CPIX API Reference

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Contents

1 Confidentiality Notice

2 About This Document

This document describes and specifies eDRM (Edgeware DRM) and CPIX (Content Protection Information Exchange Format) interface.

3 History

A brief history of this document:

Issue	Date	Changes
A1 draft1	2023-02-24	Initial draft
A1 draft2	2023-02-28	Update CPIX Interface specification
A1	2023-03-03	Update document version and limitation
	2023-08-02	Update key rotation
A2	2025-10-03	Remove limitation

4 Introduction

A `CPIX` document contains keys and DRM information used for encrypting and protecting content and can be used for exchanging this information among entities needing it in many possibly different workflows for preparing, for example, DASH or HLS content. The CPIX document itself can be encrypted, signed and authenticated so that its receivers can be sure that its confidentiality, source and integrity are also protected.

`eDRM` uses `CPIX` as API to send request and receive a response between `eDRM` and the DRM provider in some plugin.

5 DRM Gateway plugin

`eDRM` is a HTTP/REST/JSON based interface for integrating AgileTV repackagers with external DRM systems. AgileTV's repackager implements the client side of the interface. The specification hence describes how an `eDRM` server should be implemented.

5.1 The DRM-GW core and the plugins

There are number of stages to identify and distinguish in the processing pipeline (few common for every plugin), starting from the DRM-GW initialization.

- At the DRM-GW startup **(1)**, the core loads all the .py plugins collected under the **edrm_plugin** directory (and instantiates them) and the configuration file (often called **config.json**, located in **/etc/edgeware/drm-gw** folder). The configuration specifies the **outputProfiles** that are used for dispatching particular requests to matching plugins, as well as the plugin chaining (if more than one plugin processes the request). Each plugin (also called **Processor** internally) instantiates its own data structures, optionally a variant groupers or a key rotator.
- The repackager sends its request **(2)**, which corresponds to **ResourceContext (3)** in `eDRM`. It is a shared data model that stores all drm-specific data: data taken from the SW Repackager's request at this point, and filled in by plugin(s) in later processing.
- As mentioned, the dispatcher, based on the output profile taken from the request's url and loaded configuration, selects **(4)** the plugin, calls **Processor** and shares the resource context reference.
- The plugin-specific processing kicks in **(5)**. Common aspect includes extracting **(6)** the required data from the resource context and validating it against the plugin's own set of rules. In detailed, each plugin behave differently: work mode (pull or push), key rotation mechanism, or group variants.

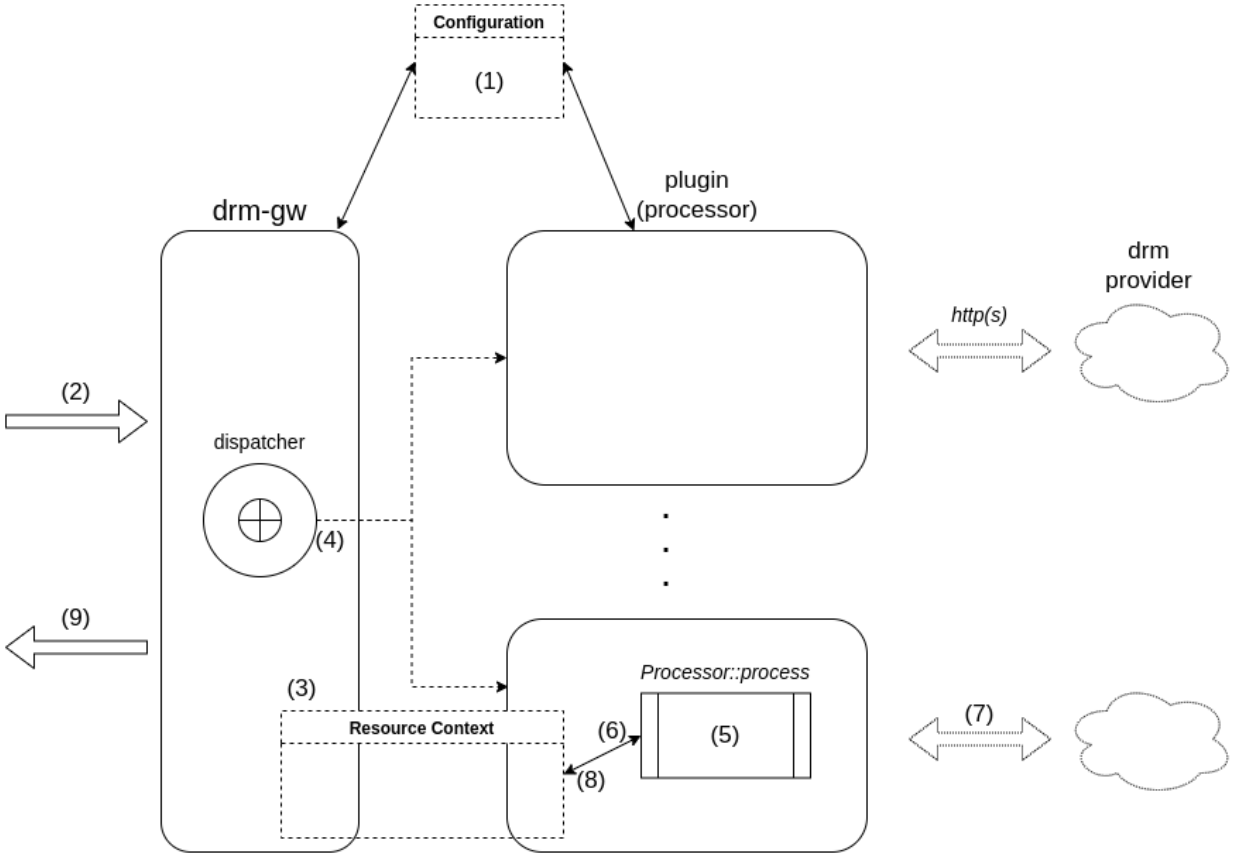

Figure 1: DRM-GW Overview

- A rule of thumb is to separate the entity (so called connector) which exchanges the data between the DRM provider and the DRM-GW's plugin **(7)**. That stage is about using a propriatary model to pass the required information to the external DRM server and retrieve the key(s) and its (their) metadata, i.e. pssh box. Though the CPIX model was introduced to unify that aspect.
- Once the DRM data is received and processed, it is applied to the **ResourceContext (8)** and, control is given back either to the DRM-GW core or to the next plugin in line (if the plugin chaining is used). Finally, the core will regain the control and form a response to the SW Repackager (9) using the data stored in the resource context.

6 DRM-GW plugin and CPIX

6.1 CPIX Interface specification

CPIX stands for DASH-IF Content Protection Information Exchange. DRM-GW currently follow v2.2 specification.

6.1.1 HTTP requests

6.1.1.1 Message Start-Line

6.1.1.2 HTTP requests method

The following HTTP methods should be supported by the server:

- **POST** is used to send data to a DRM provider server. The HTTP message contains a body with a CPIX request document.
- **GET** is used to request data from a DRM provider server. The CPIX request document is not created in this case.

6.1.1.3 HTTP requests target

- It is usually a URL, or the absolute path of the protocol, port, and domain are usually characterized by the request context.
- The parameter in the URL is configured via the configuration file (**config.json**) and it has to be provided by the DRM provider.

Start-Line Example

```
GET https://the.server.dommain.com:443/cpix/anevia/instances/28/type/live/
    ↪ channel/MovistarEventos
```

Note: The additional information (like types: live, vod) on the parameter in the URL is decided by the DRM provider.

6.1.1.4 Message Header

HTTP headers from a request follow the same basic structure of an HTTP header. The authentication is handled in the header if the DRM provider needs it.

6.1.1.5 Message Body

Message body contains the CPIX request document to send to the DRM provider incase the **POST** method.

6.1.2 HTTP responses

HTTP response needs to contain a status code, status test and the body that contains the CPIX response document so that eDRM plugin can get the data.

6.2 CPIX python library

Some plugins to be integrated with the CPIX-based DRM service (CPIX API v2) to send/receive CPIX request/response documents.

A CPIX python library is used to handle CPIX documents.

Supported features on python library:

- Creation of CPIX documents
- Content keys
- Usage rules
- DRM systems
- Parsing of CPIX documents
- Validation against CPIX XSD

Python library reference: https://pypi.org/project/cpix/

6.3 The DRM-GW plugin and CPIX

Let's take a look at 7 stages, that could be distinguished in the processing pipeline, few common for every plugin.

- Stage **(1)**: Based on the output profile taken from the request's URL and loaded configuration for that profile, the DRM-GW picks the Processor (plugin), calls the **Processor::process** function, and shares the **Resource Context**.
- Stage **(2)**: Feed to **CPIXAdapter** to get a CPIX document with a proper content. The content including **drm_systems**, **key_infos**, **content_id** and **encryption**. Based on the content, **CPIXAdapter** creates the CPIX request document by using the CPIX python library and send it back to **Processor**. Currently, the document supports **ContentKeyList**, **DRMSystemList**, **ContentKeyUsageRuleList**, and **ContentKeyPeriodList** elements.

Irdeto parameter input example

```
'drm_systems': 'irdetoprotection',
'key_infos': {
    KeyInfo {
        'key': 'nursQCDkeEy3qhQ72BYUcQ==',
        'key_id': 'pfgORMczTVGrWgh2a9OiFw==',
```

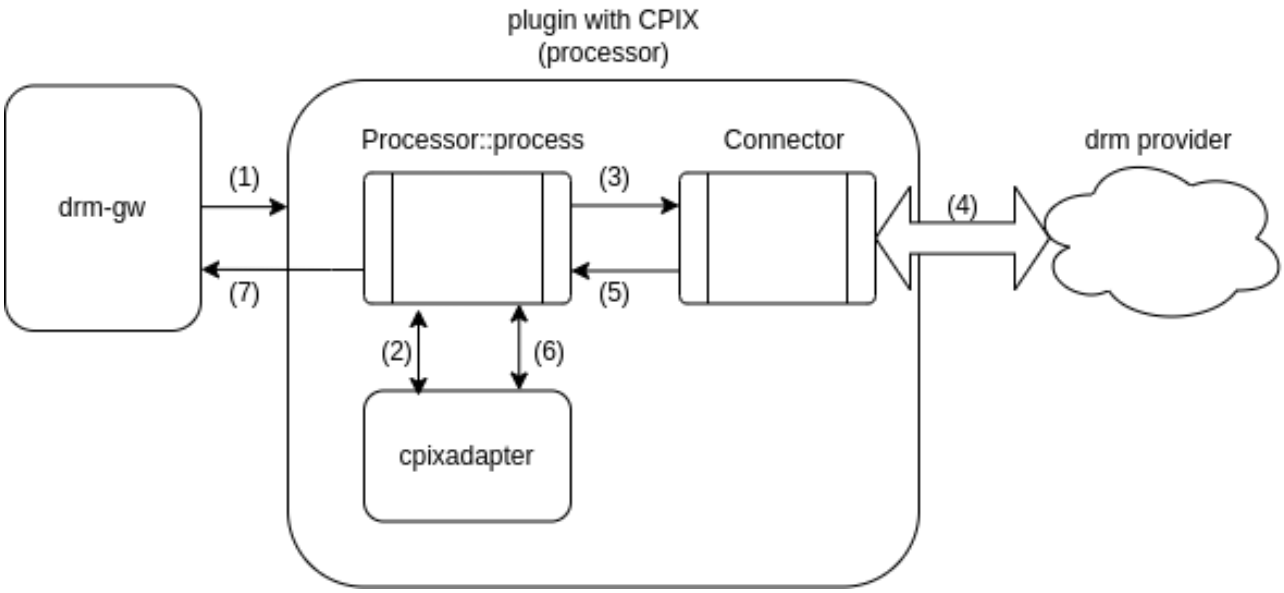

Figure 2: DRM-GW plugin with CPIX

```
        'drm_info': [],
        'end_time': 10000
    }
},
'content_id': 'dummy_resource_id',
'encryption': 'cenc'
```

Irdeto CPIX request example

```
<CPIX xmlns="urn:dashif:org:cpix" xmlns:xsi="http://www.w3.org/2001/XMLSchema
    ↪ -instance" xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc" xmlns:ds="
    ↪ http://www.w3.org/2000/09/xmldsig#" xmlns:enc="http://www w3.org
    ↪ /2001/04/xmlenc#" xsi:schemaLocation="urn:dashif:org:cpix cpix.xsd"
    ↪ contentId="dummy_resource_id">
    <ContentKeyList>
        <ContentKey kid="a5f80e44-c733-4d51-ab5a-08766bd3a217"
            ↪ commonEncryptionScheme="cenc"/>
    </ContentKeyList>
    <DRMSystemList>
        <DRMSystem kid="a5f80e44-c733-4d51-ab5a-08766bd3a217" systemId="80
            ↪ a6be7e-1448-4c37-9e70-d5aebe04c8d2"name="irdetoprotection"/>
    </DRMSystemList>
</CPIX>
```

- Stage **(3)**: After the Connector receives the CPIX document from **Processor**, CPIX document will be used as a payload in the HTTP message. Authentication (if need be) will be added to the header.
- Stage **(4)**: The **Connector** sends the HTTP message to the DRM provider via the **POST** or **GET** method (the HTTP message doesn't need a CPIX document in case the **GET** method). The same CPIX document is expected in the response, but with the extra data in it.

Irdeto server request example

```
POST https://1.2.3.4/tkm/v2/dummy_account_id/copyProtectionData
{
   'Authorization': 'Basic ZHVtbXlfdXNlcjpkdW1teV9wYXNz'
   'Content-Type': 'text/xml'
   'Content-Length': '617'
}
{
```

```
    <CPIX xmlns="urn:dashif:org:cpix" xmlns:xsi="http://www.w3.org/2001/
        ↪ XMLSchema-instance" xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc
        ↪ " xmlns:ds="http://www.w3.org/2000/09/xmldsig#" xmlns:enc="http://
        ↪ www.w3.org/2001/04/xmlenc#" xsi:schemaLocation="urn:dashif:org:cpix
        ↪  cpix.xsd" contentId="dummy_resource_id">
        <ContentKeyList>
            <ContentKey kid="a5f80e44-c733-4d51-ab5a-08766bd3a217"
                ↪ commonEncryptionScheme="cenc"/>
        </ContentKeyList>
        <DRMSystemList>
            <DRMSystem kid="a5f80e44-c733-4d51-ab5a-08766bd3a217" systemId="80
                ↪ a6be7e-1448-4c37-9e70-d5aebe04c8d2" name="irdetoprotection
                ↪ "/>
        </DRMSystemList>
    </CPIX>
}
```

Irdeto CPIX response example

```
<cpix:CPIX
    xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
    xmlns:cpix="urn:dashif:org:cpix"
    xmlns:xenc="http://www.w3.org/2001/04/xmlenc#"
    xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc"contentId="
        ↪ dummy_resource_id" version="2.3">
    <cpix:ContentKeyList>
        <cpix:ContentKey kid="a5f80e44-c733-4d51-ab5a-08766bd3a217"
            ↪ commonEncryptionScheme="cbcs">
            <cpix:Data>
                <pskc:Secret>
                    <pskc:PlainValue>nursQCDkeEy3qhQ72BYUcQ==</pskc:PlainValue
                        ↪ >
                </pskc:Secret>
            </cpix:Data>
        </cpix:ContentKey>
    </cpix:ContentKeyList>
    <cpix:DRMSystemList>
        <cpix:DRMSystem systemId="edef8ba9-79d6-4ace-a3c8-27dcd51d21ed" kid="
            ↪ a5f80e44-c733-4d51-ab5a-08766bd3a217" name="Widevine">
            <cpix:PSSH>AAAANXBzc2gAAAAA7e+
                ↪ LqXnWSs6jyCfc1R0h7QAAABUSEBERERERERERERERGiHsgXwek4rhE=</cpix
                ↪ :PSSH>
            <cpix:HLSSignalingData>I0VYVC1YLUtFWTpNRVRIT0Q9U0FNUExFLUFFUy
            xVUkk9ImRhdGE6dGV4dC9wbGFpbjtiYXNlNjQsQUFBQU8zQnpjMmdBQUFBQTd
            lK0xxWG5XU3M2anlDZmMxUjBoN1FBQUFCc1NFSDFhT3dwWG0weHJyMHZlU3RL
            VGRLWTQxd2hJODhhSm13WT0iLEtFWUlEPSIweDdkNWEzYjBhNTc5YjRjNmJhZ
            jRiZGU0YWQyOTM3NGE2IixLRVlGT1JNQVQ9InVybjp1dWlkOmVkZWY4YmE5LT
            c5ZDYtNGFjZS1hM2M4LTI3ZGNkNTFkMjFlZCIsS0VZRk9STUFUVkVSU0lPTj0
            iMSI=
            </cpix:HLSSignalingData>
        </cpix:DRMSystem>
    </cpix:DRMSystemList>
</cpix:CPIX>
```

- Stage **(5)**: The **Connector** handles response error codes from the response (if have). In some case, the response message needs to handle before sending it to **Processor** if it has the wrong CPIX document format.
- Stage **(6)**: The CPIX response must be passed through the **CPIXAdapter** to get the DRM data. **CPIXAdapter** continues to use the CPIX python library to parse the CPIX response, the DRM data is extracted based on DRM protocol(**PSSH** and **HLSSignaling**). The DRM data is sent to **Processor** to continue working.

- Stage **(7)**: Finally, the DRM data must be applied to the **Resource Context** as the control. **Resource Context** is given back to the DRM-GW server.

Irdeto Resource Context output example

```
ResourceContext {
   'encryption': 'cenc',
   'resource_id': 'dummy_resource_id',
   'content_id': UUID('725c445a-2fcf-5143-858c-83ae6c07a830'),
   'key_infos': {
       KeyInfo {
           'key': 'nursQCDkeEy3qhQ72BYUcQ==',
           'key_id': 'pfgORMczTVGrWgh2a9OiFw==',
           'drm_info': {
               DrmImfo {
                   'name': 'widevine',
                   'system_id': 'edef8ba9-79d6-4ace-a3c8-27dcd51d21ed',
                   'header_data': 'AAAAVXBzc2gAAAAA7e+LqXnWSs6jyCfc1R0h7QAAA
                   DUAAAA1cHNzaAAAAADt74upedZKzqPIJ9zVHSHtAAAAFRIQERERERERERER
                   EREaIeyBfB6TiuEQ==',
                   'protocol': <DrmProto.PSSH: (1,)>
                   },
           'end_time': 10000
           }
       }
   }
}
```

6.4 Extra CPIX information on DRM-GW

6.4.1 Common Encryption protection scheme

The Common Encryption protection scheme that the content key is intended to be used with. Possible values are:

- **cenc** : AES-128 CTR(Counter Mode).
- **cbc1** : AES-128 CBC(Cipher-block chaining mode).
- **cens** : AES-CTR Pattern. AES-128 CTR using pattern of unencrypted/encrypted bytes.
- **cbcs** : AES-CBC Pattern. AES-128 CBC usingpattern of unencrypted/encrypted bytes.

The **cenc** encryption protection scheme is used in case **cenc** encryption, and **cbcs** encryption protection scheme is used in case **sample-aes** or **aes-128** encryption is chosen.

NOTE: **cenc**, **sample-aes**, **aes-128** encryption is configured via the configuration file (**config.json**)

6.4.2 DRMSystem

The DRMSystem element contains all information on a DRM system that can be used for retrieving licenses. An identier for the DRMSystem element. It shouldbe unique within the scope where the current CPIX document is published.

- **PlayReady**: 9a04f079-9840-4286-ab92-e65be0885f95
- **Widevine**: edef8ba9-79d6-4ace-a3c8-27dcd51d21ed
- **FairPlay Streaming**: 94ce86fb-07 -4f43-adb8-93d2fa968ca2
- **ClearKey**: 1077efec-c0b2-4d02-ace3-3c1e52e2fb4b. This identier indicates that tracks are encrypted with Common encryption.
- **ChinaDRM**: 4368696e-6144-524d-3130-495244453135. This is the Vendor Id dened in accordance with the specication of ChinaDRM Lab, not the one from DASH-IF.
- **HLS AES-128**: 81376844-f976-481e-a84e-cc25d39b0b33. This is an implementation-specic systemId dened by AWS.
- **IrdetoProtection**: 80a6be7e-1448-4c37-9e70-d5aebe04c8d2. Irdeto Content Protection isused by CCA (Cloaked CA) for MPEG-DASH content. This option is valid only in a hybrid deployment.

6.4.3 Key Rotation Support

Following DASH-IF Content Protection Information Exchange document, the CPIX API also supports key rotation. The CPIX document shall contain one or more **ContentKey** elements, one per crypto-period which the document covers. Each **ContentKey** element contains the key material for a single crypto-period. The crypto-period itself is identified by the **ContentKeyPeriod** element, that includes **start/end** or **index** attributes. Please check DASH-IF Content Protection Information Exchange documentation for more details.

Each time period is calculated in DRM-GW. Each period value is used and identified by **index** or **start/end** in the CPIX document.

7 CPIX requests/responses examples

More examples CPIX request/response with CPIX document on eDRM

7.1 CPIX with POST method

Irdeto uses **POST** method to send the request to the key server with the CPIX request document included in the message body.

7.1.1 Widevine CBCS

Request Example

```
<cpix:CPIX contentId="tkm-content-vod"
    xmlns:cpix="urn:dashif:org:cpix">
    <cpix:ContentKeyList>
        <cpix:ContentKey kid="7d5a3b0a-579b-4c6b-af4b-de4ad29374a6"
commonEncryptionScheme="cbcs"/>
    </cpix:ContentKeyList>
    <cpix:DRMSystemList>
        <cpix:DRMSystem name="Widevine" systemId="edef8ba9-79d6-4ace-a3c8-
27dcd51d21ed" kid="7d5a3b0a-579b-4c6b-af4b-de4ad29374a6"/>
    </cpix:DRMSystemList>
</cpix:CPIX>
```

Response Example

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<cpix:CPIX
    xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
    xmlns:cpix="urn:dashif:org:cpix"
    xmlns:xenc="http://www.w3.org/2001/04/xmlenc#"
    xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc" contentId="tkm-content-
        ↪ vod"
version="2.3">
    <cpix:ContentKeyList>
        <cpix:ContentKey kid="7d5a3b0a-579b-4c6b-af4b-de4ad29374a6"
explicitIV="vwWIZJ57RlucjbImmFgSpg==" commonEncryptionScheme="cbcs">
            <cpix:Data>
                <pskc:Secret>
                    <pskc:PlainValue>6IqGOcS4PtOiE2T5ghR9TA==
</pskc:PlainValue>
                </pskc:Secret>
            </cpix:Data>
        </cpix:ContentKey>
    </cpix:ContentKeyList>
    <cpix:DRMSystemList>
        <cpix:DRMSystem systemId="edef8ba9-79d6-4ace-a3c8-27dcd51d21ed"
kid="7d5a3b0a-579b-4c6b-af4b-de4ad29374a6" name="Widevine">
            <cpix:PSSH>AAAAO3Bzc2gAAAAA7e+
                ↪ LqXnWSs6jyCfc1R0h7QAAABsSEH1aOwpXm0xrr0veStKTdKY41
```

```
</cpix:PSSH>
            <cpix:ContentProtectionData>
                ↪ PGNlbmM6cHNzaCB4bWxuczpjZW5jPSJ1cm46bXBlZzpjZW5jOjIw
</cpix:ContentProtectionData>
            <cpix:HLSSignalingData>
                ↪ I0VYVC1YLUtFWTpNRVRIT0Q9U0FNUExFLUFFUyxVUkk9ImRhdGE6dGV4d
</cpix:HLSSignalingData>
        </cpix:DRMSystem>
    </cpix:DRMSystemList>
</cpix:CPIX>
```

7.1.2 IrdetoProtection and Widevine

Request Example

```
<cpix:CPIX contentId="tkm-content-vod"
    xmlns:cpix="urn:dashif:org:cpix"
    xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc">
    <cpix:ContentKeyList>
        <cpix:ContentKey kid="11111111-1111-1111-1111-a21ec817c1e9"/>
    </cpix:ContentKeyList>
    <cpix:DRMSystemList>
        <cpix:DRMSystem name="IrdetoProtection" systemId="80a6be7e-1448-4c37-
9e70-d5aebe04c8d2" kid="11111111-1111-1111-1111-a21ec817c1e9"/>
        <cpix:DRMSystem name="Widevine" systemId="edef8ba9-79d6-4ace-a3c8-
27dcd51d21ed" kid="11111111-1111-1111-1111-a21ec817c1e9"/>
    </cpix:DRMSystemList>
</cpix:CPIX>
```

Response Example

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<cpix:CPIX
    xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
    xmlns:cpix="urn:dashif:org:cpix"
    xmlns:xenc="http://www.w3.org/2001/04/xmlenc#"
    xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc" contentId="tkm-content-
        ↪ vod"
version="2.3">
    <cpix:ContentKeyList>
        <cpix:ContentKey kid="11111111-1111-1111-1111-a21ec817c1e9"
explicitIV="MTIzNDU2Nzg5MDEyMzQ1Ng==">
            <cpix:Data>
                <pskc:Secret>
                    <pskc:PlainValue>nursQCDkeEy3qhQ72BYUcQ==
</pskc:PlainValue>
                </pskc:Secret>
            </cpix:Data>
        </cpix:ContentKey>
    </cpix:ContentKeyList>
    <cpix:DRMSystemList>
        <cpix:DRMSystem systemId="80a6be7e-1448-4c37-9e70-d5aebe04c8d2"
kid="11111111-1111-1111-1111-a21ec817c1e9" name="IrdetoProtection">
            <cpix:PSSH>AAACR3Bzc2gAAAAAgKa+
                ↪ fhRITDeecNWuvgTI0gAAAicBAAACIgABAh48Q0NBUk1IRUFER
</cpix:PSSH>
            <cpix:ContentProtectionData>
                ↪ PGNlbmM6cHNzaCB4bWxuczpjZW5jPSJ1cm46bXBlZzpjZW5jOjIw
</cpix:ContentProtectionData>
        </cpix:DRMSystem>
        <cpix:DRMSystem systemId="edef8ba9-79d6-4ace-a3c8-27dcd51d21ed"
```

```
kid="11111111-1111-1111-1111-a21ec817c1e9" name="Widevine">
            <cpix:PSSH>AAAANXBzc2gAAAAA7e+
                ↪ LqXnWSs6jyCfc1R0h7QAAABUSEBERERERERERERERGiHsgXwek4
</cpix:PSSH>
            <cpix:ContentProtectionData>
                ↪ PGNlbmM6cHNzaCB4bWxuczpjZW5jPSJ1cm46bXBlZzpjZW5jOjIw
</cpix:ContentProtectionData>
            <cpix:HLSSignalingData>
                ↪ I0VYVC1YLUtFWTpNRVRIT0Q9U0FNUExFLUFFUy1DVFIsVVJJPSJkYXRhO
</cpix:HLSSignalingData>
        </cpix:DRMSystem>
    </cpix:DRMSystemList>
</cpix:CPIX>
```

7.1.3 IrdetoProtection with key rotation

Request Example

```
<CPIX
    xmlns="urn:dashif:org:cpix"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc"
    xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
    xmlns:enc="http://www.w3.org/2001/04/xmlenc#" xsi:schemaLocation="urn:
       ↪ dashif:org:cpix
    cpix.xsd" contentId="dummy">
    <ContentKeyList>
        <ContentKey kid="89571c8b-fcb9-4fe5-bb87-6ea622ded7d9"
            ↪ commonEncryptionScheme="cenc"/>
        <ContentKey kid="8c32e158-24c2-42d0-b4a6-9354a6b9e850"
            ↪ commonEncryptionScheme="cenc"/>
    </ContentKeyList>
    <DRMSystemList>
        <DRMSystem kid="89571c8b-fcb9-4fe5-bb87-6ea622ded7d9" systemId="80
            ↪ a6be7e-1448-4c37-9e70
        -d5aebe04c8d2" name="irdetoprotection"/>
        <DRMSystem kid="8c32e158-24c2-42d0-b4a6-9354a6b9e850" systemId="80
            ↪ a6be7e-1448-4c37-9e70
        -d5aebe04c8d2" name="irdetoprotection"/>
    </DRMSystemList>
    <ContentKeyPeriodList>
        <ContentKeyPeriod id="GY88RtjwZMt6mWJbAkJgFP" start="2023-07-14T06
            ↪ :41:00" end="2023-07-14T06:42:00"/>
        <ContentKeyPeriod id="i7f8vJqsXF65okCDfWqMhi" start="2023-07-14T06
            ↪ :43:00" end="2023-07-14T06:44:00"/>
    </ContentKeyPeriodList>
    <ContentKeyUsageRuleList>
        <ContentKeyUsageRule kid="89571c8b-fcb9-4fe5-bb87-6ea622ded7d9">
            <KeyPeriodFilter periodId="GY88RtjwZMt6mWJbAkJgFP"/>
        </ContentKeyUsageRule>
        <ContentKeyUsageRule kid="8c32e158-24c2-42d0-b4a6-9354a6b9e850">
            <KeyPeriodFilter periodId="i7f8vJqsXF65okCDfWqMhi"/>
        </ContentKeyUsageRule>
    </ContentKeyUsageRuleList>
</CPIX>
```

Response Example

```
<cpix:CPIX
    xmlns:cpix="urn:dashif:org:cpix"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
```

```
    xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc"
    xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
    xmlns:enc="http://www.w3.org/2001/04/xmlenc#" xsi:schemaLocation="urn:
       ↪ dashif:org:cpix
    cpix.xsd" contentId="dummy">
    <cpix:ContentKeyList>
        <cpix:ContentKey kid="89571c8b-fcb9-4fe5-bb87-6ea622ded7d9"
           ↪ commonEncryptionScheme="cenc">
            <cpix:Data>
                <pskc:Secret>
                    <pskc:PlainValue>vG3aOu/0M9kVQt8ZEJyuMbe/8NelZtDTS/
                       ↪ su0khT5Yw=</pskc:PlainValue>
                </pskc:Secret>
            </cpix:Data>
        </cpix:ContentKey>
        <cpix:ContentKey kid="8c32e158-24c2-42d0-b4a6-9354a6b9e850"
           ↪ commonEncryptionScheme="cenc">
            <cpix:Data>
                <pskc:Secret>
                    <pskc:PlainValue>Dq+ra7VElSYh5hZR+1dMU4+0
                       ↪ hmeVcUEEDl45Bo6OeyY=</pskc:PlainValue>
                </pskc:Secret>
            </cpix:Data>
        </cpix:ContentKey>
    </cpix:ContentKeyList>
    <cpix:DRMSystemList>
        <cpix:DRMSystem kid="89571c8b-fcb9-4fe5-bb87-6ea622ded7d9" systemId
           ↪ ="80a6be7e-1448-4c37
        -9e70-d5aebe04c8d2">
            <cpix:PSSH>AAAAV3Bzc2gAAAAAgKa+
               ↪ fhRITDeecNWuvgTI0gAAADdkdW1teV9wc3NoX2Zvcl9raWRfODk1
            NzFjOGItZmNiOS00ZmU1LWJiODctNmVhNjIyZGVkN2Q5</cpix:PSSH>
        </cpix:DRMSystem>
        <cpix:DRMSystem kid="8c32e158-24c2-42d0-b4a6-9354a6b9e850" systemId
           ↪ ="80a6be7e-1448-4c37
        -9e70-d5aebe04c8d2">
            <cpix:PSSH>AAAAV3Bzc2gAAAAAgKa+
               ↪ fhRITDeecNWuvgTI0gAAADdkdW1teV9wc3NoX2Zvcl9raWRfOGMz
            MmUxNTgtMjRjMi00MmQwLWI0YTYtOTM1NGE2YjllODUw</cpix:PSSH>
        </cpix:DRMSystem>
    </cpix:DRMSystemList>
    <cpix:ContentKeyPeriodList>
        <cpix:ContentKeyPeriod id="GY88RtjwZMt6mWJbAkJgFP" start="2023-07-14
           ↪ T06:41:00" end="2023-07-14T06:42:00"/>
        <cpix:ContentKeyPeriod id="i7f8vJqsXF65okCDfWqMhi" start="2023-07-14
           ↪ T06:43:00" end="2023-07-14T06:44:00"/>
    </cpix:ContentKeyPeriodList>
    <cpix:ContentKeyUsageRuleList>
        <cpix:ContentKeyUsageRule kid="89571c8b-fcb9-4fe5-bb87-6ea622ded7d9">
            <cpix:KeyPeriodFilter periodId="GY88RtjwZMt6mWJbAkJgFP"/>
        </cpix:ContentKeyUsageRule>
        <cpix:ContentKeyUsageRule kid="8c32e158-24c2-42d0-b4a6-9354a6b9e850">
            <cpix:KeyPeriodFilter periodId="i7f8vJqsXF65okCDfWqMhi"/>
        </cpix:ContentKeyUsageRule>
    </cpix:ContentKeyUsageRuleList>
</cpix:CPIX>
```

7.2 CPIX with GET method

Some customers use the **GET** method to send the request to the key server so there is **NO** CPIX request document created. The response returns the full DRM key for **Widevine**, **Playready**, and **Fairplay**

Drm service will generate a GET request to the following path:

```
{url}/cpix/anevia/instances/{instance_id}/type/{playback_type}/channel/{
    ↪ channel_name}
```

Where:

- {domain_name}: The server domain
- {instance_id}: It will be the id of the instance that can be used to track the requests from the different headends.
- {playback_type}: The type of playback that will allow two possible values (live, npvr).
- {channel_name}: Name of channel using DRM.

Response Example

```
<cpix:CPIX
    xmlns:xenc="http://www.w3.org/2001/04/xmlenc#"
    xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:cpix="urn:dashif:org:cpix"
    xmlns:ds="http://www.w3.org/2000/09/xmldsig#" id="
    MovistarEventos">
    <cpix:ContentKeyList>
        <cpix:ContentKey kid="37fa96a6-a739-4f2d-8d8b-3cb5089d5bb8">
            <cpix:Data>
                <pskc:Secret>
                    <pskc:PlainValue>eKHcBkYRlwfpA1FNigBzXw==</pskc:
                        ↪ PlainValue>
                </pskc:Secret>
            </cpix:Data>
        </cpix:ContentKey>
        <cpix:ContentKey kid="48fa96a6-a739-4f2d-8d8b-3cb5089d5bb8"
            ↪ explicitIV="zAFReiLyPch5xGXg2sGMXQ==">
            <cpix:Data>
                <pskc:Secret>
                    <pskc:PlainValue>O9ovQDRMfe9hQie5wPA+Jg==</pskc:
                        ↪ PlainValue>
                </pskc:Secret>
            </cpix:Data>
        </cpix:ContentKey>
    </cpix:ContentKeyList>
    <cpix:DRMSystemList>
        <!-- Widevine Content Protection for MPEG DASH with default key -->
        <cpix:DRMSystem kid="37fa96a6-a739-4f2d-8d8b-3cb5089d5bb8" systemId="
            ↪ edef8ba9-79d6-4ace-a3c8-27dcd51d21ed">
            <cpix:PSSH>AAAAZnBzc2gAAAAA7e+LqXnWSs6jyCfc1R0h7QAAAEYIARIQN/
                ↪ qWpqc5Ty2Nizy1CJ1buBoKdGVsZWZvbmljYSIkMzdmYTk2YTYtYTczO
S00ZjJkLThkOGItM2NiNTA4OWQ1YmI4</cpix:PSSH>
            <cpix:ContentProtectionData>PGNlbmM6cHNzaD5BQUFBWm5CemMyZ0FBQUFBN
            2UrTHFYbldTczZqeUNmYzFSMGg3UUFBQUVZSUFSSVFOL3FXcHFjNVR5Mk5penkxQ0
            oxYnVCb0tkR1ZzWldadmJtbGpZU0lrTXpkbVlUazJZ
            VFl0WVRjek9TMDBaakprTFRoa09HSXRNMk5pTlRBNE9XUTFZbUk0PC
9jZW5jOnBzc2g+</cpix:ContentProtectionData>
        </cpix:DRMSystem>
        <!-- PlayReady Content Protection for MPEG DASH with default key -->
        <cpix:DRMSystem kid="37fa96a6-a739-4f2d-8d8b-3cb5089d5bb8" systemId
            ↪ ="9a04f079-9840-4286-ab92-e65be0885f95">
            <cpix:PSSH>AAACiHBzc2gAAAAAmgTweZhAQoarkuZb4IhflQAAAmhoAgAAAQABAF
            4CPABXAFIATQBIAEUAQQBEAEUAUgAgAHgAbQBsAG4AcwA9ACIAaAB0AHQAcAA6AC8
            ALwBzAGMAaABlAG0AYQBzAC4AbQBpAGMAcgBvAHMAbwBmAHQALgBjAG8AbQAvAEQA
            UgBNAC8AMgAwADAANwAvADAAMwAvAFAAbABhAHkAUgBlAGEAZAB5AEgAZQBhAGQAZ
            QByACIAIAB2AGUAcgBzAGkAbwBuAD0AIgA0AC4AMAAuADAALgAwACIAPgA8AEQAQQ
            BUAEEAPgA8AFAAUgBPAFQARQBDAFQASQBOAEYATwA+ADwASwBFAFkATABFAE4APgA
```

```
            xADYAPAAvAEsARQBZAEwARQBOAD4APABBAEwARwBJAEQAPgBBAEUAUwBDAFQAUgA8
            AC8AQQBMAEcASQBEAD4APAAvAFAAUgBPAFQARQBDAFQASQBOAEYATwA+ADwASwBJA
            EQAPgBwAHAAYgA2AE4AegBtAG4ATABVACsATgBpAHoAeQAxAEMASgAxAGIAdQBBAD
            0APQA8AC8ASwBJAEQAPgA8AEwAQQBfAFUAUgBMAD4AaAB0AHQAcABzADoALwAvAG0
            AcwBwAGwAYQB5AHIAZQBhAGQAeQBkAHIAbQAuAGwAYQBiAHMALgBnAHYAcAAuAHQA
            ZQBsAGUAZgBvAG4AaQBjAGEALgBjAG8AbQAvAFIAaQBnAGgAdABzAE0AYQBuAGEAZ
            wBlAHIALgBhAHMAbQB4ADwALwBMAEEAXwBVAFIATAA+ADwALwBEAEEAVABBAD4APA
            AvAFcAUgBNAEgARQBBAEQARQBSAD4A
            </cpix:PSSH>
            <cpix:ContentProtectionData>PG1zcHI6cHJvPmFBSUFBQUVBQVFCZUFqd0FWd
            0JTQUUwQVNBQkZBRUVBUkFCRkFGSUFJQUI0QUcwQWJBQnVBSE1BUFFBaUFHZ0FkQU
            IwQUhBQU9nQXZBQzhBY3dCakFHZ0FaUUJ0QUdFQWN3QXVBRzBBYVFCakFISUFid0J
            6QUc4QVpnQjBBQzRBWXdCdkFHMEFMd0JFQUZJQVRRQXZBRElBTUFBd0FEY0FMd0F3
            QURNQUx3QlFBR3dBWVFCNUFGSUFaUUJoQUdRQWVRQklBR1VBWVFCa0FHVUFjZ0FpQ
            UNBQWRnQmxBSElBY3dCcEFHOEFiZ0E5QUNJQU5BQXVBREFBTGdBd0FDNEFNQUFpQU
            Q0QVBBQkVBRUVBVkFCQkFENEFQQUJRQUZJQVR3QlVBRVVBUXdCVUFFa0FUZ0JHQUU
            4QVBnQThBRXNBUlFCWkFFd0FSUUJPQUQ0QU1RQTJBRHdBTHdCTEFFVUFXUUJNQUVV
            QVRnQStBRHdBUVFCTUFFY0FTUUJFQUQ0QVFRQkZBRk1BUXdCVUFGSUFQQUF2QUVFQ
            VRBQkhBRWtBUkFBK0FEd0FMd0JRQUZJQVR3QlVBRVVBUXdCVUFFa0FUZ0JHQUU4QV
            BnQThBRXNBU1FCRUFENEFjQUJ3QUdJQU5nQk9BSG9BYlFCdUFFd0FWUUFyQUU0QWF
            RQjZBSGtBTVFCREFFb0FNUUJpQUhVQVFRQTlBRDBBUEFBdkFFc0FTUUJFQUQ0QVBB
            Qk1BRUVBWHdCVkFGSUFUQUErQUdnQWRBQjBBSEFBY3dBNkFDOEFMd0J0QUhNQWNBQ
            nNBR0VBZVFCeUFHVUFZUUJrQUhrQVpBQnlBRzBBTGdCc0FHRUFZZ0J6QUM0QVp3Qj
            JBSEFBTGdCMEFHVUFiQUJsQUdZQWJ3QnVBR2tBWXdCaEFDNEFZd0J2QUcwQUx3QlN
            BR2tBWndCb0FIUUFjd0JOQUdFQWJnQmhBR2NBWlFCeUFDNEFZUUJ6QUcwQWVBQThB
            QzhBVEFCQkFGOEFWUUJTQUV3QVBnQThBQzhBUkFCQkFGUUFRUUErQUR3QUx3QlhBR
            klBVFFCSUFFVUFRUUJFQUVVQVVnQStBQT09PC9tc3ByOnBybz4=
            </cpix:ContentProtectionData>
        </cpix:DRMSystem>
        <!-- Fairplay Content Protection for HLS with default key -->
        <cpix:DRMSystem kid="48fa96a6-a739-4f2d-8d8b-3cb5089d5bb8" systemId
            ↪ ="94ce86fb-07ff-4f43-adb8-93d2fa968ca2">
            <cpix:HLSSignalingData>I0VYVC1YLUtFWTpNRVRIT0Q9U0FNUExFLUFFUyxVUk
            k9InNrZDovLzQ4ZmE5NmE2YTczOTRmMmQ4ZDhiM2NiNTA4OWQ1YmI4IixLRVlGT1J
            NQVQ9ImNvbS5hcHBsZS5zdHJlYW1pbmdrZXlkZWxpdmVyeSIsS0VZRk9STUFUVkVS
            U0lPTlM9IjEi</cpix:HLSSignalingData>
        </cpix:DRMSystem>
    </cpix:DRMSystemList>
</cpix:CPIX>
```

8 Appendix A

8.1 Response Codes

8.1.1 Irdeto CPIX

Status Code	Description
200	OK
400	Bad request
404	Not found

8.1.2 Reference customer CPIX

Status Code	Description
200	OK
400	Invalid parameter
404	Not found instance_id
500	Fatal error