

PBS Kids Video - API Workflow Documentation

PBS Kids Video - Detailed API Workflow Documentation

This document provides an in-depth overview of the PBS Kids Video mobile application's API workflows, focusing on:

- GraphQL API (Apollo Server)
- DRM license handling (Widevine)
- Content delivery APIs
- Localization APIs

Payloads, headers, and server characteristics are included based on APK data and verified Apollo server behavior.

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1. GraphQL API (Apollo Server) - Detailed Overview

Endpoint:

- POST <https://graph.services.pbskids.org/graph>

Server Characteristics:

- The server is powered by **Apollo GraphQL**.
- **Open access**: No authentication required to explore schema or run queries.
- Provides an interactive GraphQL dashboard where all available queries and mutations can be inspected and tested directly.
- **Supports complex nested queries** involving shows, videos, schedules, sponsors, themes, and DRM license URLs.

Common Headers:

- Content-Type: application/json
- Accept: application/json

Payload Example (Query VideoByTpMediaId):

```
{
  "operationName": "VideoByTpMediaId",
  "variables": { "tpMediaId": "tp-123456" },
  "query": "query VideoByTpMediaId($tpMediaId: String!) { getVideoByTpMediaId(tpMediaId: $tpMediaId) {
...VideoData } }"
}
```

Response Example (Simplified):

```
{
  "data": {
    "getVideoByTpMediaId": {
      "id": "tp-123456",
      "title": "Example Episode",
      "videos": [
```

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```
{ "url": "https://stream.mpd", "widevine_license_url": "https://license.server" }  
]  
}  
}  
}
```

Available Queries (examples from schema):

- PageByUri
- VideoByTpMediaId
- LiveStreamPromo
- MediaCollection
- PrivacyPolicy

Fragments include:

- VideoData
- ShowData
- CollectionData
- PropertyData

2. DRM License Handling (Widevine)

Workflow:

1. GraphQL query VideoByTpMediaId returns a 'widevine_license_url'.
2. The app sends a DRM license request with a **binary challenge payload**.
3. Receives a DRM license in response, which decrypts the video content.

Headers:

- Content-Type: application/octet-stream
- Authorization: (if applicable, based on device DRM framework)

Payload: Device-specific **binary challenge** (not visible in the APK).

3. Content Delivery API (content.services.pbs.org)

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Domains:

- <https://content.services.pbs.org/>
- <https://content-dev.services.pbskids.org/>
- <https://content-stage.services.pbskids.org/>

Purpose:

- Supplies backend data for GraphQL queries.
- No standalone REST endpoints exposed in the APK.
- **Headers**: Unknown (handled internally by the GraphQL layer).

4. Localization API (localization.services.pbs.org)

Endpoint:

- <https://localization.services.pbs.org>

Purpose:

- Provides localized strings and translations.
- Likely queried during app startup or language changes.

Headers:

- Content-Type: application/json

Payload: Not exposed in the APK (likely simple key-based requests for translations).