RadioTAG-Account-Name	The display name of the associated user account (if applicable)
RadioTAG-Service-Provider	The display name of the tag service provider
RadioTAG-Grant-Scope	If the service provides pairing to a user account, this will have the value <code>identity</code> . See Authorization
RadioTAG-Grant-Token	The token to use when exercising the <code>identity</code> grant

Body

Example

```
HTTP/1.1 200 OK↵
Date: Tue, 02 Aug 2011 16:22:08 GMT↵
Status: 200 OK↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Grant-Scope: identity↵
RadioTAG-Grant-Token: ddc7f510-9353-45ad-9202-746ffe3b663a↵
Content-Type: application/xml; charset=utf-8↵
Content-Length: 974↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>Tag List</title>
  <link href="http://radiotag.example.com/tags"/>
  <link href="http://radiotag.example.com/tags" rel="self"/>
```

```

<updated>2011-08-02T17:22:08+01:00</updated>
<author>
  <name>BBC</name>
</author>
<id>urn:uuid:6a041e97-65bb-4b12-82da-c1b373731905</id>
<os:totalResults>1</os:totalResults>
<os:startIndex>1</os:startIndex>
<os:itemsPerPage>1</os:itemsPerPage>
<entry>
  <title>PM</title>
  <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
  <radiotag:service>BBC Radio 4</radiotag:service>
  <link rel="image" href="http://radiotag.bbc.co.uk/images/episode/b012
  <link rel="canonical" href="http://www.bbc.co.uk/programmes/b012wjd3?
  <id>urn:uuid:9f61f2c1-f3f7-4ff7-bc61-32f0e468054d</id>
  <updated>2011-08-02T17:22:08+01:00</updated>
  <published>2011-08-02T17:22:08+01:00</published>
  <summary>Eddie Mair presents the day's top stories.</summary>
</entry>
</feed>

```

POST /registration_key

Request

Headers

Name	Value
RadioTAG-Auth-Token	Either blank or a valid receiver token

Parameters

Name	Value
grant_scope	Must be the value identity
grant_token	Must be the grant token issued in the previous request

Example

```

POST /registration_key HTTP/1.1↵
Content-Length: 73↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
grant_scope=identity&grant_token=ddc7f510-9353-45ad-9202-746ffe3b663a

```

Response

Status

HTTP Status	HTTP	Explanation
-------------	------	-------------

Code	Status	
204	No Content	The request was successful. The response headers contain the registration key required to pair the radio.

Headers

Name	Value
RadioTAG-Service-Provider	The display name of the tag service provider
RadioTAG-Registration-Key	The registration key to use when pairing the device.
RadioTAG-Registration-Url	The url to visit to register the device.

Body

This response contains no body.

Example

```
HTTP/1.1 204 No Content↵
Date: Tue, 02 Aug 2011 16:22:09 GMT↵
Status: 204 No Content↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Registration-Key: 2b188492↵
RadioTAG-Registration-Url: http://radiotag.example.com/↵
↵
```

POST /register

Request

Headers

Name	Value
RadioTAG-Auth-Token	Receiver OR user token

Parameters

Name	Value
registration_key	The registration key returned from the /registration_key request
pin	The PIN issued to the user (e.g. at a web front end).

Example

```
POST /register HTTP/1.1↵
RadioTAG-Auth-Token: cf7ce9dc-7762-4b4c-970a-d194c5aa03ed↵
Content-Length: 34↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
registration_key=2b188492&pin=3612
```

Response

Status

HTTP Status Code	HTTP Status	Explanation
204	No Content	The registration has succeeded and the receiver has been paired to the associated user account

Headers

Name	Value
RadioTAG-Service-Provider	The display name of the tag service provider
RadioTAG-Auth-Token	The token to use for future requests
RadioTAG-Account-Name	The display name of the associated user account

Body

There is no body returned in this response.

Example

```
HTTP/1.1 201 Created↵
Date: Tue, 02 Aug 2011 16:22:09 GMT↵
Status: 204 No Content↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Auth-Token: b48bf7ed-14a6-429e-b5c8-35f7a4c094b7↵
RadioTAG-Account-Name: sean↵
↵
```

Data formats

Tag data

All server responses containing tags use the Atom Syndication Format to represent tags, with some extensions under a RadioTAG namespace.

In the following, the element prefix "radiotag:" indicates the RadioTag namespace. All other elements are assumed to be from the Atom namespace.

Atom defines these elements as required:

Element	Description	Max length
id	unique identifier for this tag ref	48
title	broadcaster generated title ref	128
updated	the datetime the tag was modified ref	20

All dates are UTC in ISO format (ISO 8601 or RFC 3339), e.g. 2011-08-08T09:00:00Z.

The RadioTAG specification also requires the following:

Element	Description	Max length
author	name of tag service provider (e.g. BBC, Global)	16
published	the datetime of creation (= tag time)	20
summary	text only - i.e. must not include HTML tags	180
link rel="image"	link to 100x100 image representing the tag	255
link rel="self"	a user accessible url for the tag	255
radiotag:service	the human-readable name of the service tagged	16
radiotag:sid	RadioDNS service identifier	32

Note the difference here between `id` and `link rel="self"`. `id` is a globally unique identifier. `link rel="self"` gives the url as visible to the device/user (i.e. scoped by the auth token).

Also note that we are interpreting the `published` entry as equivalent to the tag time. The `updated` element can be used to indicate that the tag data has been updated, e.g. the description has changed.

The 255 character limit on urls is based on a strict reading of the note in paragraph 3 of RFC 2616 Section 3.2.1.

The radiotag:service limit matches the mediumNameType in the EPG specifications (and also the DAB label length).

The example below shows these elements in context:

```
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>Meet David Sedaris</title>
  <link href="http://radiotag.example.com"/>
  <link href="http://radiotag.example.com" rel="self"/>
  <updated>2011-08-01T11:38:38+01:00</updated>
  <author>
    <name>BBC</name>
  </author>
  <id>urn:uuid:5001c814-7a28-42a4-b35a-eef17abc7249</id>
  <os:totalResults>1</os:totalResults>
  <os:startIndex>1</os:startIndex>
  <os:itemsPerPage>1</os:itemsPerPage>
  <entry>
    <title>Meet David Sedaris</title>
    <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
    <radiotag:service>BBC Radio 4</radiotag:service>
    <link rel="image" href="http://node1.bbcimg.co.uk/iplayer/images/epis
    <link rel="canonical" href="http://www.bbc.co.uk/programmes/b01211y4?
    <id>urn:uuid:5001c814-7a28-42a4-b35a-eef17abc7249</id>
    <updated>2011-08-01T11:38:38+01:00</updated>
    <published>2011-08-01T11:38:38+01:00</published>
    <summary>'Me Talk Pretty One Day' and 'It's Catching'.</summary>
  </entry>
</feed>
```

Tags data

```
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>Tag List</title>
  <link href="http://radiotag.example.com/tags"/>
  <link href="http://radiotag.example.com/tags" rel="self"/>
  <updated>2011-08-02T17:22:09+01:00</updated>
  <author>
    <name>BBC</name>
  </author>
  <id>urn:uuid:bf3e7d30-ccb8-4b45-b438-c790fb2ec5f7</id>
  <os:totalResults>3</os:totalResults>
  <os:startIndex>1</os:startIndex>
  <os:itemsPerPage>3</os:itemsPerPage>
  <entry>
    <title>PM</title>
    <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
    <radiotag:service>BBC Radio 4</radiotag:service>
    <link rel="image" href="http://node1.bbcimg.co.uk/iplayer/images/epis
    <link rel="canonical" href="http://www.bbc.co.uk/programmes/b012wjd3?
    <id>urn:uuid:8facc0c0-ce13-4349-8664-dc71d55c6c97</id>
    <updated>2011-08-02T17:22:09+01:00</updated>
    <published>2011-08-02T17:22:09+01:00</published>
    <summary>Eddie Mair presents the day's top stories.</summary>
```

```
</entry>
<entry>
  <title>PM</title>
  <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
  <radiotag:service>BBC Radio 4</radiotag:service>
  <link rel="image" href="http://node1.bbcimg.co.uk/iplayer/images/epis
  <link rel="canonical" href="http://www.bbc.co.uk/programmes/b012wjd3?
  <id>urn:uuid:9f61f2c1-f3f7-4ff7-bc61-32f0e468054d</id>
  <updated>2011-08-02T17:22:08+01:00</updated>
  <published>2011-08-02T17:22:08+01:00</published>
  <summary>Eddie Mair presents the day's top stories.</summary>
</entry>
<entry>
  <title>PM</title>
  <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
  <radiotag:service>BBC Radio 4</radiotag:service>
  <link rel="image" href="http://node1.bbcimg.co.uk/iplayer/images/epis
  <link rel="canonical" href="http://www.bbc.co.uk/programmes/b012wjd3?
  <id>urn:uuid:8e67aef6-4e8c-47ac-bc10-f89d4d5bac17</id>
  <updated>2011-08-02T17:22:08+01:00</updated>
  <published>2011-08-02T17:22:08+01:00</published>
  <summary>Eddie Mair presents the day's top stories.</summary>
</entry>
</feed>
```

Limits

Data elements

Data element	Max. size in bytes	Notes
author	16	Atom entry
id	48	Atom entry
pin number	10	
service id (sid)	32	As specified by RadioDNS
summary	180	Atom entry
title	128	Atom entry (compatible with DAB/RDS Livetext)
token	48	
url	255	See RFC 2616 Section 3.2.1

HTTP Headers

Headers	Max. size in bytes
RadioTAG-Account-Name	48
RadioTAG-Auth-Token	48
RadioTAG-Grant-Scope	16
RadioTAG-Grant-Token	48
RadioTAG-Registration-Key	10
RadioTAG-Registration-Url	128
RadioTAG-Service-Provider	16

Appendix

Narratives

From receiver to user pairing

This section describes the requests and responses made between a receiver and a RadioTAG server when the server supports both receiver and user tagging.

Tune radio to BBC Radio 4

After tuning to BBC Radio 4, a RadioDNS look-up is performed to resolve the broadcast parameters into a `hostname` for the RadioTAG service.

Having ascertained that the service supports RadioTAG, the receiver makes available a `Tag` button.

Press tag

The user presses the `Tag` button.

Request

The receiver makes a `POST` request to the tag service with the `station` identifier (using the broadcast parameter string used in constructing a RadioDNS FQDN), and a `time`. Unix Time is used for the `time` parameter.

As this receiver has no Auth Token, the `Radiotag-Auth-Token` header is blank. It could also simply not be there at all. The following sequence of events is also triggered when the request contains an invalid authentication token.

```
POST /tag HTTP/1.1↵
RadioTAG-Auth-Token: ↵
Content-Length: 43↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
station=0.c224.ce15.ce1.dab&time=1319201989
```

Response

To mitigate the possibility of resource depletion attacks, when the server supports receiver tagging we introduce a two-step process to obtain a token before being allowed to tag. The first step involves obtaining a **grant**. A grant is temporary permission to make a specific request.

When a tag service supports receiver tagging, it responds to an unauthenticated `/tag` request by returning a `401 Unauthorized` response containing a grant that allows the device to request an authentication token. This grant consists of two parts: a **scope** which indicates that the server supports receiver tagging, and a **token** which is used in the subsequent request to `/token`.

A general principle is that a grant is only guaranteed to be valid on the next request, so should not be stored permanently.

```
HTTP/1.1 401 Unauthorized↵
```

```
Date: Fri, 21 Oct 2011 12:59:49 GMT↵
Status: 401 Unauthorized↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Grant-Scope: receiver↵
RadioTAG-Grant-Token: b86bfdfb-5ff5-4cc7-8c61-daaa4804f188↵
Content-Type: text/html; charset=utf-8↵
Content-Length: 18↵
↵
Must request token
```

Request

The receiver POSTs the grant to the /token endpoint to request a token to create tags.

```
POST /token HTTP/1.1↵
Content-Length: 69↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
grant_scope=receiver&grant_token=b86bfdfb-5ff5-4cc7-8c61-daaa4804f188
```

Response

The authentication token is returned to the receiver in the headers of a 204 No Content response.

```
HTTP/1.1 204 No Content↵
Date: Fri, 21 Oct 2011 12:59:49 GMT↵
Status: 204 No Content↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Auth-Token: e2300af3-bad6-45f8-ba38-6bcb025ca210↵
↵
```

Request

Now the receiver has successfully exchanged a grant for a token, the tag request can be made again, this time passing the authentication token in a header of a POST request to /tag.

```
POST /tag HTTP/1.1↵
RadioTAG-Auth-Token: e2300af3-bad6-45f8-ba38-6bcb025ca210↵
Content-Length: 43↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
station=0.c224.ce15.ce1.dab&time=1319201989
```

Response

The server verifies the request by checking the token against those that it has issued, and if valid creates a tag. The metadata corresponding to this tag is returned in the body of a 201 Created response, in the form of an Atom document. See Data formats for more details.

An example entry for a tag created during an episode of a BBC Radio 4 programme is shown below:

```
HTTP/1.1 201 Created↵
Date: Fri, 21 Oct 2011 12:59:49 GMT↵
Status: 201 Created↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Grant-Scope: identity↵
RadioTAG-Grant-Token: ddc7f510-9353-45ad-9202-746ffe3b663a↵
Content-Type: application/xml;charset=utf-8↵
Content-Length: 1032↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>Feedback</title>
  <link href="http://radiotag.bbc.co.uk"/>
  <link href="http://radiotag.bbc.co.uk" rel="self"/>
  <updated>2011-10-21T13:59:49+01:00</updated>
  <author>
    <name>BBC</name>
  </author>
  <id>urn:uuid:661417da-cb8d-4fd0-a8fd-9b55ed2086d7</id>
  <os:totalResults>1</os:totalResults>
  <os:startIndex>1</os:startIndex>
  <os:itemsPerPage>1</os:itemsPerPage>
  <entry>
    <title>Feedback</title>
    <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
    <radiotag:service>BBC Radio 4</radiotag:service>
    <link rel="image" href="http://radiotag.bbc.co.uk/images/episode/b015
    <link rel="canonical" href="http://www.bbc.co.uk/programmes/b015zsx2?
    <id>urn:uuid:661417da-cb8d-4fd0-a8fd-9b55ed2086d7</id>
    <updated>2011-10-21T13:59:49+01:00</updated>
    <published>2011-10-21T13:59:49+01:00</published>
    <summary>Listener views on local radio cuts. Roger hears how to secur
  </entry>
</feed>
```

Press OK

In the previous, successful /tag request, the server's response contained a identity grant. The presence of this grant indicates to the receiver that the server supports the pairing a receiver with a user account. At this stage the receiver can present to the user the option to register with the server, or to accept the information in the current tag and return to the default state for the station.

In this case, we chose the latter by pressing OK.

Press Tags

As the server supports receiver tagging the tags created so far have been stored on the server against the authentication token, which stands in for a receiver id. The receiver can request a list of tags by making a GET request to /tags with the authentication token in the header:

Request

```
GET /tags HTTP/1.1↵
RadioTAG-Auth-Token: e2300af3-bad6-45f8-ba38-6bcb025ca210↵
Host: radiotag.bbc.co.uk↵
↵
```

Response

The server responds with an Atom feed containing a list of tags created for this device.

```
HTTP/1.1 200 OK↵
Date: Fri, 21 Oct 2011 12:59:49 GMT↵
Status: 200 OK↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Grant-Scope: identity↵
RadioTAG-Grant-Token: ddc7f510-9353-45ad-9202-746ffe3b663a↵
Content-Type: application/xml; charset=utf-8↵
Content-Length: 1042↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>Tag List</title>
  <link href="http://radiotag.bbc.co.uk/tags"/>
  <link href="http://radiotag.bbc.co.uk/tags" rel="self"/>
  <updated>2011-10-21T13:59:49+01:00</updated>
  <author>
    <name>BBC</name>
  </author>
  <id>urn:uuid:8eca1859-bb85-4c23-ba06-d078f6bfc9f5</id>
  <os:totalResults>1</os:totalResults>
  <os:startIndex>1</os:startIndex>
  <os:itemsPerPage>1</os:itemsPerPage>
  <entry>
    <title>Feedback</title>
    <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
    <radiotag:service>BBC Radio 4</radiotag:service>
    <link rel="image" href="http://radiotag.bbc.co.uk/images/episode/b015
    <link rel="canonical" href="http://www.bbc.co.uk/programmes/b015zsx2?
    <id>urn:uuid:661417da-cb8d-4fd0-a8fd-9b55ed2086d7</id>
    <updated>2011-10-21T13:59:49+01:00</updated>
    <published>2011-10-21T13:59:49+01:00</published>
    <summary>Listener views on local radio cuts. Roger hears how to secur
  </entry>
</feed>
```

Press Tag

We now show the flow of interactions when a user decides to register their receiver with the service. The process begins with the user pressing the Tag button as before.

Request

```
POST /tag HTTP/1.1↵
RadioTAG-Auth-Token: e2300af3-bad6-45f8-ba38-6bcb025ca210↵
Content-Length: 43↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
station=0.c224.ce15.ce1.dab&time=1319201989
```

Response

The response in this case is a 201 Created, since the service supports receiver tagging and the receiver has passed in the authentication token with the request to /tag. Again the

response contains a identity grant. The receiver uses the presence of this grant to decide to display the option to register.

```
HTTP/1.1 201 Created↵
Date: Fri, 21 Oct 2011 12:59:49 GMT↵
Status: 201 Created↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Grant-Scope: identity↵
RadioTAG-Grant-Token: ddc7f510-9353-45ad-9202-746ffe3b663a↵
Content-Type: application/xml; charset=utf-8↵
Content-Length: 1032↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>Feedback</title>
  <link href="http://radiotag.bbc.co.uk"/>
  <link href="http://radiotag.bbc.co.uk" rel="self"/>
  <updated>2011-10-21T13:59:49+01:00</updated>
  <author>
    <name>BBC</name>
  </author>
  <id>urn:uuid:4b8a1b72-f76b-4dc2-9db8-cb15042454ea</id>
  <os:totalResults>1</os:totalResults>
  <os:startIndex>1</os:startIndex>
  <os:itemsPerPage>1</os:itemsPerPage>
  <entry>
    <title>Feedback</title>
    <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
    <radiotag:service>BBC Radio 4</radiotag:service>
    <link rel="image" href="http://radiotag.bbc.co.uk/images/episode/b015
    <link rel="canonical" href="http://www.bbc.co.uk/programmes/b015zsx2?
    <id>urn:uuid:4b8a1b72-f76b-4dc2-9db8-cb15042454ea</id>
    <updated>2011-10-21T13:59:49+01:00</updated>
    <published>2011-10-21T13:59:49+01:00</published>
    <summary>Listener views on local radio cuts. Roger hears how to secur
  </entry>
</feed>
```

Press Register

This time the user selects the option to register on the receiver. The receiver requires an identifier to identify itself to the server during the registration process. It requests this from the tag service by making a POST request to the /registration_key endpoint, sending back the grant_scope and grant_token from the previous response.

Request

```
POST /registration_key HTTP/1.1↵
Content-Length: 73↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
grant_scope=identity&grant_token=ddc7f510-9353-45ad-9202-746ffe3b663a
```

Response

The service responds with a registration key in the header, and the location of a web site where the user can complete the registration process.

```
HTTP/1.1 204 No Content↵
Date: Fri, 21 Oct 2011 12:59:49 GMT↵
Status: 204 No Content↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Registration-Key: 399eaa7c↵
RadioTAG-Registration-Url: http://radiotag.bbc.co.uk/↵
↵
```

Register with a web front end

Registering with a web front end and obtaining the authenticating PIN number is outside the scope of RadioTAG, so is not specified here.

The following is a sketch of how this part of the system might be implemented:

The desired outcome of registering is that the registration key is associated with a user's account and a PIN returned to the user. The combination of registration key (which is already known to the receiver) and the PIN will be used to request an authenticated token in the `/register` step below. The tag service needs then to be able to map that token to the corresponding user account.

A typical scenario would be that the user visits the broadcaster's web front end, authenticates by some means with the provider of the tagging service (using their user name and password, for example), and submits the registration key obtained in the previous step using a form.

This causes a request to be made to the service which has previously stored the registration key that was issued to the receiver in the previous step. The service then checks the authenticity and, if valid, issues a PIN number, which is then displayed to the user.

At the backend, the registration key and PIN are stored against the user account so that when the `/register` request is made, they can be validated and exchanged for a token.

Enter the PIN

The user enters the PIN number obtained in the previous step into their receiver, which then makes a POST request to `/register` with the registration key and PIN in the body of the request.

Note that the previously issued authentication token for receiver tagging is included in the header of the request. This allows the server to migrate tags from an unpaired receiver to the user's account.

Request

```
POST /register HTTP/1.1↵
RadioTAG-Auth-Token: e2300af3-bad6-45f8-ba38-6bcb025ca210↵
Content-Length: 34↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
registration_key=399eaa7c&pin=7535
```

Response

The server checks the credentials and returns 204 No Content to indicate that a new token has been created. The response headers contain the new authentication token (RadioTAG-Auth-Token), which is to be used for future tagging requests that wish to be associated with this user account. Also in the headers is the user account name (RadioTAG-Account-Name). This account name can be used by the receiver to provide a reminder or prompt to the user in case they are unsure of the account they used to register the receiver.

```
HTTP/1.1 204 No Content↵
Date: Fri, 21 Oct 2011 12:59:50 GMT↵
Status: 204 No Content↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Auth-Token: d7975fbd-343a-474f-9dc4-05752c83cea1↵
RadioTAG-Account-Name: sean↵
↵
```

Press Tag

The receiver now has a token which identifies the receiver with the user account on the server. Subsequent tag requests are made as POSTs to /tag with this token sent in the request headers, so that they can be stored against the user's account.

Request

```
POST /tag HTTP/1.1↵
RadioTAG-Auth-Token: d7975fbd-343a-474f-9dc4-05752c83cea1↵
Content-Length: 43↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
station=0.c224.ce15.ce1.dab&time=1319201990
```

Response

```
HTTP/1.1 201 Created↵
Date: Fri, 21 Oct 2011 12:59:50 GMT↵
Status: 201 Created↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Auth-Token: d7975fbd-343a-474f-9dc4-05752c83cea1↵
RadioTAG-Account-Name: sean↵
Content-Type: application/xml; charset=utf-8↵
Content-Length: 1032↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>Feedback</title>
  <link href="http://radiotag.bbc.co.uk"/>
  <link href="http://radiotag.bbc.co.uk" rel="self"/>
  <updated>2011-10-21T13:59:50+01:00</updated>
  <author>
    <name>BBC</name>
  </author>
  <id>urn:uuid:5967db0e-dc63-428d-a075-90cf316ded5d</id>
  <os:totalResults>1</os:totalResults>
  <os:startIndex>1</os:startIndex>
  <os:itemsPerPage>1</os:itemsPerPage>
```

```

<entry>
  <title>Feedback</title>
  <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
  <radiotag:service>BBC Radio 4</radiotag:service>
  <link rel="image" href="http://radiotag.bbc.co.uk/images/episode/b015
  <link rel="canonical" href="http://www.bbc.co.uk/programmes/b015zsx2?
  <id>urn:uuid:5967db0e-dc63-428d-a075-90cf316ded5d</id>
  <updated>2011-10-21T13:59:50+01:00</updated>
  <published>2011-10-21T13:59:50+01:00</published>
  <summary>Listener views on local radio cuts. Roger hears how to secur
</entry>
</feed>

```

Press Tags

The receiver can again request a list of tags, this time using the new authentication token. The server has migrated the tags created while the receiver was unpaired to the user's account, so all three tags created above are returned in the Atom feed.

Request

```

GET /tags HTTP/1.1↵
RadioTAG-Auth-Token: d7975fbd-343a-474f-9dc4-05752c83cea1↵
Host: radiotag.bbc.co.uk↵
↵

```

Response

```

HTTP/1.1 200 OK↵
Date: Fri, 21 Oct 2011 12:59:50 GMT↵
Status: 200 OK↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Auth-Token: d7975fbd-343a-474f-9dc4-05752c83cea1↵
RadioTAG-Account-Name: sean↵
Content-Type: application/xml; charset=utf-8↵
Content-Length: 2268↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>Tag List</title>
  <link href="http://radiotag.bbc.co.uk/tags"/>
  <link href="http://radiotag.bbc.co.uk/tags" rel="self"/>
  <updated>2011-10-21T13:59:50+01:00</updated>
  <author>
    <name>BBC</name>
  </author>
  <id>urn:uuid:93beb9c2-0b8d-49ad-a813-c1e6120f63b9</id>
  <os:totalResults>3</os:totalResults>
  <os:startIndex>1</os:startIndex>
  <os:itemsPerPage>3</os:itemsPerPage>
  <entry>
    <title>Feedback</title>
    <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
    <radiotag:service>BBC Radio 4</radiotag:service>
    <link rel="image" href="http://radiotag.bbc.co.uk/images/episode/b015
    <link rel="canonical" href="http://www.bbc.co.uk/programmes/b015zsx2?
    <id>urn:uuid:5967db0e-dc63-428d-a075-90cf316ded5d</id>
    <updated>2011-10-21T13:59:50+01:00</updated>
    <published>2011-10-21T13:59:50+01:00</published>

```

```

    <summary>Listener views on local radio cuts. Roger hears how to secur
</entry>
<entry>
  <title>Feedback</title>
  <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
  <radiotag:service>BBC Radio 4</radiotag:service>
  <link rel="image" href="http://radiotag.bbc.co.uk/images/episode/b015
  <link rel="canonical" href="http://www.bbc.co.uk/programmes/b015zsx2?
  <id>urn:uuid:4b8a1b72-f76b-4dc2-9db8-cb15042454ea</id>
  <updated>2011-10-21T13:59:49+01:00</updated>
  <published>2011-10-21T13:59:49+01:00</published>
  <summary>Listener views on local radio cuts. Roger hears how to secur
</entry>
<entry>
  <title>Feedback</title>
  <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
  <radiotag:service>BBC Radio 4</radiotag:service>
  <link rel="image" href="http://radiotag.bbc.co.uk/images/episode/b015
  <link rel="canonical" href="http://www.bbc.co.uk/programmes/b015zsx2?
  <id>urn:uuid:661417da-cb8d-4fd0-a8fd-9b55ed2086d7</id>
  <updated>2011-10-21T13:59:49+01:00</updated>
  <published>2011-10-21T13:59:49+01:00</published>
  <summary>Listener views on local radio cuts. Roger hears how to secur
</entry>
</feed>

```

Unidentified to user identity

This section shows the HTTP traces of transactions between a RadioTAG receiver (e.g. a radio) and a RadioTAG service. It covers the scenario where the RadioTAG service permits *unidentified* tagging upgradeable to *user* account tagging, i.e. it provides a response to an unauthorized receiver but does not store tags until the receiver has been paired with a user account.

Here we deal only with the differences between this scenario and the receiver-to-user scenario above. Please refer to that document for more information.

Press Tag

The user presses the Tag button. Note that the request is exactly the same as in the receiver case above.

Request

```

POST /tag HTTP/1.1↵
RadioTAG-Auth-Token: ↵
Content-Length: 43↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
station=0.c224.ce15.ce1.dab&time=1319202059

```

Response

The response is a 200 OK rather than a 201 Created. The receiver should remember this result for later as it indicates that the receiver should resubmit the tag request after registration.

Note that just like the receiver case, the response contains a identity grant. The receiver can use this to provide the choice to accept the result or to register the receiver.

```
HTTP/1.1 200 OK↵
Date: Fri, 21 Oct 2011 13:00:59 GMT↵
Status: 200 OK↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Grant-Scope: identity↵
RadioTAG-Grant-Token: ddc7f510-9353-45ad-9202-746ffe3b663a↵
Content-Type: application/xml; charset=utf-8↵
Content-Length: 973↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>The Archers</title>
  <link href="http://radiotag.bbc.co.uk"/>
  <link href="http://radiotag.bbc.co.uk" rel="self"/>
  <updated>2011-10-21T14:00:59+01:00</updated>
  <author>
    <name>BBC</name>
  </author>
  <id>urn:uuid:3bfaa9dd-11ed-45f9-8f3c-6587db086b04</id>
  <os:totalResults>1</os:totalResults>
  <os:startIndex>1</os:startIndex>
  <os:itemsPerPage>1</os:itemsPerPage>
  <entry>
    <title>The Archers</title>
    <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
    <radiotag:service>BBC Radio 4</radiotag:service>
    <link rel="image" href="http://radiotag.bbc.co.uk/images/episode/b015
    <link rel="canonical" href="http://www.bbc.co.uk/programmes/b015zs13?
    <id>urn:uuid:3bfaa9dd-11ed-45f9-8f3c-6587db086b04</id>
    <updated>2011-10-21T14:00:59+01:00</updated>
    <published>2011-10-21T14:00:59+01:00</published>
    <summary>David brings shocking news.</summary>
  </entry>
</feed>
```

Press OK

At this point, the receiver can forget the stored 200 OK result code.

Press Tags

Request

```
GET /tags HTTP/1.1↵
RadioTAG-Auth-Token: ↵
Host: radiotag.bbc.co.uk↵
↵
```

Response

As this service does not provide receiver tagging, there are no tags stored on the server.

```
HTTP/1.1 401 Unauthorized↵
Date: Fri, 21 Oct 2011 13:00:59 GMT↵
Status: 401 Unauthorized↵
```

```
RadioTAG-Service-Provider: BBC↵
Content-Type: text/html;charset=utf-8↵
Content-Length: 12↵
↵
Unauthorized
```

Press Tag

Request

```
POST /tag HTTP/1.1↵
RadioTAG-Auth-Token: ↵
Content-Length: 43↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
station=0.c224.ce15.ce1.dab&time=1319202059
```

Response

Again, the receiver should remember that the return code for this /tag request is 200.

```
HTTP/1.1 200 OK↵
Date: Fri, 21 Oct 2011 13:01:00 GMT↵
Status: 200 OK↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Grant-Scope: identity↵
RadioTAG-Grant-Token: ddc7f510-9353-45ad-9202-746ffe3b663a↵
Content-Type: application/xml;charset=utf-8↵
Content-Length: 973↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>The Archers</title>
  <link href="http://radiotag.bbc.co.uk"/>
  <link href="http://radiotag.bbc.co.uk" rel="self"/>
  <updated>2011-10-21T14:00:59+01:00</updated>
  <author>
    <name>BBC</name>
  </author>
  <id>urn:uuid:8ea43558-70c2-4a4a-aeb9-8ffeee700898</id>
  <os:totalResults>1</os:totalResults>
  <os:startIndex>1</os:startIndex>
  <os:itemsPerPage>1</os:itemsPerPage>
  <entry>
    <title>The Archers</title>
    <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
    <radiotag:service>BBC Radio 4</radiotag:service>
    <link rel="image" href="http://radiotag.bbc.co.uk/images/episode/b015
    <link rel="canonical" href="http://www.bbc.co.uk/programmes/b015zs13?
    <id>urn:uuid:8ea43558-70c2-4a4a-aeb9-8ffeee700898</id>
    <updated>2011-10-21T14:00:59+01:00</updated>
    <published>2011-10-21T14:00:59+01:00</published>
    <summary>David brings shocking news.</summary>
  </entry>
</feed>
```

Press Register

Request

```
POST /registration_key HTTP/1.1↵
Content-Length: 73↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
grant_scope=identity&grant_token=ddc7f510-9353-45ad-9202-746ffe3b663a
```

Response

```
HTTP/1.1 204 No Content↵
Date: Fri, 21 Oct 2011 13:01:00 GMT↵
Status: 204 No Content↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Registration-Key: 4fa9ed43↵
RadioTAG-Registration-Url: http://radiotag.bbc.co.uk/↵
↵
```

Register with the web front end to get a PIN

Registering with a web front end is outside the scope of the RadioTAG specification. See the note on registering with a web front end above for one possible implementation.

Enter PIN

Request

Note that unlike the receiver case, there is no auth token to send.

```
POST /register HTTP/1.1↵
RadioTAG-Auth-Token: ↵
Content-Length: 34↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
registration_key=4fa9ed43&pin=9666
```

Response

The receiver has now completed the pairing process so receives an RadioTAG-Auth-Token header which it should include as a request header in all future requests.

```
HTTP/1.1 204 No Content↵
Date: Fri, 21 Oct 2011 13:01:00 GMT↵
Status: 204 No Content↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Auth-Token: 0f73d1b8-e6b5-451e-9ecf-1a3c33c76415↵
RadioTAG-Account-Name: sean↵
↵
```

Request

The receiver should have stored the result of the previous request to /tag. As it was a 200

OK rather than 201 Created, the receiver knows it should resubmit the tag request, this time including the newly acquired RadioTAG-Auth-Token in the request header:

```
POST /tag HTTP/1.1↵
RadioTAG-Auth-Token: 0f73d1b8-e6b5-451e-9ecf-1a3c33c76415↵
Content-Length: 43↵
Content-Type: application/x-www-form-urlencoded↵
Host: radiotag.bbc.co.uk↵
↵
station=0.c224.ce15.ce1.dab&time=1319202060
```

Response

This time the response status is 201 Created to indicate that the tag data has been stored on the server and can be retrieved both on the device and via the web.

```
HTTP/1.1 201 Created↵
Date: Fri, 21 Oct 2011 13:01:00 GMT↵
Status: 201 Created↵
RadioTAG-Service-Provider: BBC↵
RadioTAG-Auth-Token: 0f73d1b8-e6b5-451e-9ecf-1a3c33c76415↵
RadioTAG-Account-Name: sean↵
Content-Type: application/xml;charset=utf-8↵
Content-Length: 973↵
↵
<?xml version="1.0"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:radiotag="http://radiodns
  xmlns:os="http://a9.com/-/spec/opensearch/1.1/">
  <title>The Archers</title>
  <link href="http://radiotag.bbc.co.uk"/>
  <link href="http://radiotag.bbc.co.uk" rel="self"/>
  <updated>2011-10-21T14:01:00+01:00</updated>
  <author>
    <name>BBC</name>
  </author>
  <id>urn:uuid:fcbb6008-aa54-45b4-91c9-78ec0655f9d7</id>
  <os:totalResults>1</os:totalResults>
  <os:startIndex>1</os:startIndex>
  <os:itemsPerPage>1</os:itemsPerPage>
  <entry>
    <title>The Archers</title>
    <radiotag:sid>0.c224.ce15.ce1.dab</radiotag:sid>
    <radiotag:service>BBC Radio 4</radiotag:service>
    <link rel="image" href="http://radiotag.bbc.co.uk/images/episode/b015
    <link rel="canonical" href="http://www.bbc.co.uk/programmes/b015zs13?
    <id>urn:uuid:fcbb6008-aa54-45b4-91c9-78ec0655f9d7</id>
    <updated>2011-10-21T14:01:00+01:00</updated>
    <published>2011-10-21T14:01:00+01:00</published>
    <summary>David brings shocking news.</summary>
  </entry>
</feed>
```