tucanoRED standard: VOD and EPG metadata

Status

VOD: **IMPLEMENTED**

Live: **ANALYZED**

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Summary

Many VOD providers, usually the smaller ones, ask Alpha Networks or our customers to specify the metadata format they should use.

For this purpose, we have a generic "product" driver whose format is strongly inspired from tucanoRED's canonical metadata format, with a few simplifications aiming at making implementation simpler for the providers.

Initial story: **TUC-8706** - Getting issue details... STATUS

Process

The "pseudo-canonical" data structures are received as JSON files. They are converted to a normal canonical and sent to the CMS.

The files are received in a single input folder **per ingest**, whose name must be the timestamp at which the process of delivery of the files started (something like `/input/1567497600/`). Such naming would allow the driver to be down for a while, and then ingest the folders in the right order. The structure of files inside this "per-ingest folder" depends on the ingestion mode - see below.

In both modes however, the files are moved to another one for archiving purpose after ingestion (e.g. to a folder like `/ingested/1567497600/`).

Also in both modes, images are provided in a subdirectory of the main ingest folder (`/input/1567497600/images/`), and removed after having been copied to the storage used by the CMS.

Ingestion modes

There are two ingestion modes: **incremental** and **integral.**

Incremental mode consists in receiving updates, "deltas", which are applied on top of the current data.

In incremental mode, metadata is put in two subdirectories: `add/` and `remove/`. Updates are put in `add/` like new assets; tucanoRED's CMS detects that the asset already exists.

Integral mode consists in receiving the entirety of the data at every ingest. This is like asking the provider to export the contents of a relational database.

In integral mode, files are put directly in the main ingest folder.

Whether a provider uses integral or incremental mode is configured at the EPG provider or VOD source catalog level.

Metadata files

File naming convention

For **EPG** ingests, the following files are received:

- assets.json
- broadcasts.json

For **VOD** ingests, the following files are received:

- assets.json
- categories.json
- series.json (optional)

For VOD ingests, **videos** can optionally be provided too. If they are provided, they must be put in a separate subdirectory whose name is the asset's id (`/input/1567497600/asset1/`), and the video files themselves must start with the asset id, with an optional suffix, which can be (for instance) the bitrate, if multiple MBTS files are provided (eg `/input/1567497600/asset1/asset1_1600.ts`). In the assets.json file, the medias' location must be indicated; see the next section for more information on this property.

For VOD ingests, **trailers** can also be provided. The difference with "regular" videos is that trailers can be watched even by non-subscribed users. The rules for trailers video files are the same as for the main video content, except the subdirectory in which they must be uploaded is different: `/input/1567497600/asset1_trailers/`.

Media and trailer location

Both media and trailers have a "location" property which indicates "where" the corresponding video is.

As a reminder, an asset "media", in tucanoRED's nomenclature, is a single published multimedia file. A given asset can have multiple media, for instance because of the presence of burned-in subtitles in the video.

Note that if tucanoRED manages video content (transcoding, DRM protection, publication on a CDN), each input media will be duplicated, as there is a published media per streaming protocol. In other words: for a given MP4 file provided as input, the output will be (for instance) one "HLS media", one "DASH media", and one "HSS media". If tucanoRED does not manage video workflow, and instead the provider does, then the metadata must provide (at least) one media per supported streaming protocol, and in that case, the location is the URL of the corresponding manifest or playlist file.

The following table lists the possible use-cases of the driver, in terms of media management:

Use-case	Media location format	Example	Description
video content is not managed by tucanoRED	Absolute HTTP URL, generally of the manifest / playlist file	http://cdn.provider.com/asset.m3u8	The provider has its own video distribution infrastructure. The location provided is the origin URL, sent to the end-user as-is or processed (e.g. tokenized) by another driver at asset playback time.
MBTR files are provided for each media	An absolute or relative path on the storage used, with a wildcard to match all video files corresponding to a media	/media/VOD/asset1/asset1_*.ts	For each media, multiple video files are provided - one per bitrate. In this case, there **must** be a single entry in the list of media for all of the MTBR files; therefore, a wildcard must be used to match them all.

A single video file is provided for each media	An absolute or relative path on the storage used, pointing to the single video file	/media/VOD/asset1 /asset1_vostfr.ts	For each media, a single video file is provided. In this case, there is simply a single path toward the video file. Remote URLs can be used (toward an FTP server, S3 bucket, etc.), **with the exception of HTTP URLs**, which are reserved to the first use-case.

Note that we do not support video content being cut in multiple parts (or "chapters"). No matter which use-case above is used, each video file must contain the entirety of the asset.

Media and trailer technology and DRM

Both media and trailers have two **optional** properties: "`technology`" and "`drm`".

Technology

The `technology` property indicates "what" the corresponding video is:

- If tucanoRED manages video content, the technology provided must be the multimedia container format provided ("MP4", "TS" for MPEG2-TS, etc.).
- If tucanoRED does not manage video content, then the media provided is a "published" origin URL for the content. In this case, the technology is the streaming protocol available at that URL (e.g. "HLS", "HSS", "DASH").

If this property is absent, the technology is inferred from the extension of the provided files:

Provided file's extension	Inferred technology
.mp4	mp4
.ts	ts (MPEG-2 TS)
.m3u8	HLS
.mpd	DASH
.ism	HSS
any other	not inferred yet; **please use the technology field**.

For convenience, **this property is case-insensitive**.

DRM

This property is **only** used in the case tucanoRED does not manage video content, which means the media provided is a published origin URL for the content.

In this case, the URL is that of a manifest, for an asset which might be DRM-protected. The DRM protocol used for this asset can then be provided in the `drm` field; the ID of the DRM resource must also be provided in this case, in the media metadata drm_resource_id (see section "Supported media metadata" below).

If no DRM resource ID is provided and no `drm` property either, the asset is considered not DRM-protected.

If no DRM resource ID is provided and a `drm` property is provided, the DRM resource id is considered to be the **asset** ID. **Relying on this behavior is not recommended**.

If a DRM resource ID is provided and no `drm` field is provided, the protocol is inferred from the technology, according to the following mapping:

Media technology	Inferred DRM
DASH	FairPlay
HLS	Widevine
HSS	PlayReady

assets.json

This file contains the assets, in the tucanoRED sense of the term.

see last definition : https://nexus.rd.alphanetworks.tv/repository/snapshot/red/2020.5.x/drivers/tucano/generic_ingest/assets/

Example file

```
{
    "assets": [
      {
        "id": "e5dd7acd-c432-45d6-8d3c-6508bbb61a22", // mandatory
string (idAssetProvider)
        "title": {  // mandatory
          "eng": "lorem ipsum ..."
        },
        "subtitle": {  // optional (AD_SUBTITLE)
          "eng": "lorem ipsum ..."
        },
        "synopsis": {  // mandatory
          "eng": "lorem ipsum ..."
        },
        "morality_level": 18, // mandatory
        "adult": false, // mandatory
        "duration": 3600000, // mandatory, in ms
        "series_id": "523c4c5c-68c5-4e00-a98b-754b9e9f4b71", //
Optional. Empty string is also OK, if not a series
        "season_id": "759bab6c-1168-4ed5-ab91-b4ec41501daa", //
mandatory if series_id provided. Empty string OK for non-series content.
        "season_episode_number": 7, // mandatory if series_id provided.
Episode number in the season
        "genres": [  // mandatory (can be empty if no genres)
          "horror",
          "love",
          "college"
        ],
        "available_from": 1566047956123, // mandatory. UTC timestamp,
in ms
        "available_to": 1666047956456, // mandatory. UTC timestamp, in
ms
        "metadata": {}, // mandatory (but can be empty). Arbitrary key
/value pairs. Keys are strings. Values can be text, numbers, booleans,
or even structures such as lists of maps.
        "images": [ // mandatory (can be empty).
          {
            "id": "7b4ef709-51d8-438c-b2b1-4123dc5c6754",
            "type": "poster", // mandatory. Types to be agreed
beforehand (usual ones are "poster" and "background")
            "language": "eng", // optional, defaults to null. ISO 639-3
language code
            // Mandatory
            // the image location. Valid values are:
            // - Absolute remote URLs:
            //   - http(s)://(user:password@)server.com(:80)/a/b/c/d.png
            //   - ftp(s)://(user:password@)my-ftp-server(:21)/vod
/posters.123456.svg
            //   - sftp://(user:password@)my-ftp-server(:22)/vod
/posters.123456.svg
            //   - s3://keyId:keySecret@aws-region/bucket-name/test.png
            // - Relative local URLs:
            //   - images/123.jpeg
            "location": "https://upload.wikimedia.org/wikipedia/commons
/thumb/d/d9/Earth_by_the_EPIC_Team_on_21_April_2018.png/280px-
Earth_by_the_EPIC_Team_on_21_April_2018.png"
          }
        ],
        "medias": [ // Mandatory; list of video files.
          {
            "id": "37409ea7-8a21-4899-9b18-fce68cc22f71", // Mandatory
string
            "type": "TRAILER", // Mandatory. "TRAILER" for trailers,
"MEDIA" for the actual movie / episode
            "title": "lorem ipsum...", // Mandatory string. If you
don't have a title, you can repeat the id.

            // Mandatory
            // the media location. Valid values are:
            // - Absolute remote URLs:
            //   - http(s)://(user:password@)server.com(:80)/a/b/c/d.ts
            //   - ftp(s)://(user:password@)my-ftp-server(:21)/vod
/trailers.123456.mp4
            //   - sftp://(user:password@)my-ftp-server(:22)/vod/movies.
123456.mkv
            //   - s3://keyId:keySecret@aws-region/bucket-name/test.ts
            // - Relative local URLs:
            //   - medias/123.raw
            //
            // In case multiple files are to be considered (for
instance multiple resolutions), you must use globs such as: /vod
/123456_*.mp4 to match files /vod/123456_240.mp4, /vod/123456_360.mp4,
/vod/123456_480.mp4, and /vod/123456_720.mp4
            "location": "https://server.com/movie.mp4",
            "technology": "mp4",
            "audio_languages": [ "eng"], // Mandatory; list of audio
languages included (ISO-639-3 code)
            "subtitles_languages": [ "fra" ], // Mandatory; list of
caption languages included (ISO-639-3 code)
            "subtitles": [
              {
                "language": "eng", // list of audio languages included
(ISO-639-3 code)
                "location": "https://server.com/movie_str_eng.srt",
                "type": "normal" // type of subtitle - ex: Hard-of-
Hearing (SDH)
              }, {
                "language": "fra",
                "location": "https://server.com/movie_str_fra.srt",
                "type": "normal"
              }, {
                "language": "eng",
                "location": "https://server.com/movie_str_fra.srt",
                "type": "sdh"
              },
            ],
            "metadata": {}  // Mandatory, but can be empty. Arbitrary
```

```
key/value pairs. Keys are strings. Values can be text, numbers,
booleans, or even structures such as lists of maps
          }
        ]
      }
    ]
}
```

JSON schema

```
{
  "definitions": {},
  "$schema": "http://json-schema.org/draft-07/schema#",
  "$id": "http://tucano.io/red/ingest/canonical/assets.json",
  "type": "object",
  "title": "assets.json file for tucano's standard ingest",
  "required": [
    "assets"
  ],
  "properties": {
    "assets": {
      "$id": "#/properties/assets",
      "type": "array",
      "items": {
        "$id": "#/properties/assets/items",
        "type": "object",
        "required": [
          "adult",
          "available_from",
          "available_to",
          "duration",
          "genres",
          "id",
          "images",
          "medias",
          "metadata",
          "morality_level",
          "synopsis",
          "title"
        ],
        "dependencies": {
            "series_id": {
                "required": [
                    "season_id",
                    "season_episode_number"
                ]
            }
        },
        "properties": {
          "adult": {
```

```
      "$id": "#/properties/assets/items/properties/adult",
      "type": "boolean",
      "description": "Whether this asset is adult content",
      "examples": [
       false
      ]
     },
     "available_from": {
      "$id": "#/properties/assets/items/properties
/available_from",
      "type": "integer",
      "description": "UTC epoch timestamp at which the asset
becomes available to end-users, in milliseconds.",
      "examples": [
       1566047956123
      ]
     },
     "available_to": {
      "$id": "#/properties/assets/items/properties
/available_to",
      "type": "integer",
      "description": "UTC epoch timestamp at which the asset
stops being available to end-users, in milliseconds.",
      "examples": [
       1666047956456
      ]
     },
     "duration": {
      "$id": "#/properties/assets/items/properties/duration",
      "type": "integer",
      "description": "The duration of the asset, in seconds",
      "examples": [
       3600000
      ]
     },
     "genres": {
      "$id": "#/properties/assets/items/properties/genres",
      "type": "array",
      "description": "List of genres of the asset",
      "items": {
       "$id": "#/properties/assets/items/properties/genres
/items",
       "type": "string",
       "examples": [
        "horror",
        "love",
        "college"
       ]
      }
     },
     "id": {
      "$id": "#/properties/assets/items/properties/id",
      "type": "string",
            "description": "Unique id of the asset",
            "examples": [
              "e5dd7acd-c432-45d6-8d3c-6508bbb61a22"
            ]
          },
          "images": {
            "$id": "#/properties/assets/items/properties/images",
            "type": "array",
            "description": "List of images linked to this asset",
            "items": {
              "$id": "#/properties/assets/items/properties/images
/items",
              "type": "object",
              "required": [
                "location",
                "type",
                "id"
              ],
              "properties": {
                "id": {
                  "$id": "#/properties/assets/items/properties/images
/items/properties/id",
                  "type": "string",
                  "description": "ID of the image",
                  "examples": [
                    "7b4ef709-51d8-438c-b2b1-4123dc5c6754"
                  ]
                },
                           "language": {
                  "$id": "#/properties/assets/items/properties/images
/items/properties/language",
                  "type": "string",
                  "description": "Language of the image, as an ISO
639-3 code.",
                  "default": null,
                  "examples": [
                    "eng"
                  ],
                  "pattern": "^[a-z]{3}$"
                },
                "location": {
                  "$id": "#/properties/assets/items/properties/images
/items/properties/location",
                  "type": "string",
                  "description": "Image location. Accepted values are
absolute remote URLs (http, ftp, sftp, Amazon S3...), or relative
local paths.",
                  "examples": [
                    "https://upload.wikimedia.org/wikipedia/commons
/thumb/d/d9/Earth_by_the_EPIC_Team_on_21_April_2018.png/280px-
Earth_by_the_EPIC_Team_on_21_April_2018.png",
                    "images/123.jpeg",
                    "ftp(s)://(user:password@)my-ftp-server(:21)/vod
```

```
/posters.123456.svg",
                    "sftp://(user:password@)my-ftp-server(:22)/vod
/posters.123456.svg",
                    "s3://keyId:keySecret@aws-region/bucket-name/test.
png"
                  ]
                },
                "type": {
                  "$id": "#/properties/assets/items/properties/images
/items/properties/type",
                  "type": "string",
                  "description": "Image type; an arbitrary string
agreed to beforehand. Usually used ones are 'poster' and
'background', respectively for a portrait and landscape format.",
                  "default": "",
                  "examples": [
                    "poster",
                    "background"
                  ]
                }
              }
            }
          },
          "medias": {
            "$id": "#/properties/assets/items/properties/medias",
            "type": "array",
            "description": "List of medias (video files) of the
asset",
            "items": {
              "$id": "#/properties/assets/items/properties/medias
/items",
              "type": "object",
              "required": [
                "audio_languages",
                "id",
                "location",
                "metadata",
                "subtitles_languages",
                "title",
                "type"
              ],
              "properties": {
                "audio_languages": {
                  "$id": "#/properties/assets/items/properties/medias
/items/properties/audio_languages",
                  "type": "array",
                  "description": "List of audio languages available
in this video, as a list of ISO 639-3 language codes.",
                  "items": {
                    "$id": "#/properties/assets/items/properties
/medias/items/properties/audio_languages/items",
                    "type": "string",
                    "default": "",
                    "examples": [
                      "eng",
                      "fra"
                    ],
                    "pattern": "^[a-z]{3}$"
                  }
                },
                "id": {
                  "$id": "#/properties/assets/items/properties/medias
/items/properties/id",
                  "type": "string",
                  "description": "Unique ID of the media; if you
don't have any, you can use the asset id with a suffix",
                  "examples": [
                    "37409ea7-8a21-4899-9b18-fce68cc22f71"
                  ]
                },
                "location": {
                  "$id": "#/properties/assets/items/properties/medias
/items/properties/location",
                  "type": "string",
                  "description": "Media location. Accepted values are
absolute remote URLs (http, ftp, sftp, Amazon S3...), or relative
local paths. Remote URLs are not downloaded, but instead considered
to be origin URLs for content ready to play (no workflow management
by tucano). Wildcards are supported, and mandatory for MTBR files.",
                  "examples": [
                    "https://server.com/movie.mp4",
                    "http(s)://(user:password@)server.com(:80)/a/b/c
/d.ts",
                    "ftp(s)://(user:password@)my-ftp-server(:21)/vod
/trailers.123456.mp4",
                    "sftp://(user:password@)my-ftp-server(:22)/vod
/movies.123456.mkv",
                    "s3://keyId:keySecret@aws-region/bucket-name/test.
ts",
                    "medias/asset123/123.raw",
                    "medias/asset1/asset1_*.ts"
                  ]
                },
                "technology": {
                  "$id": "#/properties/assets/items/properties/medias
/items/properties/technology",
                  "type": "string",
                  "description": "Case-insensitive. 'Technology' of
the media, which can be an indication of the video container format
('mp4', 'ts', etc.) if video content is managed by tucanoRED, or the
streaming protocol ('hls', 'dash', or 'hss') otherwise.",
                  "examples": [
                    "mp4",
                    "ts",
                    "hls",
                    "hss",
                    "dash"
                  ]
                },
                "drm": {
                  "$id": "#/properties/assets/items/properties/medias
/items/properties/drm",
                  "type": "string",
                  "description": "Case-insensitive. DRM protocol used
to protect the media, if video content is not managed by tucanoRED.",
                  "examples": [
                    "fairplay",
                    "widevine",
                    "playready"
                  ]
                },
                "metadata": {
                  "$id": "#/properties/assets/items/properties/medias
/items/properties/metadata",
                  "type": "object",
                  "description": "Arbitrary key/value pairs. Keys are
strings; values can be text, numbers, booleans, or more complex data
structures like lists of maps. Although arbitrary keys are accepted,
some are listed in an accompanying document, in an effort to simplify
and standardize the most common use-cases."
                },
                "subtitles_languages": {
                  "$id": "#/properties/assets/items/properties/medias
/items/properties/subtitles_languages",
                  "type": "array",
                  "description": "The subtitles languages available
in that media, as a list of ISO 639-3 language codes",
                  "items": {
                    "$id": "#/properties/assets/items/properties
/medias/items/properties/subtitles_languages/items",
                    "type": "string",
                    "examples": [
                      "fra"
                    ],
                    "pattern": "^[a-z]{3}$"
                  }
                },
                "title": {
                  "$id": "#/properties/assets/items/properties/medias
/items/properties/title",
                  "type": "string",
                  "description": "The media's title. If you don't
have a title, you can repeat the ID.",
                  "examples": [
                    "lorem ipsum..."
                  ]
                },
                "type": {
                  "$id": "#/properties/assets/items/properties/medias
```

```
/items/properties/type",
                  "type": "string",
                  "description": "Type of media: TRAILER, for
trailers, or MEDIA, for the actual movie or show.",
                  "examples": [
                    "TRAILER",
                    "MEDIA"
                  ],
                  "pattern": "^(MEDIA|TRAILER)$"
                }
              }
            }
          },
          "metadata": {
            "$id": "#/properties/assets/items/properties/metadata",
            "type": "object",
            "description": "Arbitrary key/value pairs. Keys are
strings; values can be text, numbers, booleans, or more complex data
structures like lists of maps. Although arbitrary keys are accepted,
some are listed in an accompanying document, in an effort to simplify
and standardize the most common use-cases."
          },
          "morality_level": {
            "$id": "#/properties/assets/items/properties
/morality_level",
            "type": "integer",
            "description": "Morality level of the asset (aka parental
rating), as an integer indicating the minimum age recommended for
viewers",
            "default": 0,
            "examples": [
              18,
              16,
              12
            ]
          },
          "season_episode_number": {
            "$id": "#/properties/assets/items/properties
/season_episode_number",
            "type": "integer",
            "description": "Mandatory if series_id provided. For
series' episodes, number of the episode within the season",
            "examples": [
              7
            ]
          },
          "season_id": {
            "$id": "#/properties/assets/items/properties/season_id",
            "type": "string",
            "description": "Mandatory if series_id provided. Unique
id of the season, as defined in the series.json file.",
            "examples": [
              "759bab6c-1168-4ed5-ab91-b4ec41501daa"
            ]
          },
          "series_id": {
            "$id": "#/properties/assets/items/properties/series_id",
            "type": "string",
            "description": "Unique id of the season; reference to
series.json.",
            "default": "",
            "examples": [
              "523c4c5c-68c5-4e00-a98b-754b9e9f4b71"
            ]
          },
          "subtitle": {
            "$id": "#/properties/assets/items/properties/subtitle",
            "type": "object",
            "description": "Secondary title of the asset. It is a map
of translations. Keys are ISO 639-3 language codes, values are the
subtitle in that language."
          },
          "synopsis": {
            "$id": "#/properties/assets/items/properties/synopsis",
            "type": "object",
            "description": "Synopsis of the asset. It is a map of
translations. Keys are ISO 639-3 language codes, values are the
synopsis of the asset in that language."
          },
          "title": {
            "$id": "#/properties/assets/items/properties/title",
            "type": "object",
            "description": "Title of the asset. It is a map of
translations. Keys are ISO 639-3 language codes, values are the title
of the asset in that language."
          }
        }
      }
    }
  }
}
```

Supported asset metadata

While arbitrary key/value pairs are accepted, some keys are pre-defined for common use-cases, making it easier to standardize most projects.

Keep in mind that only VOD has been specified for now, and that even for EPG, some metadata would be attached to the broadcast, not the asset.

Name in the ingest file	Type	Example	tucanoRED equivalent	Description
country	string	"Spain"	AD_CTRYNATI	
production_year	integer	2007	TS_PRODYEAR	
release_year	integer	2007	TS_RELEDATE	
morality_level_full	string	"R"	AD_MLRAWVAL	

morality_level_type	string	"MPAA"	AD_MLTYPENA	
summary	array of strings	["part 1", "part 2"]	AD_SUMMARY	
georestriction	string	"bel"	AD_GEOREST	Three-letter **country** code, as defined in ISO 3166 (alpha-3).
scores	dictionnary (set of key /value pairs) with values as numbers	`{ "Rotten Tomatoes": 88, "Telerama": 3}`	many AD_SCORxxxx metadata	
budget	integer	2000000	AD_BUDGET	
tags	array of strings	["Blockbuster", "highlight"]	AD_LIKEYWOR	
external_ids	dictionnary (set of key /value pairs) with values as strings	`{ "IMDB": "tt1038988" }`	AD_EXTERIDS	
sport_championship	string	"Ligue 1 Conforama"	AD_SPORTCHM	
sport_event	string	"Nantes / Montpellier"	AD_SPORTEVT	
sport_location	string	"La Beaujoire"	AD_SPORTLOC	
actors	array of strings	["Manuela Velasco"]	AD_LIACTORS	

directors	array of strings	["Jaume_Balagueró"]	AD_LIREALIS	
tvod_price	integer	5	AD_TCMPRICE	
external_links	dictionnary (set of key /value pairs) with values as strings	`{ "website": "http://alphanetworks.tv" }`	AD_EXTLINKS	
flies	array of strings	["logo_provider_XXX"]	AD_LIFLIES	

Supported media metadata

While arbitrary key/value pairs are accepted, some keys are pre-defined for common use-cases, making it easier to standardize most projects.

Name in the ingest file	Type	Example	tucanoRED equivalent	Description
drm_resource_id	string	48f84734-9248-4009-90d4-ea70cd04bf7	io.tucano. drmResourceId	For assets that have already been provisioned in a DRM system

Notes

Translations

No distinction is made between translated titles (synopsis, subtitles...) and "technical" (or default) titles (synopsis, subtitles...). Instead, the default will be decided by the following priority list:

1. platform's language
2. first language in the provided list

In most cases, only one language will be provided.

categories.json

This file contains the categories, in the tucanoRED sense of the term, as a flat list. This allows the integrator to prepare the data to be exported as a relational database, and then simply "dump" the content of the tables.

see last definition : https://nexus.rd.alphanetworks.tv/repository/snapshot/red/2020.5.x/drivers/tucano/generic_ingest/categories/

Example

```
{
  "categories": [
    {
      "id": "7b4ef709-51d8-438c-b2b1-4123dc5c6756", // Mandatory
string
      "name": { // mandatory
        "eng": "lorem ipsum ...."
      },
      "description_translations": { // optional
        "eng": "lorem ipsum ..."
      },
      "hidden": false,  // mandatory; whether the category is hidden
to end-users
      "morality_level": 18, // mandatory; morality level of the
category. Users under this age won't be able to see it
      "parental_control": false, // mandatory boolean; whether to
require parental control (pin code) to access this category
      "adult": false, // mandatory boolean; whether this category
contains adult content
      "downloadable": false, // Optional (default is null), meaning
"use the value on the asset".
      "offline": false, // Optional (default is null), meaning "use
the value on the asset".
      "metadata": {},  // mandatory (but can be empty). Arbitrary key
/value pairs. Keys are strings. Values can be text, numbers,
booleans, or even structures such as lists of maps.
      "images": [ // mandatory (can be empty)
        {
          "id": "7b4ef709-51d8-438c-b2b1-4123dc5c6754",
          "type": "poster", // mandatory. Types to be agreed
beforehand (usual ones are "poster" and "background")
          "language": "eng", // optional, defaults to null. ISO 639-3
language code
          // Mandatory
          // the image location. Valid values are:
          // - Absolute remote URLs:
          //   - http(s)://(user:password@)server.com(:80)/a/b/c/d.png
          //   - ftp(s)://(user:password@)my-ftp-server(:21)/vod
/posters.123456.svg
          //   - sftp://(user:password@)my-ftp-server(:22)/vod
/posters.123456.svg
          //   - s3://keyId:keySecret@aws-region/bucket-name/test.png
          // - Relative local URLs:
          //   - images/123.jpeg
          "location": "https://upload.wikimedia.org/wikipedia/commons
/thumb/d/d9/Earth_by_the_EPIC_Team_on_21_April_2018.png/280px-
Earth_by_the_EPIC_Team_on_21_April_2018.png"
        }
      ],
      "series_id": "523c4c5c-68c5-4e00-a98b-754b9e9f4b71", //
optional (default: null). Reference to a series defined in series.
json.
      "season_id": "759bab6c-1168-4ed5-ab91-b4ec41501daa", //
optional (defaut: null). Reference to a season defined in series.
json. Mandatory if series_id provided.
      "parent_id": "", // mandatory. Reference to the parent
category, as defined in categories.json. If there is no parent, null
or empty.
      "assets": [
        "123c4c5c-68c5-4e00-a98b-754b9e9f4b71"
      ]
    }
  ]
}
```

JSON schema

```
{
  "definitions": {},
  "$schema": "http://json-schema.org/draft-07/schema#",
  "$id": "http://tucano.io/red/ingest/canonical/categories.json",
  "type": "object",
  "title": "categories.json file for tucano's standard ingest",
  "required": [
    "categories"
  ],
  "properties": {
    "categories": {
      "$id": "#/properties/categories",
      "type": "array",
      "items": {
        "$id": "#/properties/categories/items",
        "type": "object",
        "required": [
          "id",
          "name",
          "hidden",
          "morality_level",
          "parental_control",
          "adult",
          "metadata",
          "images",
          "parent_id"
        ],
        "properties": {
          "id": {
            "$id": "#/properties/categories/items/properties/id",
            "type": "string",
            "description": "Unique ID of the category",
            "examples": [
              "7b4ef709-51d8-438c-b2b1-4123dc5c6756"
            ]
          },
          "name": {
            "$id": "#/properties/categories/items/properties/name",
            "type": "object",
            "description": "Category name. It is a map of
translations. Keys are ISO 639-3 language codes; values are the
category's name in that language."
          },
          "description_translations": {
            "$id": "#/properties/categories/items/properties
/description_translations",
            "type": "object",
            "description": "Description of the category. It is a map
of translations. Keys are ISO 639-3 language codes; values are the
category's description in that language."
          },
          "hidden": {
            "$id": "#/properties/categories/items/properties/hidden",
            "type": "boolean",
            "description": "Whether the category is visible to end-
users.",
            "examples": [
              false,
              true
            ]
          },
          "morality_level": {
            "$id": "#/properties/categories/items/properties
/morality_level",
            "type": "integer",
            "description": "Morality level of the category. Users
under this age won't be allowed to see its content. Should be given
the highest value of the assets contained within it.",
            "examples": [
              18
            ]
          },
          "parental_control": {
            "$id": "#/properties/categories/items/properties
/parental_control",
            "type": "boolean",
            "description": "Whether the parental PIN code should
always be requested before opening this category, disregarding
morality level checks",
            "examples": [
              false,
              true
            ]
          },
          "adult": {
            "$id": "#/properties/categories/items/properties/adult",
            "type": "boolean",
            "description": "Whether this category contains adult
content",
            "examples": [
              false,
              true
            ]
          },
          "downloadable": {
            "$id": "#/properties/categories/items/properties
/downloadable",
            "type": "boolean",
            "title": "The Downloadable Schema",
            "default": null,
            "examples": [
              false
            ]
          },
          "offline": {
            "$id": "#/properties/categories/items/properties/offline",
            "type": "boolean",
            "title": "The Offline Schema",
            "default": null,
            "examples": [
              false
            ]
          },
          "metadata": {
            "$id": "#/properties/categories/items/properties
/metadata",
            "type": "object",
            "description": "Arbitrary key/value pairs. Keys are
strings; values can be text, numbers, booleans, or more complex data
structures like lists of maps. Although arbitrary keys are accepted,
some are listed in an accompanying document, in an effort to simplify
and standardize the most common use-cases."
          },
          "images": {
            "$id": "#/properties/categories/items/properties/images",
            "type": "array",
            "description": "List of images linked to this category",
            "items": {
              "$id": "#/properties/categories/items/properties/images
/items",
              "type": "object",
              "title": "The Items Schema",
              "required": [
                "id",
                "type",
                "location"
              ],
              "properties": {
                "id": {
                  "$id": "#/properties/categories/items/properties
/images/items/properties/id",
                  "type": "string",
                  "description": "ID of the image",
                  "examples": [
                    "7b4ef709-51d8-438c-b2b1-4123dc5c6754"
                  ]
                },
                "type": {
                  "$id": "#/properties/categories/items/properties
/images/items/properties/type",
                  "type": "string",
                  "description": "Image type; an arbitrary string
agreed to beforehand. Usually used ones are 'poster' and
'background', respectively for a portrait and landscape format.",
                  "examples": [
                    "poster",
                    "background"
                  ]
                },
                "language": {
                  "$id": "#/properties/categories/items/properties
/images/items/properties/language",
                  "type": "string",
                  "description": "Language of the image, as an ISO
639-3 code.",
                  "examples": [
                    "eng",
                    "fra"
                  ],
                  "pattern": "^[a-z]{3}$"
                },
                "location": {
                  "$id": "#/properties/categories/items/properties
/images/items/properties/location",
                  "type": "string",
                  "description": "Image location. Accepted values are
absolute remote URLs (http, ftp, sftp, Amazon S3...), or relative
local paths.",
                  "examples": [
                    "https://upload.wikimedia.org/wikipedia/commons
/thumb/d/d9/Earth_by_the_EPIC_Team_on_21_April_2018.png/280px-
Earth_by_the_EPIC_Team_on_21_April_2018.png",
                    "images/123.jpeg",
                    "ftp(s)://(user:password@)my-ftp-server(:21)/vod
/posters.123456.svg",
                    "sftp://(user:password@)my-ftp-server(:22)/vod
/posters.123456.svg",
                    "s3://keyId:keySecret@aws-region/bucket-name/test.
png"
                  ]
                }
              }
            }
          },
          "series_id": {
            "$id": "#/properties/categories/items/properties
/series_id",
            "type": "string",
            "description": "If this category is a series, this must
refer to a series defined in series.json.",
            "examples": [
              "523c4c5c-68c5-4e00-a98b-754b9e9f4b71"
            ]
          },
          "season_id": {
            "$id": "#/properties/categories/items/properties
/season_id",
            "type": "string",
            "description": "If this category is a season of a series,
this must refer to a season defined in series.json.",
            "examples": [
              "759bab6c-1168-4ed5-ab91-b4ec41501daa"
            ]
          },
          "parent_id": {
            "$id": "#/properties/categories/items/properties
/parent_id",
            "type": "string",
            "description": "ID of the parent category. Must refer to
another category defined in categories.json.",
            "examples": [
              "44ee242a-0af2-4352-af3c-6d9cdc2c8822"
            ]
          },
          "assets": {
            "$id": "#/properties/categories/items/properties/assets",
            "type": "array",
            "description": "List of IDs of assets contained in this
category. Must refer to assets defined in assets.json.",
            "items": {
              "$id": "#/properties/categories/items/properties/assets
/items",
              "type": "string",
              "examples": [
                "123c4c5c-68c5-4e00-a98b-754b9e9f4b71"
              ]
            }
          }
        }
      }
    }
  }
}
```

Supported category metadata

Name in the ingest file	Type	Example	tucano equivalent	Description
flies	array of strings	["provider_logo_YYY"]	AD_LIFLIES	

series.json

see last definition: https://nexus.rd.alphanetworks.tv/repository/snapshot/red/2020.5.x/drivers/tucano/generic_ingest/series/

Example file

```
{
    "series": [
      {
        "id": "523c4c5c-68c5-4e00-a98b-754b9e9f4b71", // mandatory
string
        "external_ids": { // mandatory; can be empty
          "tmdb": 123,
          "imdb": "tt5834204",
          "anmdb": "b375bbfc-6a76-4046-a486-b444af96cdc4"
        },
        "title": { // mandatory
          "eng": "lorem ipsum ..."
        },
        "synopsis": { // mandatory
          "eng": "lorem ipsum ..."
        },
        "images": [ // mandatory
          {
            "id": "7b4ef709-51d8-438c-b2b1-4123dc5c6754",
            "type": "poster", // mandatory
            "language": "eng", // optional (default null)
            // Mandatory
            // the image location. Valid values are:
            // - Absolute remote URLs:
            //   - http(s)://(user:password@)server.com(:80)/a/b/c/d.
png
            //   - ftp(s)://(user:password@)my-ftp-server(:21)/vod
/posters.123456.svg
            //   - sftp://(user:password@)my-ftp-server(:22)/vod
/posters.123456.svg
            //   - s3://keyId:keySecret@aws-region/bucket-name/test.
png
            // - Relative local URLs:
            //   - images/123.jpeg
            "location": "https://upload.wikimedia.org/wikipedia
/commons/thumb/d/d9/Earth_by_the_EPIC_Team_on_21_April_2018.png/280px-
Earth_by_the_EPIC_Team_on_21_April_2018.png"
          }
        ],
        "seasons": [ // mandatory
          {
            "id": "759bab6c-1168-4ed5-ab91-b4ec41501daa", // mandatory
            "external_ids": { // optional
              "tmdb": 123,
              "imdb": 456,
              "anmdb": "b375bbfc-6a76-4046-a486-b444af96cdc4"
            },
            "season_number":1,
            "title": { // mandatory
              "eng": "lorem ipsum ..."
            },
            "synopsis": { // mandatory
              "eng": "lorem ipsum ..."
            },
            "images": [  // mandatory
              {
                "id": "7b4ef709-51d8-438c-b2b1-4123dc5c6754",
                "type": "poster", // mandatory
                "language": "eng", // optional
                // Mandatory
                // the image location. Valid values are:
                // - Absolute remote URLs:
                //   - http(s)://(user:password@)server.com(:80)/a/b/c/d.png
                //   - ftp(s)://(user:password@)my-ftp-server(:21)/vod/posters.123456.svg
                //   - sftp://(user:password@)my-ftp-server(:22)/vod/posters.123456.svg
                //   - s3://keyId:keySecret@aws-region/bucket-name/test.png
                // - Relative local URLs:
                //   - images/123.jpeg
                "location": "https://upload.wikimedia.org/wikipedia/commons/thumb/d/d9/Earth_by_the_EPIC_Team_on_21_April_2018.png/280px-Earth_by_the_EPIC_Team_on_21_April_2018.png"
              }
            ]
          }
        ]
      }
    ]
}
```

JSON schema

```
{
  "definitions": {},
  "$schema": "http://json-schema.org/draft-07/schema#",
  "$id": "http://tucano.io/red/ingest/canonical/series.json",
  "type": "object",
  "title": "series.json file for tucano's standard ingest",
  "required": [
    "series"
  ],
  "properties": {
    "series": {
      "$id": "#/properties/series",
      "type": "array",
      "title": "The Series Schema",
      "items": {
        "$id": "#/properties/series/items",
        "type": "object",
        "title": "The Items Schema",
        "required": [
          "id",
          "external_ids",
          "title",
          "synopsis",
          "images",
          "seasons"
        ],
        "properties": {
          "id": {
            "$id": "#/properties/series/items/properties/id",
            "type": "string",
            "description": "Unique ID for the series",
            "examples": [
              "523c4c5c-68c5-4e00-a98b-754b9e9f4b71"
            ]
          },
          "external_ids": {
            "$id": "#/properties/series/items/properties
/external_ids",
            "type": "object",
            "title": "Map of external IDs for this series. Can be
empty. Keys are the external system (eg IMDB); values are the ID in
that system as strings or numbers.",
            "required": [],
            "properties": {}
          },
          "title": {
            "$id": "#/properties/series/items/properties/title",
            "type": "object",
            "description": "Title of the series. This is a map of
translations. Keys are ISO 639-3 language codes; values are the title
of the series in that language.",
            "required": [],
            "properties": {}
          },
          "synopsis": {
            "$id": "#/properties/series/items/properties/synopsis",
            "type": "object",
            "description": "Synopsis of the series. This is a map of
translations. Keys are ISO 639-3 language codes; values are the
synopsis of the series in that language.",
            "required": [],
            "properties": {}
          },
          "images": {
            "$id": "#/properties/series/items/properties/images",
            "type": "array",
            "description": "List of images for this series.",
            "items": {
              "$id": "#/properties/series/items/properties/images
/items",
              "type": "object",
              "required": [
                "id",
                "type",
                "location"
              ],
              "properties": {
                "id": {
                  "$id": "#/properties/series/items/properties/images
/items/properties/id",
                  "type": "string",
                  "description": "ID of the image",
                  "examples": [
                    "7b4ef709-51d8-438c-b2b1-4123dc5c6754"
                  ]
                },
                "type": {
                  "$id": "#/properties/series/items/properties/images
/items/properties/type",
                  "type": "string",
                  "description": "Image type; an arbitrary string
agreed to beforehand. Usually used ones are 'poster' and
'background', respectively for a portrait and landscape format.",
                  "examples": [
                    "poster",
                    "background"
                  ]
                },
                "language": {
                  "$id": "#/properties/series/items/properties/images
/items/properties/language",
                  "type": "string",
                  "description": "Language of the image, as an ISO
639-3 code.",
                  "examples": [
                    "eng"
                  ],
                  "pattern": "^[a-z]{3}$"
                },
                "location": {
                  "$id": "#/properties/series/items/properties/images
/items/properties/location",
                  "type": "string",
                  "description": "Image location. Accepted values are
absolute remote URLs (http, ftp, sftp, Amazon S3...), or relative
local paths.",
                  "examples": [
                    "https://upload.wikimedia.org/wikipedia/commons
/thumb/d/d9/Earth_by_the_EPIC_Team_on_21_April_2018.png/280px-
Earth_by_the_EPIC_Team_on_21_April_2018.png",
                    "images/123.jpeg",
                    "ftp(s)://(user:password@)my-ftp-server(:21)/vod
/posters.123456.svg",
                    "sftp://(user:password@)my-ftp-server(:22)/vod
/posters.123456.svg",
                    "s3://keyId:keySecret@aws-region/bucket-name/test.
png"
                  ]
                }
              }
            }
          },
          "seasons": {
            "$id": "#/properties/series/items/properties/seasons",
            "type": "array",
            "description": "List of seasons of this series",
            "items": {
              "$id": "#/properties/series/items/properties/seasons
/items",
              "type": "object",
              "required": [
                "id",
                "title",
                "synopsis",
                "season_number",
                "images"
              ],
              "properties": {
                "id": {
                  "$id": "#/properties/series/items/properties/seasons
/items/properties/id",
                  "type": "string",
                  "description": "Unique id of the season. If you
don't have any, you can use the series id with the season number as
suffix.",
                  "examples": [
                    "759bab6c-1168-4ed5-ab91-b4ec41501daa"
                  ]
                },
                "external_ids": {
                  "$id": "#/properties/series/items/properties/seasons
/items/properties/external_ids",
                  "type": "object",
                  "description": "Map of external IDs for this
season. Can be empty. Keys are the external system (eg IMDB); values
are the ID in that system as strings or numbers.",
                },
                "title": {
                  "$id": "#/properties/series/items/properties/seasons
/items/properties/title",
                  "type": "object",
                  "description": "This season's title. This is a map
of translations. Keys are ISO 639-3 language codes; values are the
season's title in that language."
                },
                "synopsis": {
                  "$id": "#/properties/series/items/properties/seasons
/items/properties/synopsis",
                  "type": "object",
                  "description": "This season's synopsis. This is a
map of translations. Keys are ISO 639-3 language codes; values are
the season's synopsis in that language."
                },
                "season_number": {
                  "$id": "#/properties/series/items/properties/seasons
/items/properties/season_number",
                  "type": "integer",
                  "description": "This season's number."
                },
                "images": {
                  "$id": "#/properties/series/items/properties/seasons
/items/properties/images",
                  "type": "array",
                  "description": "List of images for this season.",
                  "items": {
                    "$id": "#/properties/series/items/properties
/seasons/items/properties/images/items",
                    "type": "object",
                    "required": [
                      "id",
                      "type",
                      "location"
                    ],
                    "properties": {
                      "id": {
                        "$id": "#/properties/series/items/properties
/images/items/properties/images/items/properties/id",
                        "type": "string",
                        "description": "ID of the image",
                        "examples": [
                          "7b4ef709-51d8-438c-b2b1-4123dc5c6754"
                        ]
                      },
                      "type": {
                        "$id": "#/properties/series/items/properties
/seasons/items/properties/images/items/properties/type",
                        "type": "string",
                        "description": "Image type; an arbitrary
string agreed to beforehand. Usually used ones are 'poster' and
'background', respectively for a portrait and landscape format.",
                        "examples": [
                          "poster",
                          "background"
                        ]
                      },
                      "language": {
                        "$id": "#/properties/series/items/properties
/seasons/items/properties/images/items/properties/language",
                        "type": "string",
                        "description": "Language of the image, as an
ISO 639-3 code.",
                        "examples": [
                          "eng",
                          "spa"
                        ],
                        "pattern": "^[a-z]{3}$"
                      },
                      "location": {
                        "$id": "#/properties/series/items/properties
/seasons/items/properties/images/items/properties/location",
                        "type": "string",
                        "description": "Image location. Accepted
values are absolute remote URLs (http, ftp, sftp, Amazon S3...), or
relative local paths.",
                        "examples": [
                          "https://upload.wikimedia.org/wikipedia
/commons/thumb/d/d9/Earth_by_the_EPIC_Team_on_21_April_2018.png/280px-
Earth_by_the_EPIC_Team_on_21_April_2018.png",
                          "images/123.jpeg",
                          "ftp(s)://(user:password@)my-ftp-server(:21)
/vod/posters.123456.svg",
                          "sftp://(user:password@)my-ftp-server(:22)
/vod/posters.123456.svg",
                          "s3://keyId:keySecret@aws-region/bucket-name
/test.png"
                        ]
                      }
                    }
                  }
                }
              }
            }
          }
        }
      }
    }
  }
}
```

broadcasts.json

Example file

```
{
    "broadcasts": [
        {
            "id": "5781b2f7-7f13-471c-9c8c-f7100f8491db",
            "channels": [
              "133733ef-676f-4442-a644-e403981bc3b2",
              "4d06ffbc-0c8d-4369-86b8-c1f7c536554f"
            ],
            "asset_id":  "e5dd7acd-c432-45d6-8d3c-6508bbb61a22",
            "start":  1568073600000,
            "end":  1568073600000,
            "catchup_enabled":  true,
            "startover_enabled":  true,
            "npvr_enabled":  false,
            "metadata":  {}
        }
    ]
}
```

JSON schema

```
{
  "definitions": {},
  "$schema": "http://json-schema.org/draft-07/schema#",
  "$id": "http://tucano.io/red/ingest/canonical/broadcasts.json",
  "type": "object",
  "title": "broadcasts.json file for tucano's standard ingest",
  "required": [
    "broadcasts"
  ],
  "properties": {
    "broadcasts": {
      "$id": "#/properties/broadcasts",
      "type": "array",
      "items": {
        "$id": "#/properties/broadcasts/items",
        "type": "object",
        "required": [
          "id",
          "channels",
          "asset_id",
          "start",
          "end",
          "catchup_enabled",
          "startover_enabled",
          "npvr_enabled",
          "metadata"
        ],
        "properties": {
          "id": {
            "$id": "#/properties/broadcasts/items/properties/id",
            "type": "string",
            "description": "Unique ID for the broadcast",
            "examples": [
              "5781b2f7-7f13-471c-9c8c-f7100f8491db"
            ]
          },
          "channels": {
            "$id": "#/properties/broadcasts/items/properties
/channels",
            "type": "array",
            "description": "Array of channel IDs. The mapping between
channel IDs and channels configured in tucanoRED's CMS is configured
in tucanoRED; there is no channels.json file.",
            "items": {
              "$id": "#/properties/broadcasts/items/properties
/channels/items",
              "type": "string",
              "examples": [
                "133733ef-676f-4442-a644-e403981bc3b2",
                "3b7ccfd0-c296-4671-a6f6-4f1ff9bf27ed"
              ]
            }
          },
          "asset_id": {
            "$id": "#/properties/broadcasts/items/properties
/asset_id",
            "type": "string",
            "description": "ID of the asset being broadcasted.
Reference to assets.json.",
            "examples": [
              "e5dd7acd-c432-45d6-8d3c-6508bbb61a22"
            ]
          },
          "start": {
            "$id": "#/properties/broadcasts/items/properties/start",
            "type": "integer",
            "description": "UTC epoch timestamp of the time at which
the broadcast starts, in milliseconds.",
            "examples": [
              1568073600
            ]
          },
          "end": {
            "$id": "#/properties/broadcasts/items/properties/end",
            "type": "integer",
            "description": "UTC epoch timestamp of the time at which
the broadcast ends, in milliseconds",
            "examples": [
              1568073600
            ]
          },
          "catchup_enabled": {
            "$id": "#/properties/broadcasts/items/properties
/catchup_enabled",
            "type": "boolean",
            "description": "Whether catch-up is enabled for this
broadcast.",
            "examples": [
              true,
              false
            ]
          },
          "startover_enabled": {
            "$id": "#/properties/broadcasts/items/properties
/startover_enabled",
            "type": "boolean",
            "description": "Whether start-over is enabled for this
broadcast.",
            "examples": [
              true,
              false
            ]
          },
          "npvr_enabled": {
            "$id": "#/properties/broadcasts/items/properties
/npvr_enabled",
            "type": "boolean",
            "description": "Whether NPVR is enabled for this
broadcast.",
            "examples": [
              false,
              true
            ]
          },
          "metadata": {
            "$id": "#/properties/broadcasts/items/properties
/metadata",
            "type": "object",
            "description": "Arbitrary key/value pairs. Keys are
strings; values can be text, numbers, booleans, or more complex data
structures like lists of maps.",
            "properties": {}
          }
        }
      }
    }
  }
}
```