



Common Encoder Interface CPIX\CEI API Reference

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Verimatrix S.A.
Impasse des Carrés de l'Arc
Rond-point du Canet
13590 Meyreuil, France
Telephone: +33.4.42905905

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Preface

About This Document

This document provides a description of the application program interface (API) between encoders/scramblers and the Verimatrix VCAS system.

The Verimatrix VCAS Common Encoder Interface (CEI) has two encoder interfaces:

- Native
- DASH-IF Content Protection Information Exchange (CPIX)

This document describes the part of the CEI API that defines the key exchange with encoders using the [DASH-IF CPIX v2.1 specification](https://dashif.org/docs/CPIX2.1/HTML/Index.html) (<https://dashif.org/docs/CPIX2.1/HTML/Index.html>).

Who Should Use This Document

Users of this document are those trying to integrate their encoders/scramblers to the Verimatrix VCAS system.

Readers should have:

- Working knowledge of encryption and key concepts
- Understanding of encoder/scrambler functionality
- Understanding of video formats and processing
- General knowledge of the Verimatrix VCAS system
- General knowledge of the DASH-IF CPIX v2.1 specification
- Have attended Verimatrix University

Overview

The CEI CPIX v1.1 is a RESTful interface using the [DASH-IF CPIX v2.1 specification \(https://dash-industry-forum.github.io/docs/CPIX2.1/XSD/cpix.zip\)](https://dash-industry-forum.github.io/docs/CPIX2.1/XSD/cpix.zip). The CEI CPIX is deployed as part of the Verimatrix VCAS CEI component.

The CEI CPIX:

- Supports the DASH-IF CPIX v2.0 and v2.1 specifications.
- Protects content with Verimatrix Internet TV, Microsoft PlayReady, Google Widevine, and Apple FairPlay Streaming digital rights management (DRM) schemes.
- Supports key rotation using multiple keys per content item.

The Verimatrix VCAS CEI CPIX interface supports the encryptor-consumer workflow described in the DASH-IF CPIX v2.1 specification. Communication between an encoder and the CEI CPIX interface occurs as follows:

1. The encoder sends a request for content and content keys in CPIX standard format to the CEI CPIX interface.
2. If the asset ID does not already exist, Verimatrix VCAS creates a content item using the asset ID in the CPIX request payload.
3. The Verimatrix VCAS system then generates a key for the passed-in key ID.
4. The CEI CPIX interface returns DRM-specific protection data to the encoder in CPIX standard format for each requested DRM system.

CEI CPIX Version Compatibility

VERIMATRIX VCAS VERSION	CEI CPIX VERSION	DASH-IF SPECIFICATION
4.3.0.0 and above	CEI CPIX v1.0	DASH-IF CPIX v2.0
4.3.1.0 and above	CEI CPIX v1.1	DASH-IF CPIX v2.1

Supported Streaming Technologies with DRMs

STREAMING TECHNOLOGY WITH DRM	DRM SYSTEM ID TO USE	CEI CPIX v1.0	CEI CPIX v1.1
MPEG-DASH with Verimatrix	Verimatrix VCAS	✓	✓
MPEG-DASH with Google Widevine	Google Widevine	✓	✓
MPEG-DASH with Microsoft PlayReady	Microsoft PlayReady	✓	✓
Microsoft Smooth Streaming with Microsoft PlayReady	Microsoft PlayReady	✓	✓
HLS AES-128 with Verimatrix	Verimatrix VCAS	✓	✓
HLS Sample-AES with Verimatrix	Verimatrix VCAS	✓	✓
HLS Sample-AES with Verimatrix using Apple FairPlay Streaming protocol	Apple FairPlay Streaming	✓	✓
HLS Sample-AES with native Apple FairPlay Streaming clients	Apple FairPlay Streaming	-	✓

You can find a list of all available DRM system IDs at the [DASH-IF identifiers catalog \(http://dashif.org/identifiers/content_protection/\)](http://dashif.org/identifiers/content_protection/), which refers to them as "Protection System-Specific Identifiers".

URI Scheme

BasePath: /cpix/v1.1

Tags

v1.1

Available Methods: CEI CPIX

This section defines the methods available within the CEI CPIX API. CPIX data structures are described in [DASH-IF Content Protection Information Exchange Format v2.1](https://dashif.org/docs/CPIX2.1/HTML/Index.html) (<https://dashif.org/docs/CPIX2.1/HTML/Index.html>).

Heartbeat

Retrieves the CEI CPIX heartbeat. Use this method to test whether the connection between the encoder/scrambler and the Verimatrix VCAS system is viable.

Request Syntax

```
GET /cpix/{version}/heartbeat
```

Request Example

```
curl -v -X GET 'http://localhost:8058/cpix/v1.1/heartbeat'
```

Request Parameters

NAME	TYPE	OCCURS	DESCRIPTION
version	String	1..1	Version of the endpoint to access. Example: v1.1

Response Example

```
HTTP/1.1 200 OK  
Content-Length: 7  
SUCCESS
```


Response Parameters

HTTP CODE	TYPE	OCCURS	DESCRIPTION
200	HeartbeatResponse	1..1	Successful operation

CEI CPIX Exchange Content Key and Protection Data

The CEI CPIX interface returns DRM-specific protection data based on the list of system IDs (`systemIds`) passed in the request payload. For MPEG Common Encryption, you can list multiple `DrmSystem` elements (containing `systemIds`) in the `DrmSystemList` element of the CPIX document.

If the request system ID is missing or unknown, the Verimatrix VCAS system returns only the content key section of the response and not the DRM-specific data. If the Verimatrix VCAS system does not support some of the request system IDs, the system logs warning messages for the unsupported system IDs and returns responses for the supported system IDs.

Unlike the native CEI interface, the CEI CPIX interface does not use the DRM-enabling flags for MultiDRM solutions defined in the `cei.properties` configuration file (such as `smoothstreaming.playready.enabled`, `dash.widevine.enabled`). It does use `cpix.fairplay.verimatrix_itv.enabled` to determine if content should be added to the Internet TV network.

CEI CPIX supports the following system IDs:

DRM	SYSTEM ID	STREAMING FORMAT
Verimatrix VCAS™	9a27dd82-fde2-4725-8cbc-4234aa06ec09	MPEG-DASH HLS with AES-128 HLS with Sample-AES
Microsoft PlayReady	9a04f079-9840-4286-ab92-e65be0885f95	MPEG-DASH Microsoft Smooth Streaming
Google Widevine	edef8ba9-79d6-4ace-a3c8-27dcd51d21ed	MPEG-DASH
Apple FairPlay	94CE86FB-07FF-4F43-ADB8-93D2FA968CA2	HLS with Sample-AES

If a content item with the content ID (`contentId`) specified in the CPIX request body does not already exist in the system, the system creates the content item using the specified content ID.

NOTE The content ID does not have to be strictly `xs:ID` compatible. For example, the content ID may start with a number instead of a letter.

To Implement Key Rotation

To use key rotation, provide the index/position in the `contentKeyPeriod` attribute of the request body. If you do not provide the index/position, the system considers the content item to be VOD and creates a key for position 0.

To Return Verimatrix Internet TV FairPlay Streaming Data

CEI CPIX v1.1 only. By default, when the CEI CPIX v1.1 interface receives an Apple FairPlay request, it returns Multi-DRM FairPlay Streaming data. You can change this to return Verimatrix Internet TV FairPlay Streaming Data.

1. Using a text editor, open `/opt/vcas/multirights/etc/CEI/cei.properties`.
Set `cpix.fairplay.verimatrix_itv.enabled=TRUE`.
2. Save and close the file.

NOTE You can find the description of the parameters in the following request examples in the [DASH-IF CPIX v2.1 specification](https://dashif.org/docs/CPIX2.1/HTML/Index.html) (<https://dashif.org/docs/CPIX2.1/HTML/Index.html>).

Syntax

```
POST /cpix/v1.1
```

Request Example

VOD for Microsoft PlayReady, Google Widevine, Verimatrix ITV HLS, and Apple FairPlay Streaming

```
curl -v -X POST -H 'Content-Type: application/xml' 'http://localhost:8058/cpix/v1.1' -
d
'<?xml version="1.0"?>
<cpix:CPIX xmlns:cpix="urn:dashif:org:cpix"
xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc" contentId="test_vod">
  <cpix:ContentKeyList>
    <cpix:ContentKey kid="54f7d90a-bc2f-bc9b-08d4-bbeac4ccf08b">
      </cpix:ContentKey>
    </cpix:ContentKeyList>
  <cpix:DRMSystemList>
    <cpix:DRMSystem systemId="9a04f079-9840-4286-ab92-e65be0885f95" kid="54f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b"> <!-- PlayReady -->
      <cpix:PSSH/>
      <cpix:ContentProtectionData/>
    </cpix:DRMSystem>
    <cpix:DRMSystem systemId="edef8ba9-79d6-4ace-a3c8-27dcd51d21ed" kid="54f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b"> <!-- Widevine -->
      <cpix:PSSH/>
      <cpix:ContentProtectionData/>
    </cpix:DRMSystem>
    <cpix:DRMSystem systemId="9a27dd82-fde2-4725-8cbc-4234aa06ec09" kid="54f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b"> <!-- Verimatrix ITV HLS -->
      <cpix:PSSH/>
      <cpix:ContentProtectionData/>
    </cpix:DRMSystem>
    <cpix:DRMSystem systemId="94ce86fb-07ff-4f43-adb8-93d2fa968ca2" kid="54f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b"> <!-- FairPlayStreaming -->
      <cpix:PSSH/>
      <cpix:ContentProtectionData/>
    </cpix:DRMSystem>
  </cpix:DRMSystemList>
</cpix:CPIX>'
```

Response Example

VOD for Microsoft PlayReady, Google Widevine, Verimatrix ITV HLS, and Apple FairPlay Streaming

```

HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Date: Tue, 01 Aug 2017 17:53:40 GMT
Content-Type: application/xml
Content-Length: 1901

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns4:CPIX xmlns="http://www.w3.org/2000/09/xmlsig#"
xmlns:ns2="urn:ietf:params:xml:ns:keyprov:pskc"
xmlns:ns3="http://www.w3.org/2001/04/xmlenc#" xmlns:ns4="urn:dashif:org:cpix"
contentId="test_vod">
  <ns4:ContentKeyList>
    <ns4:ContentKey kid="54f7d90a-bc2f-bc9b-08d4-bbeac4ccf08b"
explicitIV="IWHTiHncOdfFwyTP5nUUBQ==">
      <ns4:Data>
        <ns2:Secret>
          <ns2:PlainValue>QB+EqpA72kH82EkBrMaW1A==</ns2:PlainValue>
        </ns2:Secret>
      </ns4:Data>
    </ns4:ContentKey>
  </ns4:ContentKeyList>
  <ns4:DRMSystemList>
    <ns4:DRMSystem systemId="9a04f079-9840-4286-ab92-e65be0885f95" kid="54f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b">

<ns4:PSSH>AAADNnBzc2gBAAAAmgTweZhaQoarkuZb4IhflQAAAFU99kKvC+8mwjUu+rEzPCLAAADAgIDAAAB
AAEA+AI8AFcAUgBNAEGARQBBAEQARQBSACAAeABTAGwAbgBzAD0AIgBoAHQAdABwADoALwAvAHMAyWBoAGUAbQ
BhAHMALgBtAGkAYwByAG8AcwBvAGYAdAAuAGMAbwBtAC8ARABSAAE0ALwAyADAAMAA3AC8AMAAzAC8AUABsAGEA
eQBSAGUAYQBkAHkASABlAGEAZABlAHIAIgAgAHYAZQByAHMAaQBvAG4APQAiADQALgAwAC4AMAAuADAAIgA+AD
wARABBAFQAQQA+ADwAUABSAE8AVABFAEMAVABJAE4ARgBPAD4APABLAEUAWQBMAEUATgA+ADEANgA8AC8ASwBF
AFkATABFAE4APgA8AEEATABHAEkARAA+AEEARQBTAEMAVABSADwALwBBAEwArwBJAEQAPgA8AC8AUABSAE8AVA
BFAEMAVABJAE4ARgBPAD4APABLAEkARAA+AEMAdABuADMAVgBDACsAOABtAdcAdwBJADEATAB2AHEAeABNAHoA
dwBpAHcAPQA9ADwALwBLAEkARAA+ADwAQwBIAEUAQwBLAFMAVQBNAAD4AQgBpADgAbQBWAE4ANwA2AE0AUQBjAD
0APAAvAEMASABFAEMASwBTAFUATQA+ADwATABBAF8AVQBSAEwAPgBoAHQAdABwADoALwAvADEAMgA3AC4AMAAu
ADAALgAxAC8AUABsAGEAeQBSAGUAYQBkAHkALwByAGkAZwBoAHQAcwBtAGEAbgBhAGcAZQByAC4AYQBzAG0AeA
A8AC8ATABBAF8AVQBSAEwAPgA8AEwAVQBjAF8AVQBSAEwAPgBoAHQAdABwADoALwAvADEAMgA3AC4AMAAuADAA
LgAxAC8AUABsAGEAeQBSAGUAYQBkAHkALwByAGkAZwBoAHQAcwBtAGEAbgBhAGcAZQByAC4AYQBzAG0AeAA8AC
8ATABVAEkAXwBVAFIATAA+ADwALwBEAEEAVABBAD4APAAvAFcAUgBNAEGARQBBAEQARQBSAD4A</ns4:PSSH>

    </ns4:DRMSystem>
  </ns4:DRMSystemList>
</ns4:ContentProtectionData></ns4:ContentProtectionData>

```

```
<ns4:SmoothStreamingProtectionHeaderData>AgMAAAEAAQD4AjwAVwBSAE0ASABFAEEARABFAFIATAB4A
G0AbABuAHMAPQAIAGgAdAB0AHAAOgAvAC8AcwBjAGgAZQBtAGEAcwAuAG0AaQBjAHIAbwBzAG8AZgB0AC4AYwB
vAG0ALwBEAFIATQAvADIAMAAwADcALwAwADMALwBQAGwAYQB5AFIAZQBhAGQAEQBIAGUAYQBkAGUAcgAiACAAAd
gBlAHIAcwbPAG8AbgA9ACIANAAuADAALgAwAC4AMAAiAD4APABEAEEAVABBAD4APABQAFIATwBUAEUAQwBUAEk
ATgBGAE8APgA8AEsARQBZAeWARQBOAD4AMQA2ADwALwBLAEUAWQBMAEUATgA+ADwAQQBMAECASQBEAD4AQQBFA
FMAQwBUAFIAPAAvAEEATABHAEkARAA+ADwALwBQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEAD4AQQwB
0AG4AMwBWAEMAkWA4AG0ANwB3AEkAMQBMAHYAcQB4AE0AegB3AGkAdwA9AD0APAAvAEsASQBEAD4APABDAEGAR
QBDAEsAUwBVAE0APgBCAGkAOABtAFYATgA3ADYATQBFRAGMAPQA8AC8AQwBIAEUAWQBwLAFMAVQBNA4APABMAEE
AXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYADcALgAwAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvA
HIAaQBNAGgAdABzAG0AYQBUAGEAZwBlAHIALgBhAHMABQB4ADwALwBMAEEAXwBVAFIATAA+ADwATABVAEKAXwB
VAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYADcALgAwAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAa
QBNAGgAdABzAG0AYQBUAGEAZwBlAHIALgBhAHMABQB4ADwALwBMAFUASQBfAFUUAUGBMAD4APAAvAEQAQQBUAEE
APgA8AC8AVwBSAE0ASABFAEEARABFAFIAPgA=</ns4:SmoothStreamingProtectionHeaderData>
```

```
</ns4:DRMSystem>
```

```
<ns4:DRMSystem systemId="edef8ba9-79d6-4ace-a3c8-27dcd51d21ed" kid="54f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b">
```

```
<ns4:PSSH>AAAA3Bzc2gBAAAA7e+LqXnWSS6jyCfc1R0h7QAAAAFU99kKvC+8mwjUu+rEzPCLAAANwgBEhBU
99kKvC+8mwjUu+rEzPCLGgp2ZXJpbWF0cml4Ig5yPXRlc3Rfdm9kbnM9MSoFUORfSEQ=</ns4:PSSH>
```

```
<ns4:ContentProtectionData></ns4:ContentProtectionData>
```

```
</ns4:DRMSystem>
```

```
<ns4:DRMSystem systemId="9a27dd82-fde2-4725-8cbc-4234aa06ec09" kid="54f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b">
```

```
<ns4:PSSH>AAABB3Bzc2gBAAAami fdgv3iRyWmVEI0qgbsCQAAAAFU99kKvC+8mwjUu+rEzPCLAAA0zxWZXJp
bWF0cml4PjxQc3NoIHZlcnNpb249IjEiPjxLZX1Vcmw+PCFbQ0RBVEFbaHR0cHM6Ly93d3cuZXhhbXBzZS5jb2
0vQ0FCL2tleWZpbGU/cz0xJnI9dGVzdF92b2QmdD1WT0QmcD0wJmtjPTczNDNmMThlMTY5ZTEzZTg5ZGY3ZmEx
NjNlYmE2OWRmJmtkPWQ0YTUhNDY3YTlhMDcwMzQyZjNkNzgzMzYxZDcwMzI4XV0+PC9LZX1Vcmw+PC9Qc3NoPj
wvVmVyaW1hdHJpeD4=</ns4:PSSH>
```

```
<ns4:ContentProtectionData>PG1wZD48L21wZD4=</ns4:ContentProtectionData>
```

```
<ns4:HLSSignalingData>I0VYVC1YLutFWTPNRVRIT0Q9QUVTLTEyOCxVUkk9Imh0dHBzOi8vd3d3LmV4YVw1w
bGUuY29tL0NBQI9rZXlmaWxlP3M9MSZyPXRlc3Rfdm9kbnQ9Vk9EJnA9MCRyZz03MzQwZjE4ZTE2OWUxMWU4OW
RmN2ZmTYzZWJhNjlkZiZrZD1kNGE1YTQ2N2EwYTA3MDM0MmYzZDc4NjM2MwQ3MDMyOCIsSVY9MHgyMTYxZDM4
ODc5ZGMzOWQ3YzVjMzI0Y2ZlNjc1MTQwNQ==</ns4:HLSSignalingData>
```

```
</ns4:DRMSystem>
```

```
<ns4:DRMSystem systemId="94ce86fb-07ff-4f43-adb8-93d2fa968ca2" kid="54f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b">
```

```
<ns4:PSSH></ns4:PSSH>
```

```
<ns4:ContentProtectionData></ns4:ContentProtectionData>
```

```
<ns4:HLSSignalingData>I0VYVC1YLutFWTPNRVRIT0Q9U0FNUEXFLUFFUyxVUkk9InNrZDovLzU0ZjdkOTBh
YmMyZmJwIj0wOGQ0YmJlYWM0Y2NmMdhIiixLRVlGT1JNQQV9ImNvbS5hcHBzZS5zdHJlY1w1pbmdrZXlkZWxpdm
VyeSIsS0VZRk9STUFUVkVSU01PT1M9IjEi</ns4:HLSSignalingData>
```

```
</ns4:DRMSystem>
```

```
</ns4:DRMSystemList>
```

```
<ns4:ContentKeyPeriodList/>
```

```
<ns4:ContentKeyUsageRuleList/>  
</ns4:CPIX>
```

Request Example

Broadcast for Microsoft PlayReady, Google Widevine, Verimatrix ITV HLS, and Apple FairPlay Streaming

```
curl -v -X POST -H 'Content-Type: application/xml' 'http://localhost:8058/cpix/v1.1' -
d
'<?xml version="1.0"?>
<cpix:CPIX xmlns:cpix="urn:dashif:org:cpix"
xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc" contentId="test_dtv">
  <cpix:ContentKeyList>
    <cpix:ContentKey kid="74f7d90a-bc2f-bc9b-08d4-bbeac4ccf08b">
      </cpix:ContentKey>
    </cpix:ContentKeyList>
  <cpix:DRMSystemList>
    <cpix:DRMSystem systemId="9a04f079-9840-4286-ab92-e65be0885f95" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b"> <!-- PlayReady -->
      <cpix:PSSH/>
      <cpix:ContentProtectionData/>
    </cpix:DRMSystem>
    <cpix:DRMSystem systemId="edef8ba9-79d6-4ace-a3c8-27dcd51d21ed" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b"> <!-- Widevine -->
      <cpix:PSSH/>
      <cpix:ContentProtectionData/>
    </cpix:DRMSystem>
    <cpix:DRMSystem systemId="9a27dd82-fde2-4725-8cbc-4234aa06ec09" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b"> <!-- Verimatrix ITV HLS -->
      <cpix:PSSH/>
      <cpix:ContentProtectionData/>
    </cpix:DRMSystem>
    <cpix:DRMSystem systemId="94ce86fb-07ff-4f43-adb8-93d2fa968ca2" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b"> <!-- FairPlayStreaming -->
      <cpix:PSSH/>
      <cpix:ContentProtectionData/>
    </cpix:DRMSystem>
  </cpix:DRMSystemList>
  <cpix:ContentKeyPeriodList>
    <cpix:ContentKeyPeriod id="keyPeriod_0909829f-40ff-4625-90fa-75da3e53278f"
index="2"/>
  </cpix:ContentKeyPeriodList>
  <cpix:ContentKeyUsageRuleList>
    <cpix:ContentKeyUsageRule kid="74f7d90a-bc2f-bc9b-08d4-bbeac4ccf08b">
      <cpix:KeyPeriodFilter periodId="keyPeriod_0909829f-40ff-4625-90fa-
75da3e53278f" />
    </cpix:ContentKeyUsageRule>
  </cpix:ContentKeyUsageRuleList>
</cpix:CPIX>
```



```
        </cpix:ContentKeyUsageRule>  
    </cpix:ContentKeyUsageRuleList>  
</cpix:CPIX>'
```

Response Example

Broadcast for Microsoft PlayReady, Google Widevine, Verimatrix ITV HLS, and Apple FairPlay Streaming

```

HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Date: Tue, 01 Aug 2017 17:57:33 GMT
Content-Type: application/xml
Content-Length: 2018
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns4:CPIX xmlns="http://www.w3.org/2000/09/xmlsig#"
xmlns:ns2="urn:ietf:params:xml:ns:keyprov:pskc"
xmlns:ns3="http://www.w3.org/2001/04/xmlenc#" xmlns:ns4="urn:dashif:org:cpix"
contentId="test_dtv">
  <ns4:ContentKeyList>
    <ns4:ContentKey kid="74f7d90a-bc2f-bc9b-08d4-bbeac4ccf08b"
explicitIV="9h4nwmQNNfMaAn+C4Qm20g==">
      <ns4:Data>
        <ns2:Secret>
          <ns2:PlainValue>irWDMWodYA02Ube171/t2g==</ns2:PlainValue>
        </ns2:Secret>
      </ns4:Data>
    </ns4:ContentKey>
  </ns4:ContentKeyList>
  <ns4:DRMSSystemList>
    <ns4:DRMSSystem systemId="9a04f079-9840-4286-ab92-e65be0885f95" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b">

<ns4:PSSH>AAADNnBzc2gBAAAAMgTweZhaQoarkuZb4Ihf1QAAAAF099kKvC+8mwjUu+rEzPCLAAADAgIDAAAB
AAEA+AI8AFcAUgBNAEgARQBBAEQARQBSACAAeABTAGwAbgBzAD0AIgBoAHQAdABwADoALwAvAHMAyWBoAGUAbQ
BhAHMALgBtAGkAYwByAG8AcwBvAGYAdAAuAGMAbwBtAC8ARABSAAE0ALwAyADAAMAA3AC8AMAAZAC8AUABsAGEA
eQBSAGUAYQBkAHkASABlAGEAZABlAHIAIgAgAHYAZQByAHMAAQBvAG4APQAIADQALgAwAC4AMAAuADAAIgA+AD
wARABBAFQAQQA+AdwAUABSAAE8AVABFAEMAVABJAE4ARgBPAD4APABLAEUAWQBMAEUATgA+ADEANgA8AC8ASwBF
AFkATABFAE4APgA8AEEATABHAEkARAA+AEEARQBTAEMAVABSADwALwBBAEwARwBJAEQAPgA8AC8AUABSAAE8AVA
BFAEMAVABJAE4ARgBPAD4APABLAEkARAA+AEMAdABuADMAZABDACsAOABtADcAdwBJADEATAB2AHEAeABNAHoA
dwBpAHcAPQA9ADwALwBLAEkARAA+ADwAQwBIAEUAQwBLAFMAVQBNA4ASwBTADAAAdwBLAGgAcgBMAEkAdwBnAD
0APAAvAEMASABFAEMASwBTAFUATQA+ADwATABBAF8AVQBSAEwAPgBoAHQAdABwADoALwAvADEAMgA3AC4AMAAu
ADAALgAxAC8AUABsAGEAeQBSAGUAYQBkAHkALwByAGkAZwBoAHQAcwBtAGEAbgBhAGcAZQByAC4AYQBzAG0AeA
A8AC8ATABBAF8AVQBSAEwAPgA8AEwAVQBjAF8AVQBSAEwAPgBoAHQAdABwADoALwAvADEAMgA3AC4AMAAuADAA
LgAxAC8AUABsAGEAeQBSAGUAYQBkAHkALwByAGkAZwBoAHQAcwBtAGEAbgBhAGcAZQByAC4AYQBzAG0AeAA8AC
8ATABVAEkAXwBVAFIATAA+ADwALwBEAEEAVABBAD4APAAvAFcAUgBNAEgARQBBAEQARQBSAD4A</ns4:PSSH>

    </ns4:ContentProtectionData></ns4:ContentProtectionData>

```

```
<ns4:SmoothStreamingProtectionHeaderData>AgMAAAEAAQD4AjwAVwBSAE0ASABFAEEARABFAFIATAB4A
G0AbABuAHMAPQAIAGgAdAB0AHAAOgAvAC8AcwBjAGgAZQBtAGEAcwAuAG0AaQBjAHIAbwBzAG8AZgB0AC4AYwB
vAG0ALwBEAFIATQAvADIAMAAwADcALwAwADMALwBQAGwAYQB5AFIAZQBhAGQAEQBIAGUAYQBkAGUAcgAiACAAd
gBlAHIAcwbPAG8AbgA9ACIANAAuADAALgAwAC4AMAAiAD4APABEAEEAVABBAD4APABQAFIATwBUAEUAQwBUAEk
ATgBGAE8APgA8AEsARQBZAeWARQBOAD4AMQA2ADwALwBLAEUAWQBMAEUATgA+ADwAQQBMAECASQBEAD4AQQBFA
FMAQwBUAFIAPAAvAEEATABHAEkARAA+ADwALwBQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEAD4AQQwB
0AG4AMwBkAEMAkWA4AG0ANwB3AEkAMQBMAHYAcQB4AE0AegB3AGkAdwA9AD0APAAvAEsASQBEAD4APABDAEGAR
QBDAEsAUwBVAE0APgBLAFMAMAB3AGUAAaBYAEwASQB3AGcAPQA8AC8AQwBIAEUAQwBLAFMAVQBNA4APABMAEE
AXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYADcALgAwAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvA
HIAaQBNAGgAdABzAG0AYQBUAGEAZwBlAHIALgBhAHMABQB4ADwALwBMAEEAXwBVAFIATAA+ADwATABVAEKAXwB
VAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYADcALgAwAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAa
QBNAGgAdABzAG0AYQBUAGEAZwBlAHIALgBhAHMABQB4ADwALwBMAFUASQBfAFUUAUGBMAD4APAAvAEQAQQBUAEE
APgA8AC8AVwBSAE0ASABFAEEARABFAFIAPgA=</ns4:SmoothStreamingProtectionHeaderData>
```

```
</ns4:DRMSystem>
```

```
<ns4:DRMSystem systemId="edef8ba9-79d6-4ace-a3c8-27dcd51d21ed" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b">
```

```
<ns4:PSSH>AAAA3Bzc2gBAAAA7e+LqXnWSS6jyCfc1R0h7QAAAAF099kKvC+8mwjUu+rEzPCLAAANwgBEhB0
99kKvC+8mwjUu+rEzPCLGgp2ZXJpbWF0cml4Ig5yPXRlc3RfZHR2JnM9MSoFUORfSEQ=</ns4:PSSH>
```

```
<ns4:ContentProtectionData></ns4:ContentProtectionData>
```

```
</ns4:DRMSystem>
```

```
<ns4:DRMSystem systemId="9a27dd82-fde2-4725-8cbc-4234aa06ec09" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b">
```

```
<ns4:PSSH>AAABB3Bzc2gBAAAami fdgv3iRyWmVEI0qgbsCQAAAAF099kKvC+8mwjUu+rEzPCLAAA0zxWZXJp
bWF0cml4PjxQc3NoIHZlcnNpb249IjEiPjxLZX1Vcmw+PCFbQ0RBVEFbaHR0cHM6Ly93d3cuZXhhbXBzZS5jb2
0vQ0FCL2tleWZpbGU/cz0xJnI9dGVzdF9kdHYmdD1EVFVmcD0yJmtjPTEeXDMxNTgyMTczNzExZTg5ZGY3ZmEx
NjNlYmE2OWRmJmtkPWU0OWMxYTIhYzAzYmUyZjVmMjA4NzYzNDlkYjVmYTZxV0+PC9LZX1Vcmw+PC9Qc3NoPj
wvVmVyaW1hdHJpeD4=</ns4:PSSH>
```

```
<ns4:ContentProtectionData>PG1wZD48L21wZD4=</ns4:ContentProtectionData>
```

```
<ns4:HLSSignalingData>I0VYVC1YLutFWTpNRVRIT0Q9QUVTLTEyOCxVUkk9Imh0dHBzOi8vd3d3LmV4Y4Y1w
bGUuY29tL0NBQI9rZX1maWxlP3M9MSZyPXRlc3RfZHR2JnQ9RFRWJnA9MiZrYz0xMWQzMtU4MjE3MzcwMwU4OW
RmN2ZhmTYzZWJhNjlkZiZrZD1lND1jMWB5YWMwM2JlMmY1ZjIwODc2MzQ5ZGI1ZmE2YSIsSVY9MHhmNjFlMjdj
MjY0MGQzNWYzMWEmMjdmODJlMjA5YjZkMg==</ns4:HLSSignalingData>
```

```
</ns4:DRMSystem>
```

```
<ns4:DRMSystem systemId="94ce86fb-07ff-4f43-adb8-93d2fa968ca2" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b">
```

```
<ns4:PSSH></ns4:PSSH>
```

```
<ns4:ContentProtectionData></ns4:ContentProtectionData>
```

```
<ns4:HLSSignalingData>I0VYVC1YLutFWTpNRVRIT0Q9U0FNUExFLUFFUyxVUkk9InNrZDovLzc0ZjdkOTBh
YmMyZmJwIj0wIiwOGQ0YmJlYWM0Y2NmMdhIiixLRVlGT1JNQQV9ImNvbS5hcHBzZS5zdHJlY1w1pbmdrZX1kZWxpdm
VyeSIsS0VZRk9STUFUVkVSU01PTlM9IjEi</ns4:HLSSignalingData>
```

```
</ns4:DRMSystem>
```

```
</ns4:DRMSystemList>
```

```
<ns4:ContentKeyPeriodList>
```

```
<ns4:ContentKeyPeriod id="keyPeriod_0909829f-40ff-4625-90fa-75da3e53278f"
index="2"/>
</ns4:ContentKeyPeriodList>
<ns4:ContentKeyUsageRuleList>
  <ns4:ContentKeyUsageRule kid="74f7d90a-bc2f-bc9b-08d4-bbeac4ccf08b">
    <ns4:KeyPeriodFilter periodId="keyPeriod_0909829f-40ff-4625-90fa-
75da3e53278f"/>
  </ns4:ContentKeyUsageRule>
</ns4:ContentKeyUsageRuleList>
</ns4:CPIX>
```

Request Example

Broadcast for Apple FairPlay Streaming using Verimatrix ITV

To use Verimatrix Internet TV, set `cpix.fairplay.verimatrix_itv.enabled=TRUE` in `/opt/vcas/multirights/etc/CEI/cei.properties`.

```
curl -v -X POST -H 'Content-Type: application/xml' 'http://localhost:8058/cpix/v1.1' -
d
'<?xml version="1.0"?>
<cpix:CPIX xmlns:cpix="urn:dashif:org:cpix"
xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc" contentId="test_dtv">
  <cpix:ContentKeyList>
    <cpix:ContentKey kid="74f7d90a-bc2f-bc9b-08d4-bbeac4ccf08b">
      </cpix:ContentKey>
    </cpix:ContentKeyList>
  <cpix:DRMSystemList>
    <cpix:DRMSystem systemId="94ce86fb-07ff-4f43-adb8-93d2fa968ca2" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b"> <!-- FairPlayStreaming -->
      <cpix:PSSH/>
      <cpix:ContentProtectionData/>
    </cpix:DRMSystem>
  </cpix:DRMSystemList>
  <cpix:ContentKeyPeriodList>
    <cpix:ContentKeyPeriod id="keyPeriod_0909829f-40ff-4625-90fa-75da3e53278f"
index="2"/>
  </cpix:ContentKeyPeriodList>
  <cpix:ContentKeyUsageRuleList>
    <cpix:ContentKeyUsageRule kid="74f7d90a-bc2f-bc9b-08d4-bbeac4ccf08b">
      <cpix:KeyPeriodFilter periodId="keyPeriod_0909829f-40ff-4625-90fa-
75da3e53278f" />
    </cpix:ContentKeyUsageRule>
  </cpix:ContentKeyUsageRuleList>
</cpix:CPIX>'
```

Response Example

Broadcast for Apple FairPlay Streaming using Verimatrix Internet TV

```

HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Date: Tue, 01 Aug 2017 17:57:33 GMT
Content-Type: application/xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:CPIX xmlns="http://www.w3.org/2000/09/xmlsig#" xmlns:ns2="urn:dashif:org:cpix"
xmlns:ns3="urn:ietf:params:xml:ns:keyprov:pskc"
xmlns:ns4="http://www.w3.org/2001/04/xmlenc#" contentId="test_dtv">
  <ns2:ContentKeyList>
    <ns2:ContentKey kid="74f7d90a-bc2f-bc9b-08d4-bbeac4ccf08b"
explicitIV="9h4nwmQNNfMaAn+C4Qm20g==">
      <ns2:Data>
        <ns3:Secret>
          <ns3:PlainValue>irWDMWodYA02Ube171/t2g==</ns3:PlainValue>
        </ns3:Secret>
      </ns2:Data>
    </ns2:ContentKey>
  </ns2:ContentKeyList>
  <ns2:DRMSysList>
    <ns2:DRMSys systemId="94ce86fb-07ff-4f43-adb8-93d2fa968ca2" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08b">
      <ns2:PSSH></ns2:PSSH>
      <ns2:ContentProtectionData></ns2:ContentProtectionData>
      <ns2:HLSSignalingData>I0VYVC1YLUtFWTPNRVRIT0Q9U0FNUEXFLUFFUyxVUkk9Imh0dHBzOi8vd3d3LmV4
YW1wbGUuY29tL0NBQI9rZXlmaWx1P3M9MSZyPXRlc3RfZHR2JnQ9RFRWJnA9MiZrYz0xMWQzMTU4MjE3Mzcw
U4OWRmN2ZhmTYzZWJhNjlkZiZrZD1lNDljMWE5YWMwM2JlMmY1ZjIwODc2MzQ5ZGI1ZmE2YSIsS0VZrk9STUFU
PSJjb20uYXBwbGUuc3RyZWFTaW5na2V5ZGVsaXZlcnk1LEtFWUZPUk1BVVFZFU1NJT05TPSIxIixJVj0weGY2MW
UyN2MyNjQwZDM1ZjMxYTAyN2Y4MmUxMDliNmQy</ns2:HLSSignalingData>
    </ns2:DRMSys>
  </ns2:DRMSysList>
  <ns2:ContentKeyPeriodList>
    <ns2:ContentKeyPeriod id="keyPeriod_0909829f-40ff-4625-90fa-75da3e53278f"
index="2"/>
  </ns2:ContentKeyPeriodList>
  <ns2:ContentKeyUsageRuleList>
    <ns2:ContentKeyUsageRule kid="74f7d90a-bc2f-bc9b-08d4-bbeac4ccf08b">
      <ns2:KeyPeriodFilter periodId="keyPeriod_0909829f-40ff-4625-90fa-
75da3e53278f"/>
    </ns2:ContentKeyUsageRule>
  </ns2:ContentKeyUsageRuleList>

```

```
</ns2:ContentKeyUsageRuleList>  
</ns2:CPIX>
```

Protecting Content Using a Unique Key Per Track

This section applies only to cloud-based Verimatrix VCAS versions.

If you want to use different keys to encrypt different tracks for Widevine or PlayReady content, such as audio, SD, and HD, you can make a single request to the VCAS CPIX interface for multiple keys. Each content key must be mapped to a unique intended track type using the KID attribute.

You can still use existing keys that do not have track types.

This section describes example curl requests and responses for cloud VCAS service CPIX 1.1 supporting multiple keys for each track on MultiDRM.

Use Cases

- [Create/Retrieve content key for a single track](#) (on page 21)
 - [Create/Retrieve a single content key for all tracks](#) (on page 23)
 - [Create/Retrieve multiple content keys for multiple tracks](#) (on page 26)
- [Response codes related to requesting multiple keys](#) (on page 28)

intendedTrackType

The following table lists the possible track types for requests with intended track types. The attribute is part of the cpix:ContentKeyUsageRule element. Valid values depend on the DRM type.

INTENDEDTRACKTYPE ATTRIBUTE

DRM	DESCRIPTION
Widevine	<p>Optional. Type of media track for Widevine content.</p> <p>Valid values:</p> <ul style="list-style-type: none"> • AUDIO • SD • HD • UHD • UHD1 • UHD2 <hr/> <p>NOTE UHD and UHD1 both use the security level set for UHD1.</p>
PlayReady	<p>Optional. Type of media track for PlayReady content.</p> <p>Valid values:</p> <ul style="list-style-type: none"> • AUDIO • SD • HD • UHD • UHD1 • UHD2 <hr/> <p>NOTE UHD, UHD1, and UHD2 all use the security level set for UHD.</p>

Create/Retrieve Content Key for a Single Track

Request Syntax

```
curl -v -X POST -H 'Content-Type: application/xml' 'https://localhost:8058/cpix/v1.1'  
-d @input.xml
```

Request Body Example

NOTE intendedTrackType is in cpix:ContentKeyUsageRuleList

```
<?xml version="1.0" encoding="utf-8"?>  
<cpix:CPIX xmlns:cpix="urn:dashif:org:cpix" xmlns:pskc="urn:ietf:params:xml:ns:keypr  
ov:pskc" contentId="dx-test7">  
  <cpix:ContentKeyList>  
    <cpix:ContentKey kid="9a04f079-9840-4286-ab92-  
be6bc9e136ef"></cpix:ContentKey>  
  </cpix:ContentKeyList>  
  <cpix:DRMSystemList>  
    <cpix:DRMSystem systemId="EDEF8BA9-79D6-4ACE-A3C8-27DCD51D21ED"  
kid="9a04f079-9840-4286-ab92-be6bc9e136ef"></cpix:DRMSystem>  
  
  </cpix:DRMSystemList>  
  <cpix:ContentKeyPeriodList>  
    <cpix:ContentKeyPeriod id="keyPeriod_9c786af2-f23f-37d2-a7f9-c94aaf3c94fe"  
index="0"></cpix:ContentKeyPeriod>  
  </cpix:ContentKeyPeriodList>  
  <cpix:ContentKeyUsageRuleList>  
    <cpix:ContentKeyUsageRule intendedTrackType="UHD" kid="9a04f079-9840-4286-  
ab92-be6bc9e136ef"></cpix:ContentKeyUsageRule>  
  </cpix:ContentKeyUsageRuleList>  
</cpix:CPIX>
```

Response Example

NOTE The CPIX document is updated to add key data to the ContentKeyList.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns3:CPIX xmlns="urn:ietf:params:xml:ns:keyprov:pskc"
xmlns:ns2="http://www.w3.org/2000/09/xmldsig#" xmlns:ns3="urn:dashif:org:cpix"
xmlns:ns4="http://www.w3.org/2001/04/xmlenc#" contentId="dx-test7">
  <ns3:ContentKeyList>
    <ns3:ContentKey kid="9a04f079-9840-4286-ab92-be6bc9e136ef"
explicitIV="enuW0ThnfhvtQDEtqRXI3Q==">
      <ns3:Data>
        <Secret>
          <PlainValue>/n3Q2+wF6pJVooqqyqV834w==</PlainValue>
        </Secret>
      </ns3:Data>
    </ns3:ContentKey>
  </ns3:ContentKeyList>
  <ns3:DRMSSystemList>
    <ns3:DRMSSystem systemId="EDEF8BA9-79D6-4ACE-A3C8-27DCD51D21ED" kid="9a04f079-
9840-4286-ab92-be6bc9e136ef">
      <ns3:PSSH>AAAAa3Bzc2gBAAAA7e+LqXnWSs6jyCfc1R0h7QAAAAGaBPB5mEBChquSvmvJ4TbvAAAAANwgBEhCa
BPB5mEBChquSvmvJ4TbvGgp2ZXJpbWF0cml1Ilg5YpWR4LXRlc3Q3JnM9MSoFU0RfSEQ=</ns3:PSSH>
    </ns3:DRMSSystem>
  </ns3:DRMSSystemList>
  <ns3:ContentKeyPeriodList>
    <ns3:ContentKeyPeriod id="keyPeriod_9c786af2-f23f-37d2-a7f9-c94aaf3c94fe"
index="0"/>
  </ns3:ContentKeyPeriodList>
  <ns3:ContentKeyUsageRuleList>
    <ns3:ContentKeyUsageRule kid="9a04f079-9840-4286-ab92-be6bc9e136ef"
intendedTrackType="UHD"/>
  </ns3:ContentKeyUsageRuleList>
</ns3:CPIX>
```

Create/Retrieve Content Key for All Tracks

NOTE This type of request is handled in the same way as requests from earlier VCAS versions.

Request Example

```
<?xml version="1.0"?>
<cpix:CPIX xmlns:cpix="urn:dashif:org:cpix"
xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc" contentId="test_vod3">
  <cpix:ContentKeyList>
    <cpix:ContentKey kid="74f7d90a-bc2f-bc9b-08d4-bbeac4ccf08f">
      </cpix:ContentKey>
    </cpix:ContentKeyList>
  <cpix:DRMSystemList>
    <cpix:DRMSystem systemId="9a04f079-9840-4286-ab92-e65be0885f95" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08f"> <!-- PlayReady -->
      <cpix:PSSH/>
      <cpix:ContentProtectionData/>
    </cpix:DRMSystem>
    <cpix:DRMSystem systemId="edef8ba9-79d6-4ace-a3c8-27dcd51d21ed" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08f"> <!-- Widevine -->
      <cpix:PSSH/>
      <cpix:ContentProtectionData/>
    </cpix:DRMSystem>
    <cpix:DRMSystem systemId="94ce86fb-07ff-4f43-adb8-93d2fa968ca2" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08f"> <!-- FairPlayStreaming -->
      <cpix:PSSH/>
      <cpix:ContentProtectionData/>
    </cpix:DRMSystem>
  </cpix:DRMSystemList>
</cpix:CPIX>
```

Response Example

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns3:CPIX xmlns="urn:ietf:params:xml:ns:keyprov:pskc"
xmlns:ns2="http://www.w3.org/2000/09/xmldsig#" xmlns:ns3="urn:dashif:org:cpix"
xmlns:ns4="http://www.w3.org/2001/04/xmlenc#" contentId="test_vod3">
  <ns3:ContentKeyList>
    <ns3:ContentKey kid="74f7d90a-bc2f-bc9b-08d4-bbeac4ccf08f"
explicitIV="hGGM8/6l3QCDnUyFUzDbeQ==">
```

```
<ns3:Data>
  <Secret>
    <PlainValue>eAG+m+jsg8t7oUuGEjkkOA==</PlainValue>
  </Secret>
</ns3:Data>
</ns3:ContentKey>
</ns3:ContentKeyList>
<ns3:DRMSystemList>
  <ns3:DRMSystem systemId="9a04f079-9840-4286-ab92-e65be0885f95" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08f">

<ns3:PSSH>AAADsnBzc2gBAAAAMgTweZhAQoarkuZb4IhflQAAAAF099kKvC+8mwjUu+rEzPCPAAAdfn4DAAAB
AAEAdAM8AFcAUgBNAEGARQBBAEQARQBSACAAeABtAGwAbgBzAD0AIgBoAHQAdABwADoALwAvAHMAyWBoAGUAbQ
BhAHMALgBtAGkAYwByAG8AcwBvAGYAdAAuAGMAbwBtAC8ARABSAE0ALwAyADAAMAA3AC8AMAAzAC8AUABsAGEA
eQBSAGUAYQBkAHkASABLAGEAZABLAHIAIgAgAHYAZQByAHMAaQBvAG4APQAiADQALgAwAC4AMAAuADAAIgA+AD
wARABBAFQAQQA+ADwAUABSAE8AVABFAEMAVABJAE4ARgBPAD4APABLAEUAWQBMAEUATgA+ADEANgA8AC8ASwBF
AFkATABFAE4APgA8AEEATABHAEkARAA+AEEARQBTAEMAVABSADwALwBBAEwARwBJAEQAPgA8AC8AUABSAE8AVA
BFAEMAVABJAE4ARgBPAD4APABLAEKARAA+AEMAdABuADMAZABDACsAOABtADcAdwBJADEATAB2AHEAeABNAHoA
dwBqAHcAPQA9ADwALwBLAEkARAA+ADwAQwBIAEUAQwBLAFMAVQBNA4AdgA5AFUAdgBKAGQARgAvAGcAOABBAD
0APAAvAEMASABFAEMASwBTAFUATQA+ADwATABBAF8AVQBSAEwAPgBoAHQAdABwADoALwAvAHAAcGbsAHMALgBk
AGEAbgAuAHYAYwBhAHMALgBuAGEAMQAuAHYAZQByAGkAbQBhAHQAcgBpAHgAZABLAHYAYwBsAG8AdQBkAC4Abg
BLAHQALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBnAGGAdABzAG0AYQBuAGEAZwBLAHIALgBhAHMAbQB4ADwA
LwBMAEEAXwBVAFIATAA+ADwATABVAEKAXwBVAFIATAA+AGGAdAB0AHAAOgAvAC8AcABYAGwAcwAuAGQAYQBuAC
4AdgBjAGEAcwAuAG4AYQAxAC4AdgBLAHIAaQBtAGEAdABYAGkAeABkAGUAdgBjAGwAbwB1AGQALgBuAGUAdAAv
AFABABhAHkAUgB1LAGEAZAB5AC8AcgBpAGcAaAB0AHMAbQBhAG4AYQBnAGUAcgAuAGEAcwBtAHgAPAAvAEwAVQ
BJAF8AVQBSAEwAPgA8AC8ARABBAFQAQQA+ADwALwBwXAFIATQBIAEUAQQBEEAUUgA+AA==</ns3:PSSH>

  <ns3:ContentProtectionData></ns3:ContentProtectionData>

<ns3:SmoothStreamingProtectionHeaderData>fgMAAAEQB0AzwAVwBSAE0ASABFAEEARABFAFIATAB4A
G0AbABuAHMAPQAiAGgAdAB0AHAAOgAvAC8AcwBjAGgAZQBtAGEAcwAuAG0AaQBjAHIAbWbZAG8AZgB0AC4AYwB
vAG0ALwBEAFIATQAvADIAMAAdcALwAwADMALwBQAGwAYQB5AFIAZQBhAGQAEQBIAGUAYQBkAGUAcgAiACAAd
gBLAHIAcWbPAG8AbgA9ACIANAAuADAAAgAwAC4AMAAiAD4APABEAEAEVABBAD4APABQAFIATwBUAEUAWQBUEk
ATgBGAE8APgA8AEsARQBZAEwARQBOAD4AMQA2ADwALwBLAEUAWQBMAEUATgA+ADwAQQBMAECASQBEAD4AQQBF
FMAQwBUAFIAPAAvAEEATABHAEkARAA+ADwALwBQAFIATwBUAEUAWQBUEkATgBGAE8APgA8AEsASQBEAD4AQwB
0AG4AMwBkAEMAKwa4AG0ANwB3AEkAMQBMAHYACQB4AE0AegB3AGoAdwA9AD0APAAvAEsASQBEAD4APABDAEGAR
QBDAEsAUwBVAE0APgB2ADkAVQB2AEoAZABGAC8AZwA4AEEAPQA8AC8AQwBIAEUAQwBLAFMAVQBNA4APABMAEE
AXwBVAFIATAA+AGGAdAB0AHAAOgAvAC8AcABYAGwAcwAuAGQAYQBuAC4AdgBjAGEAcwAuAG4AYQAxAC4AdgBLA
HIAaQBtAGEAdABYAGkAeABkAGUAdgBjAGwAbwB1AGQALgBuAGUAdAAvAFABABhAHkAUgB1LAGEAZAB5AC8AcgB
pAGcAaAB0AHMAbQBhAG4AYQBnAGUAcgAuAGEAcwBtAHgAPAAvAEwAQQBfAFUAWgBMAD4APABMAFUASQBfAFUAW
gBMAD4AaAB0AHQAcAA6AC8ALwBwAHIAbABzAC4AZABhAG4ALgB2AGMAYQBzAC4AbgBhADEALgB2AGUAcgBpAG0
AYQB0AHIAaQB4AGQAZQB2AGMAbABvAHUAZAAuAG4AZQB0AC8AUABsAGEAeQBSAGUAYQBkAHkALwByAGkAZwBoA
HQAcwBtAGEAbgBhAGcAZQByAC4AYQBzAG0AeAA8AC8ATABVAEKAXwBVAFIATAA+ADwALwBEAEAEVABBAD4APAA
vAFcAUgBNAEGARQBBAEQARQBSAD4A</ns3:SmoothStreamingProtectionHeaderData>

  </ns3:DRMSystem>

  <ns3:DRMSystem systemId="edef8ba9-79d6-4ace-a3c8-27dcd51d21ed" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08f">

<ns3:PSSH>AAAABHbzc2gBAAAA7e+LqXnWSs6jyCfc1R0h7QAAAAF099kKvC+8mwjUu+rEzPCPAAAAOAgBEhB0
99kKvC+8mwjUu+rEzPCPGgp2ZXJpbWF0cm14I9y9PXRlc3RfZm9kMyZzPTEqBVNEX0hE</ns3:PSSH>
```

```
<ns3:ContentProtectionData></ns3:ContentProtectionData>
</ns3:DRMSystem>
<ns3:DRMSystem systemId="94ce86fb-07ff-4f43-adb8-93d2fa968ca2" kid="74f7d90a-
bc2f-bc9b-08d4-bbeac4ccf08f">
  <ns3:PSSH></ns3:PSSH>
  <ns3:ContentProtectionData></ns3:ContentProtectionData>

<ns3:HLSSignalingData>IOVYVC1YLutFWTpNRVRIT0Q9U0FNUEXFLUFFUyxVUkk9InNrZDovLzc0ZjdkOTBh
YmMyZmJjOWIwOGQ0YmJlYWw0Y2NmMDhmIixLRVlGTlJNqVQ9ImNvbS5hcHBsZS5zdHJlYW1pbmdrZX1kZWxpdm
VyeSIsS0VZRk9STUFUVkVSU01PTlM9IjEi</ns3:HLSSignalingData>

  </ns3:DRMSystem>
</ns3:DRMSystemList>
<ns3:ContentKeyPeriodList/>
<ns3:ContentKeyUsageRuleList/>
</ns3:CPIX>
```

Create/Retrieve Multiple Content Keys for Multiple Tracks

Request Example

```
<?xml version="1.0" encoding="utf-8"?>
<cpix:CPIX xmlns:cpix="urn:dashif:org:cpix" xmlns:pskc="urn:ietf:params:xml:ns:keyprov:pskc" contentId="dx-test6">
  <cpix:ContentKeyList>
    <cpix:ContentKey kid="7a04f079-9840-5686-ab92-be6bc9e136ef"></cpix:ContentKey>
    <cpix:ContentKey kid="4a04f079-9840-5686-ab92-7fffdb22f759"></cpix:ContentKey>
  </cpix:ContentKeyList>
  <cpix:DRMSSystemList>
    <cpix:DRMSSystem systemId="EDEF8BA9-79D6-4ACE-A3C8-27DCD51D21ED" kid="7a04f079-9840-5686-ab92-be6bc9e136ef"></cpix:DRMSSystem>
    <cpix:DRMSSystem systemId="EDEF8BA9-79D6-4ACE-A3C8-27DCD51D21ED" kid="4a04f079-9840-5686-ab92-7fffdb22f759"></cpix:DRMSSystem>
  </cpix:DRMSSystemList>
  <cpix:ContentKeyPeriodList>
    <cpix:ContentKeyPeriod id="keyPeriod_9c786af2-f23f-37d2-a7f9-c94aaf3c94fe" index="0"></cpix:ContentKeyPeriod>
  </cpix:ContentKeyPeriodList>
  <cpix:ContentKeyUsageRuleList>
    <cpix:ContentKeyUsageRule intendedTrackType="AUDIO" kid="7a04f079-9840-5686-ab92-be6bc9e136ef"></cpix:ContentKeyUsageRule>
    <cpix:ContentKeyUsageRule intendedTrackType="UHD2" kid="4a04f079-9840-5686-ab92-7fffdb22f759"></cpix:ContentKeyUsageRule>
  </cpix:ContentKeyUsageRuleList>
</cpix:CPIX>
```

Response Example

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns3:CPIX xmlns="urn:ietf:params:xml:ns:keyprov:pskc"
xmlns:ns2="http://www.w3.org/2000/09/xmldsig#" xmlns:ns3="urn:dashif:org:cpix"
xmlns:ns4="http://www.w3.org/2001/04/xmlenc#" contentId="dx-test6">
  <ns3:ContentKeyList>
    <ns3:ContentKey kid="7a04f079-9840-5686-ab92-be6bc9e136ef"
explicitIV="x2/9Sch/12dySTl/BEx3QA==">
      <ns3:Data>
        <Secret>
          <PlainValue>e656bVqskJpTBBYR6Eei4Q==</PlainValue>
        </Secret>
      </ns3:Data>
    </ns3:ContentKey>
  </ns3:ContentKeyList>
</ns3:CPIX>
```

```

        </ns3:ContentKey>
        <ns3:ContentKey kid="4a04f079-9840-5686-ab92-7fffdb22f759"
explicitIV="ypaxt7ZX5b5FjxZInui24g==">
            <ns3:Data>
                <Secret>
                    <PlainValue>6DCXqxmlu4hKij0mLay90A==</PlainValue>
                </Secret>
            </ns3:Data>
        </ns3:ContentKey>
    </ns3:ContentKeyList>
    <ns3:DRMSSystemList>
        <ns3:DRMSSystem systemId="EDEF8BA9-79D6-4ACE-A3C8-27DCD51D21ED" kid="7a04f079-
9840-5686-ab92-be6bc9e136ef">
            <ns3:PSSH>AAAAe3Bzc2gBAAAA7e+LqXnWSs6jyCfc1R0h7QAAAAJ6BPB5mEBWhquSvmvJ4TbvSgTweZhAVoar
kn//2yL3WQAAADcIARIQegTweZhAVoarkr5ryeE27xoKdmVyaW1hdHJpeCIOcj1keC10ZXN0NiZzPTEqBVNEX0
hE</ns3:PSSH>
            </ns3:DRMSSystem>
            <ns3:DRMSSystem systemId="EDEF8BA9-79D6-4ACE-A3C8-27DCD51D21ED" kid="4a04f079-
9840-5686-ab92-7fffdb22f759">
                <ns3:PSSH>AAAAe3Bzc2gBAAAA7e+LqXnWSs6jyCfc1R0h7QAAAAJ6BPB5mEBWhquSvmvJ4TbvSgTweZhAVoar
kn//2yL3WQAAADcIARIQSgTweZhAVoarkn//2yL3WRoKdmVyaW1hdHJpeCIOcj1keC10ZXN0NiZzPTEqBVNEX0
hE</ns3:PSSH>
                </ns3:DRMSSystem>
            </ns3:DRMSSystemList>
            <ns3:ContentKeyPeriodList>
                <ns3:ContentKeyPeriod id="keyPeriod_9c786af2-f23f-37d2-a7f9-c94aaf3c94fe"
index="0"/>
            </ns3:ContentKeyPeriodList>
            <ns3:ContentKeyUsageRuleList>
                <ns3:ContentKeyUsageRule kid="7a04f079-9840-5686-ab92-be6bc9e136ef"
intendedTrackType="AUDIO"/>
                <ns3:ContentKeyUsageRule kid="4a04f079-9840-5686-ab92-7fffdb22f759"
intendedTrackType="UHD2"/>
            </ns3:ContentKeyUsageRuleList>
        </ns3:CPIX>
    
```

The response may have more keys than requested. In the above example, the UHD track's keyId was created earlier.

Response Codes Related to Requesting Multiple Keys

ERROR CODE	RESPONSE
400 Bad Request	<ul style="list-style-type: none">• MALFORMED_REQUEST : Parameter [kid] is duplicated in the request.• MALFORMED_REQUEST : Parameter [intendedTrackType] is duplicated in the request.• MALFORMED_REQUEST : keyIds and trackTypes size is mismatched in the request.

ERROR CODE	DESCRIPTION
OPERATION_SUCCESS	Successfully created or retrieved the key from the database
OPERATION_FAILURE	Failed to create or retrieve the key from the database
INVALID_PARAM	The parameters sent in the URL are invalid
NULL_CONTENTID	The contentId sent in the URL is null
NULL_SMSKEYID	The smsKeyId sent in the url is null
NULL_NETWORK	The networkType sent in the URL is null
INVALID_CONTENTID	The contentId sent in the URL is invalid or not present in the database
INVALID_POSITION	The position sent in the URL is invalid or not present in the database
INVALID_SMSKEYID	The smsKeyId sent in the URL is invalid or not present in the database
INVALID_PATH	The path sent in the URL is invalid
INVALID_SITEID	The siteId sent in the URL is invalid or not present in the DB
INTERNAL_SERVER_ERROR	Failed to perform the requested operation
BAD_REQUEST	The URL is not valid
MISSING_REQUEST_HEADER	HTTP headers are missing
DUPLICATE_KEY	The key provided in the request is already present in the database
INVALID_NETWORK	The networkType sent in the URL is invalid or not present in the database
INVALID_START_POSITION	The start position provided in the URL is invalid
INVALID_POSITION_INCREMENT	The position increment provided in the URL is invalid
INVALID_KEY_COUNT	The key count provided in the URL is invalid

Response Codes

NUMBER	ERROR MESSAGE	HTTP STATUS	DESCRIPTION
1	INVALID_CONTENTID	400 Bad Request	<code>contentId</code> attribute does not contain a valid content ID
2	INVALID_POSITION	400 Bad Request	<code>index</code> attribute is empty or negative when request payload contains <code>ContentKeyPeriodList</code>
3	MALFORMED_REQUEST	400 Bad Request	Key ID is missing; <code>ContentKeyList</code> is missing or empty
4	MALFORMED_KEYID	400 Bad Request	<code>kid</code> attribute is not a 16 byte canonical UUID formatted string
5	OPERATION_FAILURE (with MEI status code)	500 Internal Server Error	Multi-DRM Encryption Interface (MEI) failed to create content or key
6	OPERATION_FAILURE	500 Internal Server Error	Missing values in the <code>cei.properties</code> file

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Preface

About This Document

This document provides a description of the application program interface (API) between encoders/scramblers and the Verimatrix VCAS system.

The Verimatrix VCAS Common Encoder Interface (CEI) has two encoder interfaces:

- Native
- DASH-IF Content Protection Information Exchange (CPIX)

This document describes the part of the CEI API that defines the key exchange with encoders using the native specification. This document describes both CEI v2.0 and CEI v1.1.

Who Should Use This Document

Users of this document are those trying to integrate their encoders/scramblers to the Verimatrix VCAS system.

Readers should have:

- Working knowledge of encryption and key concepts
- Understanding of encoder/scrambler functionality
- Understanding of video formats and processing
- General knowledge of the Verimatrix VCAS system
- Have attended Verimatrix University

Overview

The Common Encoder Interface (CEI) is a RESTful interface using JavaScript Object Notation (JSON) format for the request body.

The primary functionality of the CEI is:

- Protection of content with multiple digital rights management (DRM) schemes (simultaneously)
- Support multiple keys per content item
- Support for content policies (copy controls, offline playback, and others)

Communication between an encoder and the CEI v2.0 occurs as follows:

3. Encoder requests the creation of a new content item using the [Create Asset](#) (on page 3) request.
4. Encoder requests creation of a new key using the [Create Key](#) (on page 7) request.
5. Encoder requests a content key using one of the following methods:
 - [Get Key by assetId and position](#) (on page 12)
 - [Get Key by assetId and keyId](#) (on page 17)
 - [Get Key by keyId](#) (on page 22)
6. Optional. Encoder sends a periodic [Heartbeat](#) (on page 26) request to ensure that the connection between the encoder and the CEI is still alive.

Communication between an encoder and the CEI v1.1 occurs as follows:

7. Encoder requests the creation of a new content item using the [Create Content](#) (on page 27) request. In the scope of the Verimatrix VCAS deployment, the content is uniquely identified by the `contentId`. In the case of multiple Verimatrix VCAS deployments, an optional deployment specific `siteId` can be prepended to the `contentId`. The pair, `siteId:contentId`, constitutes a unique content identifier across all the Verimatrix VCAS deployments.
8. Encoder requests a content key using the [Create/Retrieve Key](#) (on page 29) request. The encoder must include the `contentId` and the `timestamp` in the request. The response to the Create/Retrieve key request includes the `key`, `key ID`, and the metadata specific to each DRM enabled on the Verimatrix VCAS

system. The encoder can issue multiple key requests per content item; each with a different `timestamp`.

9. Optional. Encoder sends a periodic [Heartbeat](#) (on page 36) request to ensure that the connection between the encoder and the CEI is still alive.

Available Methods: CEI v2.0

This section describes the methods available in the CEI v2.0 API.

URI Scheme

BasePath: /cei/v2.0

Create Asset

Creates a content item based on the passed-in parameters. In the scope of the Verimatrix VCAS deployment, the `assetId` uniquely defines the content. In the case of multiple Verimatrix VCAS deployments, the encoder can optionally prepend a deployment specific `siteId` to the `assetId`. The pair, `siteId:assetId`, constitutes a unique content identifier across all the Verimatrix VCAS deployments.

An encoder must send this request before sending any `Create Key` request for a content item.

Request Path

```
POST /cei/v2.0/assets?siteId={siteId}&position={position}
```

Request Body

```
{
  "createAssetRequest" : {
    "assetId": string,
    "assetType": string
  }
}
```

Request Example

```
curl -v -X POST 'http://localhost:8058/cei/v2.0/assets?siteId=1&position=1' -H
'Content-Type: application/json'
-d '{
  "createAssetRequest" : {
    "assetId": "test",
    "assetType": "DTV"
  }
}'
```

Request Parameters

NAME	TYPE	OCCURS	DESCRIPTION
siteId	Integer	0..1	<p>Optional. Unique identifier for the site. Use a site identifier to differentiate between operators.</p> <p>If you do not provide a <code>siteId</code>, the method uses the local <code>siteId</code> from the license.</p> <p>Example: 121</p>
position	Long	0..1	<p>Optional. Epoch time associated with the start time of the asset.</p> <p><code>position</code> applies only to DTV assets. If added to a VOD asset, it is ignored.</p> <p>Default: Current epoch time</p> <p>Valid range: 0 – 2147483647 (00:00:00 1-Jan-1970 - 03:14:07 19-Jan-2038 UTC)</p>
assetId	String	1..1	<p>Unique identifier for the content.</p> <p>Example: test</p> <p>Default: none</p>
assetType	String	1..1	<p>Content delivery type.</p> <p>Valid values:</p> <ul style="list-style-type: none"> • VOD • DTV

Response Example

```

HTTP/1.1 200 OK
{
  "createAssetResponse": {
    "status": "OK",
    "statusMessage": "Successfully created asset with assetId=test and siteId=1"
  }
}

```

Response Parameters

HTTP CODE	TYPE	OCCURS	DESCRIPTION
200	createAssetResponse (on page 39)	1..1	Response object containing status information

For information on other possible HTTP responses, refer to [Error Codes](#) (on page **Error! Bookmark not defined.**).

Create Key

Creates a key in a specified position for an existing content item.

Request Path

```
POST /cei/v2.0/assets/{assetId}/keys?siteId={siteId}
```

Request Body

```
{
  "createKeyRequest" : {
    "position": long
  }
}
```

Request Parameters

NAME	TYPE	OCCURS	DESCRIPTION
assetId	String	1..1	<p>Unique identifier for the content item.</p> <p>assetId is the same as the assetId that you defined during content item creation. For more information, refer to Create Asset (on page 3).</p> <p>Example: test</p>
position	Long	1..1	<p>Epoch time or index of the position.</p> <p>position must not be a negative number.</p> <p>If the key is for Internet TV DTV content then position must be epoch time.</p> <p>Epoch time must be in the future.</p> <p>Examples:</p> <ul style="list-style-type: none"> • 1458172978 • 1
siteId	Integer	0..1	<p>Optional. Unique identifier for the site. Use a site identifier to differentiate between operators.</p> <p>If you do not provide a siteId, the method uses the local siteId from the license.</p> <p>Example: 1</p>

Request Example

```
curl -v -X POST 'http://localhost:8058/cei/v2.0/assets/test/keys?siteId=1' -H
'Content-Type: application/json'
-d '{"createKeyRequest": {"position": 1 }}'
```

Response Example

```

HTTP/1.1 200 OK
{
  "keyResponse": {
    "status": "OK",
    "statusMessage": "Successfully created key for assetId=test, position=1,
siteId=1",
    "drmList": [
      {
        "drmName": "PLAYREADY",
        "streamingProtocol": "SS",
        "keyData": [
          {
            "assetKey": {
              "keyId": "ff6d122065d78d39804cdeb4dca38d76",
              "key": "8ad61564bb7dcd426293df4c17cb91a8",
              "position": 1
            },
            "drmData": {
              "manifestHeader":
"AgMAAAEAAQD4AjwAVwBSAE0ASABFAEEARABFAFIATAB4AG0AbABuAHMAPQAIAGgAdAB0AHAAOgAvAC8AcwBjA
GgAZQBtAGEAcwAuAG0AaQBJAHIAbwBzAG8AZgB0AC4AYwBvAG0ALwBEAFIATQAvADIAMAAdcALwAwADMALwB
QAGwAYQB5AFIAZQBhAGQAEQBIAGUAYQBkAGUAcgAIAACAAdgBlAHIAcwbPAG8AbgA9ACIANAAuADAAALgAwAC4AM
AAiAD4APABEAEEAVABBAD4APABQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsARQBZAEwARQBOAD4AMQA2ADw
ALwBLAEUAwQBMAEUATgA+ADwAQQBMAECASQBEAD4AQQBFMAQwBUAFIAPAavAEEATABHAEkARAA+ADwALwBQA
FIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEAD4ASQBCAEoAdAAvADkAZABsAE8AWQAYEEAVABOAYAMAA
zAEsATwBOAGQAZwA9AD0APAAvAEsASQBEAD4APABDAEgARQBDAEsAUwBVAE0APgA0AFcAbQA4AHgAVwA4AHEAR
QBrAEEAPQA8AC8AQwBIAEUQwBLAFMAVQBNA4APABMAEEAXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdc
ALgAwAc4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBnAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhA
HMAbQB4ADwALwBMAEEAXwBVAFIATAA+ADwATABVAEKAXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdcALgA
wAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBnAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhAHMAb
QB4ADwALwBMAFUASQBfAFUAUgBMAD4APAAvAEQAQQBUAEEAPgA8AC8AVwBSAE0ASABFAEEARABFAFIATPgA="
            }
          }
        ]
      },
      {
        "drmName": "PLAYREADY",
        "streamingProtocol": "DASH",
        "keyData": [
          {
            "assetKey": {
              "keyId": "ff6d122065d78d39804cdeb4dca38d76",

```

```

        "key": "8ad61564bb7dcd426293df4c17cb91a8",
        "position": 1
    },
    "drmData": {
        "drmSystemId": "9a04f079-9840-4286-ab92-e65be0885f95",
        "pssh": {
            "data":
"AgMAAAEAAQD4AjwAVwBSAE0ASABFAEEARABFAFIATAB4AG0AbABuAHMAPQAIAGgAdAB0AHAAOgAvAC8AcwBjA
GgAZQBtAGEAcwAuAG0AaQbjAHIAbwBzAG8AZgB0AC4AYwBvAG0ALwBEAFIATQAvADIAMAAdcALwAwADMALwB
QAGwAYQB5AFIAZQBhAGQAEQBIAGUAYQBkAGUAcgAiACAAdgBlAHIAcwBpAG8AbgA9ACIANAAuADAAALgAwAC4AM
AAiAD4APABEAEAEAVABBAD4APABQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsARQBZAEwARQBOAD4AMQA2ADw
ALwBLAEUAwQBMAEUATgA+ADwAQQBMAECASQBEAD4AQQBFMAQwBUAFIAPAavAEEATABHAEkARAA+ADwALwBQA
FIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEAD4ASQBCAEoAdAAvADkAZABsAE8AWQAYAEAEAVABOADYAMAA
zAEsATwBOAGQAZwA9AD0APAAvAEsASQBEAD4APABDAEgARQBDAEsAUwBVAE0APgA0AFcAbQA4AHgAVwA4AHEAR
QBrAEAEAPQA8AC8AQwBIAEUAQwBLAFMAVQBNAD4APABMAEEEXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdc
ALgAwAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBNAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhA
HMAbQB4ADwALwBMAEEEXwBVAFIATAA+ADwATABVAEKAXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdcALgA
wAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBNAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhAHMAb
QB4ADwALwBMAFUASQBfAFUAUgBMAD4APAAvAEQAQQBUAEAPgA8AC8AVwBSAE0ASABFAEEARABFAFIATAPgA="
            }
        }
    }
},
{
    "drmName": "WIDEVINE",
    "streamingProtocol": "DASH",
    "keyData": [
        {
            "assetKey": {
                "keyId": "ff6d122065d78d39804cdeb4dca38d76",
                "key": "8ad61564bb7dcd426293df4c17cb91a8",
                "position": 1
            },
            "drmData": {
                "drmSystemId": "edef8ba9-79d6-4ace-a3c8-27dcd51d21ed",
                "pssh": {
                    "data":
"CAESEp9tEiB11405gEzetNyjjXyACnZlcm1tYXRyaXgiCnI9dGVzdCZzPTEqBVNEX0hE"
                }
            }
        }
    ]
},
},

```



```

{
  "drmName": "FAIRPLAY_STREAMING",
  "streamingProtocol": "HLS",
  "keyData": [
    {
      "assetKey": {
        "keyId": "ff6d122065d78d39804cdeb4dca38d76",
        "key": "8ad61564bb7dcd426293df4c17cb91a8",
        "iv": "ee7166d46dda0af473a4a1ad6e4463c",
        "position": 1
      },
      "drmData": {
        "licenseServerUrl": "http://sp-
mr433.dev.ussd.verimatrix.com:8064/fpsa/v1.0",
        "keyUri": "r=test&s=1"
      }
    }
  ]
}

```

Response Parameters

HTTP CODE	TYPE	OCCURS	DESCRIPTION
200	KeyResponse (on page 43)	1..1	Key response object containing information about the content keys for different DRM types.

For information on other possible HTTP responses, refer to [Error Codes](#) (on page **Error! Bookmark not defined.**).

Get Key by assetId and Position

Retrieves a key for a content item with a given `assetId` and `key position`.

Request Path

```
GET /cei/v2.0/assets/{assetId}/keys?position=1&siteId=1
```

Request Parameters

NAME	TYPE	OCCURS	DESCRIPTION
<code>assetId</code>	String	1..1	<p>Unique identifier for the content item.</p> <p><code>assetId</code> is the same as the <code>assetId</code> that was defined during creation of the content item. For more information, refer to Create Asset (on page 3).</p> <p>Example: test</p>
<code>position</code>	Long	1..1	<p>Epoch time or index for which the encoder is requesting the key.</p> <p><code>position</code> is the same as the <code>position</code> that was defined during creation of the key. For more information, refer to Create Key (on page 7).</p> <p>Example: 1458172978</p>
<code>siteId</code>	Integer	0..1	<p>Optional. Unique identifier for the site. Use a site identifier to differentiate between operators.</p> <p>If you do not provide a <code>siteId</code>, the method uses the local <code>siteId</code> from the license.</p> <p>Example: 121</p>

Request Example

```
curl -v -X GET 'http://localhost:8058/cei/v2.0/assets/test/keys?siteId=1&position=1'
```

Response Example

```

HTTP/1.1 200 OK
{
  "keyResponse": {
    "status": "OK",
    "statusMessage": "Successfully retrieved key for assetId=test, position=1,
siteId=1",
    "drmList": [
      {
        "drmName": "PLAYREADY",
        "streamingProtocol": "SS",
        "keyData": [
          {
            "assetKey": {
              "keyId": "ff6d122065d78d39804cdeb4dca38d76",
              "key": "8ad61564bb7dcd426293df4c17cb91a8",
              "position": 1
            },
            "drmData": {
              "manifestHeader":
"AgMAAAEAAQD4AjwAVwBSAE0ASABFAEEARABFAFIATAB4AG0AbABuAHMAPQAIAGgAdAB0AHAAOgAvAC8AcwBjA
GgAZQBtAGEAcwAuAG0AaQBJAHIAbwBzAG8AZgB0AC4AYwBvAG0ALwBEAFIATQAvADIAMAAdcALwAwADMALwB
QAGwAYQB5AFIAZQBhAGQAEQBIAGUAYQBkAGUAcgAIAACAAdgBlAHIAcwbPAG8AbgA9ACIANAAuADAAALgAwAC4AM
AAiAD4APABEAEEAVABBAD4APABQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsARQBZAEwARQBOAD4AMQA2ADw
ALwBLAEUAWQBMAEUATgA+ADwAQQBMAECASQBEAD4AQQBFMAQwBUAFIAPAavAEEATABHAekARAA+ADwALwBQA
FIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEAD4ASQBCAEoAdAAvADkAZABsAE8AWQAYAEAEVABOAYAMAA
zAEsATwBOAGQAZwA9AD0APAAvAEsASQBEAD4APABDAEgARQBDAEsAUwBVAE0APgA0AFcAbQA4AHgAVwA4AHEAR
QBrAEEAPQA8AC8AQwBIAEUAQwBLAFMAVQBNA4APABMAEEAXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdc
ALgAwAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBnAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhA
HMAbQB4ADwALwBMAEEAXwBVAFIATAA+ADwATABVAEKAXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdcALgA
wAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBnAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhAHMAb
QB4ADwALwBMAFUASQBfAFUAUgBMAD4APAAvAEQAQQBUAEEAPgA8AC8AVwBSAE0ASABFAEEARABFAFIATPgA="
            }
          }
        ],
        "drmName": "PLAYREADY",
        "streamingProtocol": "DASH",
        "keyData": [
          {
            "assetKey": {
              "keyId": "ff6d122065d78d39804cdeb4dca38d76",

```

```

        "key": "8ad61564bb7dcd426293df4c17cb91a8",
        "position": 1
    },
    "drmData": {
        "drmSystemId": "9a04f079-9840-4286-ab92-e65be0885f95",
        "pssh": {
            "data":
"AgMAAAEAAQD4AjwAVwBSAE0ASABFAEEARABFAFIATAB4AG0AbABuAHMAPQAIAGgAdAB0AHAAOgAvAC8AcwBjA
GgAZQBtAGEAcwAuAG0AaQbjAHIAbwBzAG8AZgB0AC4AYwBvAG0ALwBEAFIATQAvADIAMAAdcALwAwADMALwB
QAGwAYQB5AFIAZQBhAGQAeQBIAGUAYQBkAGUAcgAiACAAdgBlAHIAcwbPAG8AbgA9ACIANAAuADAAALgAwAC4AM
AAiAD4APABEAEAEVABBAD4APABQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsARQBZAEwARQBOAD4AMQA2ADw
ALwBLAEUAwQBMAEUATgA+ADwAQQBMAECASQBEAD4AQQBFMAQwBUAFIAPAavAEEATABHAEkARAA+ADwALwBQA
FIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEAD4ASQBCAEoAdAAvADkAZABsAE8AWQAYAEAEVABOADYAMAA
zAEsATwBOAGQAZwA9AD0APAAvAEsASQBEAD4APABDAEgARQBDAEsAUwBVAE0APgA0AFcAbQA4AHgAVwA4AHEAR
QBrAEAEAPQA8AC8AQwBIAEUAQwBLAFMAVQBNAD4APABMAEEEXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdc
ALgAwAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAeQAvAHIAaQBNAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhA
HMAbQB4ADwALwBMAEEEXwBVAFIATAA+ADwATABVAEKAXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdcALgA
wAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAeQAvAHIAaQBNAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhAHMAb
QB4ADwALwBMAFUASQBfAFUAUgBMAD4APAAvAEQAQQBUAEAPgA8AC8AVwBSAE0ASABFAEEARABFAFIATPgA="
            }
        }
    }
}
],
{
    "drmName": "WIDEVINE",
    "streamingProtocol": "DASH",
    "keyData": [
        {
            "assetKey": {
                "keyId": "ff6d122065d78d39804cdeb4dca38d76",
                "key": "8ad61564bb7dcd426293df4c17cb91a8",
                "position": 1
            },
            "drmData": {
                "drmSystemId": "edef8ba9-79d6-4ace-a3c8-27dcd51d21ed",
                "pssh": {
                    "data":
"CAESEP9tEiB11405gEzetNyjjXyACnZlcm1tYXRyaXgiCnI9dGVzdCZzPTEqBVNEX0hE"
                }
            }
        }
    ]
},

```

```

{
  "drmName": "FAIRPLAY_STREAMING",
  "streamingProtocol": "HLS",
  "keyData": [
    {
      "assetKey": {
        "keyId": "ff6d122065d78d39804cdeb4dca38d76",
        "key": "8ad61564bb7dcd426293df4c17cb91a8",
        "iv": "ee7166d46dda0af473a4a1ad6e4463c",
        "position": 1
      },
      "drmData": {
        "licenseServerUrl": "http://sp-
mr433.dev.ussd.verimatrix.com:8064/fpsa/v1.0",
        "keyUri": "r=test&s=1"
      }
    }
  ]
}

```

Response Parameters

HTTP CODE	TYPE	OCCURS	DESCRIPTION
200	KeyResponse (on page 43)	1..1	Key response object containing information about the content keys for different DRM types.

For information on other possible HTTP responses, refer to [Error Codes](#) (on page **Error! Bookmark not defined.**).

Get Key by assetId and keyId

Retrieves a key for a content item with a given `assetId` and `keyId`.

Request Path

```
GET /cei/v2.0/assets/{assetId}/keys/{keyId}?siteId=1
```

Request Parameters

NAME	TYPE	OCCURS	DESCRIPTION
<code>assetId</code>	String	1..1	<p>Unique identifier for the content item.</p> <p><code>assetId</code> is the same as the <code>assetId</code> that you defined during content item creation. For more information, refer to Create Asset (on page 3).</p> <p>Example: test</p>
<code>keyId</code>	Long	1..1	<p>Unique key identifier in UUID format.</p> <p><code>keyId</code> is the same as the <code>keyId</code> returned by the CEI during key creation. For more information, refer to Create Key (on page 7).</p> <p>Example: ff6d1220-65d7-8d39-804c-deb4dca38d76</p>
<code>siteId</code>	Integer	0..1	<p>Optional. Unique identifier for the site. Use a site identifier to differentiate between operators.</p> <p>If you do not provide a <code>siteId</code>, the method uses the local <code>siteId</code> from the license.</p> <p>Example: 121</p>

Request Example

```
curl -v -X GET 'http://localhost:8058/cei/v2.0/assets/test/keys/ff6d1220-65d7-8d39-804c-deb4dca38d76?siteId=1'
```


Response Example

```

HTTP/1.1 200 OK
{
  "keyResponse": {
    "status": "OK",
    "statusMessage": "Successfully retrieved key for assetId=test, keyId=ff6d1220-65d7-8d39-804c-deb4dca38d76, siteId=1",
    "drmList": [
      {
        "drmName": "PLAYREADY",
        "streamingProtocol": "SS",
        "keyData": [
          {
            "assetKey": {
              "keyId": "ff6d122065d78d39804cdeb4dca38d76",
              "key": "8ad61564bb7dcd426293df4c17cb91a8",
              "position": 1
            },
            "drmData": {
              "manifestHeader":
                "AgMAAAEAAQD4AjwAVwBSAE0ASABFAEEARABFAFIATAB4AG0AbABuAHMAPQAIAGgAdAB0AHAAOgAvAC8AcwBjA
                GgAZQBtAGEAcwAuAG0AaQBJAHIAbwBzAG8AZgB0AC4AYwBvAG0ALwBEAFIATQAvADIAMAAdcALwAwADMALwB
                QAGwAYQB5AFIAZQBhAGQAEQBIAGUAYQBkAGUAcgAIAACAAdgBlAHIAcwbPAG8AbgA9ACIANAAuADAAALgAwAC4AM
                AAiAD4APABEAEEAVABBAD4APABQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsARQBZAEwARQBOAD4AMQA2ADw
                ALwBLAEUAWQBMAEUATgA+ADwAQQBMAECASQBEAD4AQQBFMAQwBUAFIAPAavAEEATABHAEkARAA+ADwALwBQA
                FIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEAD4ASQBCAEoAdAAvADkAZABsAE8AWQAYEEAVABOAYAMAA
                zAEsATwBOAGQAZwA9AD0APAAvAEsASQBEAD4APABDAEgARQBDAEsAUwBVAE0APgA0AFcAbQA4AHgAVwA4AHEAR
                QBrAEEAPQA8AC8AQwBIAEUAQwBLAFMAVQBNAD4APABMAEEAXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdc
                ALgAwAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBnAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhA
                HMAbQB4ADwALwBMAEEAXwBVAFIATAA+ADwATABVAEKAXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdcALgA
                wAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBnAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhAHMAb
                QB4ADwALwBMAFUASQBfAFUAUgBMAD4APAAvAEQAQQBUAEEAPgA8AC8AVwBSAE0ASABFAEEARABFAFIATPgA="
            }
          }
        ]
      },
      {
        "drmName": "PLAYREADY",
        "streamingProtocol": "DASH",
        "keyData": [
          {
            "assetKey": {
              "keyId": "ff6d122065d78d39804cdeb4dca38d76",

```

```

        "key": "8ad61564bb7dcd426293df4c17cb91a8",
        "position": 1
    },
    "drmData": {
        "drmSystemId": "9a04f079-9840-4286-ab92-e65be0885f95",
        "pssh": {
            "data":
"AgMAAAEAAQD4AjwAVwBSAE0ASABFAEEARABFAFIATAB4AG0AbABuAHMAPQAIAGgAdAB0AHAAOgAvAC8AcwBjA
GgAZQBtAGEAcwAuAG0AaQbjAHIAbwBzAG8AZgB0AC4AYwBvAG0ALwBEAFIATQAvADIAMAAdcALwAwADMALwB
QAGwAYQB5AFIAZQBhAGQAEQBIAGUAYQBkAGUAcgAiACAAdgBlAHIAcwbPAG8AbgA9ACIANAAuADAAALgAwAC4AM
AAiAD4APABEAEAEVABBAD4APABQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsARQBZAEwARQBOAD4AMQA2ADw
ALwBLAEUAwQBMAEUATgA+ADwAQQBMAECASQBEAD4AQQBFMAQwBUAFIAPAavAEEATABHAEkARAA+ADwALwBQA
FIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEAD4ASQBCAEoAdAAvADkAZABsAE8AWQAYAEAEVABOADYAMAA
zAEsATwBOAGQAZwA9AD0APAAvAEsASQBEAD4APABDAEgARQBDAEsAUwBVAE0APgA0AFcAbQA4AHgAVwA4AHEAR
QBrAEAEAPQA8AC8AQwBIAEUAQwBLAFMAVQBNAD4APABMAEEEXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdc
ALgAwAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBNAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhA
HMAbQB4ADwALwBMAEEEXwBVAFIATAA+ADwATAEVAEKAXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdcALgA
wAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBNAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhAHMAb
QB4ADwALwBMAFUASQBfAFUAUgBMAD4APAAvAEQAQQBUAEAPgA8AC8AVwBSAE0ASABFAEEARABFAFIATPgA="
            }
        }
    }
},
{
    "drmName": "WIDEVINE",
    "streamingProtocol": "DASH",
    "keyData": [
        {
            "assetKey": {
                "keyId": "ff6d122065d78d39804cdeb4dca38d76",
                "key": "8ad61564bb7dcd426293df4c17cb91a8",
                "position": 1
            },
            "drmData": {
                "drmSystemId": "edef8ba9-79d6-4ace-a3c8-27dcd51d21ed",
                "pssh": {
                    "data":
"CAESEp9tEiB11405gEzetNyjjXyAcnZlcm1tYXRyaXgiCnI9dGVzdCZzPTEqBVNEX0hE"
                }
            }
        }
    ]
},
},

```

```

{
  "drmName": "FAIRPLAY_STREAMING",
  "streamingProtocol": "HLS",
  "keyData": [
    {
      "assetKey": {
        "keyId": "ff6d122065d78d39804cdeb4dca38d76",
        "key": "8ad61564bb7dcd426293df4c17cb91a8",
        "iv": "ee7166d46dda0af473a4a1ad6e4463c",
        "position": 1
      },
      "drmData": {
        "licenseServerUrl": "http://sp-
mr433.dev.ussd.verimatrix.com:8064/fpsa/v1.0",
        "keyUri": "r=test&s=1"
      }
    }
  ]
}

```

Response Parameters

HTTP CODE	TYPE	OCCURS	DESCRIPTION
200	KeyResponse (on page 43)	1..1	Key response object containing information about the content keys for different DRM types.

For information on other possible HTTP responses, refer to [Error Codes](#) (on page **Error! Bookmark not defined.**).

Get Key by keyId

Retrieves a key for a given `keyId`.

Request Path

```
GET /cei/v2.0/keys/{keyId}?siteId=1
```

Request Parameters

NAME	TYPE	OCCURS	DESCRIPTION
<code>keyId</code>	Long	1..1	Unique key identifier in UUID format. <code>keyId</code> is the same as the <code>keyId</code> returned by the CEI during key creation. For more information, refer to Create Key (on page 7). Example: ff6d1220-65d7-8d39-804c-deb4dca38d76
<code>siteId</code>	Integer	0..1	Optional. Unique identifier for the site. Use a site identifier to differentiate between operators. If you do not provide a <code>siteId</code> , the method uses the local <code>siteId</code> from the license. Example: 1

Request Example

```
curl -v -X GET 'http://localhost:8058/cei/v2.0/keys/ff6d1220-65d7-8d39-804c-deb4dca38d76?siteId=1'
```

Response Example

```

HTTP/1.1 200 OK
{
  "keyResponse": {
    "status": "OK",
    "statusMessage": "Successfully retrieved key for keyId=ff6d1220-65d7-8d39-804c-
deb4dca38d76, siteId=1",
    "drmList": [
      {
        "drmName": "PLAYREADY",
        "streamingProtocol": "SS",
        "keyData": [
          {
            "assetKey": {
              "keyId": "ff6d122065d78d39804cdeb4dca38d76",
              "key": "8ad61564bb7dcd426293df4c17cb91a8",
              "position": 1
            },
            "drmData": {
              "manifestHeader":
"AgMAAAEAAQD4AjwAVwBSAE0ASABFAEEARABFAFIATAB4AG0AbABuAHMAPQAIAGgAdAB0AHAAOgAvAC8AcwBjA
GgAZQBtAGEAcwAuAG0AaQBJAHIAbwBzAG8AZgB0AC4AYwBvAG0ALwBEAFIATQAvADIAMAAdcALwAwADMALwB
QAGwAYQB5AFIAZQBhAGQAEQBIAGUAYQBkAGUAcgAIAACAAdgBlAHIAcwbPAG8AbgA9ACIANAAuADAAALgAwAC4AM
AAiAD4APABEAEEAVABBAD4APABQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsARQBZAEwARQBOAD4AMQA2ADw
ALwBLAEUAWQBMAEUATgA+ADwAQQBMAECASQBEAD4AQQBFMAQwBUAFIAPAavAEEATABHAEkARAA+ADwALwBQA
FIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEAD4ASQBCAEoAdAAvADkAZABsAE8AWQAYEEAVABOAYAMAA
zAEsATwBOAGQAZwA9AD0APAAvAEsASQBEAD4APABDAEgARQBDAEsAUwBVAE0APgA0AFcAbQA4AHgAVwA4AHEAR
QBrAEEAPQA8AC8AQwBIAEUAQwBLAFMAVQBNA4APABMAEEAXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdc
ALgAwAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBnAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhA
HMAbQB4ADwALwBMAEEAXwBVAFIATAA+ADwATABVAEKAXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdcALgA
wAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBnAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhAHMAb
QB4ADwALwBMAFUASQBfAFUAUgBMAD4APAAvAEQAQQBUAEEAPgA8AC8AVwBSAE0ASABFAEEARABFAFIATPgA="
            }
          }
        ],
        "drmName": "PLAYREADY",
        "streamingProtocol": "DASH",
        "keyData": [
          {
            "assetKey": {
              "keyId": "ff6d122065d78d39804cdeb4dca38d76",

```

```

        "key": "8ad61564bb7dcd426293df4c17cb91a8",
        "position": 1
    },
    "drmData": {
        "drmSystemId": "9a04f079-9840-4286-ab92-e65be0885f95",
        "pssh": {
            "data":
"AgMAAAEAAQD4AjwAVwBSAE0ASABFAEEARABFAFIATAB4AG0AbABuAHMAPQAIAGgAdAB0AHAAOgAvAC8AcwBjA
GgAZQBtAGEAcwAuAG0AaQbjAHIAbwBzAG8AZgB0AC4AYwBvAG0ALwBEAFIATQAvADIAMAAdcALwAwADMALwB
QAGwAYQB5AFIAZQBhAGQAEQBIAGUAYQBkAGUAcgAiACAAdgBlAHIAcwbPAG8AbgA9ACIANAAuADAAALgAwAC4AM
AAiAD4APABEAEAEVABBAD4APABQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsARQBZAEwARQBOAD4AMQA2ADw
ALwBLAEUAwQBMAEUATgA+ADwAQQBMAEcASQBEAD4AQQBFMAQwBUAFIAPAavAEEATABHAEkARAA+ADwALwBQA
FIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEAD4ASQBCAEoAdAAvADkAZABsAE8AWQAYAEAEVABOADYAMAA
zAEsATwBOAGQAZwA9AD0APAAvAEsASQBEAD4APABDAEgARQBDAEsAUwBVAE0APgA0AFcAbQA4AHgAVwA4AHEAR
QBrAEAEAPQA8AC8AQwBIAEUUAQwBLAFMAVQBNAD4APABMAEEEXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdc
ALgAwAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBNAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhA
HMAbQB4ADwALwBMAEEEXwBVAFIATAA+ADwATABVAEkAXwBVAFIATAA+AGgAdAB0AHAAOgAvAC8AMQAYAdcALgA
wAC4AMAAuADEALwBQAGwAYQB5AFIAZQBhAGQAEQAvAHIAaQBNAGgAdABzAG0AYQBuAGEAZwBlAHIALgBhAHMAb
QB4ADwALwBMAFUASQBfAFUAUgBMAD4APAAvAEQAQQBUAEAPgA8AC8AVwBSAE0ASABFAEEARABFAFIATAPgA="
            }
        }
    }
},
{
    "drmName": "WIDEVINE",
    "streamingProtocol": "DASH",
    "keyData": [
        {
            "assetKey": {
                "keyId": "ff6d122065d78d39804cdeb4dca38d76",
                "key": "8ad61564bb7dcd426293df4c17cb91a8",
                "position": 1
            },
            "drmData": {
                "drmSystemId": "edef8ba9-79d6-4ace-a3c8-27dcd51d21ed",
                "pssh": {
                    "data":
"CAESEP9tEiB11405gEzetNyjjXyAcnZlcm1tYXRyaXgiCnI9dGVzdCZzPTEqBVNEX0hE"
                }
            }
        }
    ]
},
},

```

```

{
  "drmName": "FAIRPLAY_STREAMING",
  "streamingProtocol": "HLS",
  "keyData": [
    {
      "assetKey": {
        "keyId": "ff6d122065d78d39804cdeb4dca38d76",
        "key": "8ad61564bb7dcd426293df4c17cb91a8",
        "iv": "ee7166d46dda0af473a4a1ad6e4463c",
        "position": 1
      },
      "drmData": {
        "licenseServerUrl": "http://sp-
mr433.dev.ussd.verimatrix.com:8064/fpsa/v1.0",
        "keyUri": "r=test&s=1"
      }
    }
  ]
}

```

Response Parameters

HTTP CODE	TYPE	OCCURS	DESCRIPTION
200	KeyResponse (on page 43)	1..1	Key response object containing information about the content keys for different DRM types.

For information on other possible HTTP responses, refer to [Error Codes](#) (on page **Error! Bookmark not defined.**).

Heartbeat

Retrieves the CEI heartbeat to check if the CEI endpoint is alive.

Request Syntax

```
GET /cei/2.0/heartbeat
```

Request Parameters

None

Request Example

```
curl -v -X GET 'http://localhost:8058/cei/v2.0/heartbeat'
```

Response Example

```
HTTP/1.1 200 OK  
SUCCESS
```

Response Parameters

HTTP CODE	TYPE	OCCURS	DESCRIPTION
200	HeartbeatResponse (on page 48)	1..1	Data structure that contains the heartbeat response.

For information on other possible HTTP responses, refer to [Error Codes](#) (on page **Error! Bookmark not defined.**).

Available Methods: CEI v1.1

This section describes the methods available in the CEI v1.1 API.

Create Content

Generates a content item based on the passed-in parameters. When the Verimatrix VCAS system receives the Create Content request, it ensures that the content item exists in the Verimatrix VCAS database. If the content item doesn't exist, it is created.

An encoder must send this request before sending any Create/Retrieve Key request for a given content item.

Request Syntax

```
PUT /cei/{version}/content/{contentId}?siteId={siteId}
```

Request Example

```
curl -X PUT --header 'Content-Type: application/json' --header 'Accept:
application/json'
'http://localhost:8058/cei/v1.1/content/sample_video?siteId=121' -d '{
  "contentRequest": {
    "siteId": "121",
    "contentId": "sample_video",
    "contentType": "VOD",
    "streamingProtocol": "SS",
    "encryptionAlgorithm": "AES_CTR",
    "keyRotation": {
      "chainedLicense": "FALSE",
      "cryptoPeriod": "1800"
    }
  }
}'
```

Request Parameters

NAME	TYPE	OCCURS	DESCRIPTION
version	String	1..1	Version of the endpoint to access. Example: v1.1
contentId	String	1..1	Unique identifier for the content. Example: sample_video Default: none
siteId	Integer	0..1	Unique identifier for the site. Use a site identifier to differentiate between operators. If you do not provide a <code>siteId</code> , the method uses the local <code>siteId</code> from the license.
body	ContentRequest (on page 38)	1..1	Parameters to use to generate the content item.

Response Example

```
{
  "contentResponse": {
    "statusCode": "OPERATION_SUCCESS",
    "statusMessage": "Successfully created content for contentId=sample_video"
  }
}
```

Response Parameters

HTTP CODE	TYPE	OCCURS	DESCRIPTION
200	ContentResponse (on page 41)	1..1	Successful operation

Create/Retrieve Key

Creates and returns the key for the passed-in content ID. The CEI currently supports single key creation and retrieval requests only.

NOTE The attributes `keyId` and `key` parameters inside the `ContentKey` node are optional request parameters and are reserved for future use; the encoder only sets the `position` sub-element.

Request Syntax

```
PUT /cei/{version}/content/{contentId}/position/{position}/key?siteId={siteId}
```

Request Example

```
Create/Retrieve key request example :
curl -X PUT --header 'Content-Type: application/json' --header 'Accept:
application/json'
'http://localhost:8058/cei/v1.1/content/test_get_key_01/position/1/key?siteId=1' -d '
{
  "keyRequest": {
    "contentInfo": {
      "contentId": "test_get_key_01",
      "siteId": 1,
      "keyCount": "1",
      "contentKeyList": [
        {
          "position": "1"
        }
      ]
    }
  }
}'
```

Request Parameters

NAME	TYPE	OCCURS	DESCRIPTION
version	String	1..1	Version of the endpoint to access. Example: v1.1
contentId	String	1..1	Unique identifier for the content item. Example: sample_video
position	Long	1..1	Epoch position. Example: 1458172978
siteId	Integer	0..1	Unique identifier for the site. Use a site identifier to differentiate between operators. If you do not provide a <code>siteId</code> , the method uses the local <code>siteId</code> from the license. Example: 121
body	KeyRequest (on page 41)	1:1	Key request details.

Response Example

```

{
  "keyResponse": {
    "statusCode": "OPERATION_SUCCESS",
    "statusMessage": "Successfully retrieved key and created DRM data for
contentId = test_get_key_01 ",
    "drmList": [{
      "drmName": "PLAYREADY",
      "streamingProtocol": "SS",
      "keyData": [{
        "contentKey": {
          "keyId": "ca645ceda247eadd417bee8fc24b5fc1",
          "key": "e8181d31b4cfe14ade56a26c31924556",
          "position": 1
        },
        "drmData": {
          "manifestHeader":
"yAIAAAEAAQC+AjwAVwBSAE0ASABFAEEARABFAFIAIAB2AGUAcgBzAGkAbwBuAD0AIgA0AC4AMQAUADAALgAwA
CIAIAB4AG0AbABuAHMAPQAIAGgAdAB0AHAAOgAvAC8AcwBjAGgAZQBtAGEAcwAuAG0AaQBjAHIAbwBzAG8AZgB
0AC4AYwBvAG0ALwBEAFIATQAvADIAMAawADcALwAwADMALwBQAGwAYQB5AFIAZQBhAGQAEQBIAGUAYQBkAGUAc
gAiAD4APABEAEEAVABBAD4APABQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEACAAdgBhAGwAdQBlAD0
AIgA3AFYAeABrAHkAawBlAGkAMwBlAHAAQgBlACsAngBQAHCaawB0AGYAdwBRAD0APQAIACAAQQBMAEcASQBEA
D0AIgBBAEUUwBfaEMAVABSACIAIABDAEgARQBDAEsAUwBVAE0APQAIAG4ANQA5AHUANwBPAFEARgBFAGMAOAA
9ACIALwA +
ADwALwBQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEwAQQBfAFUAUgBMAD4AaAB0AHQAcaa6AC8ALwAxADAALg
A0AC4AngAuAdgANAavAFAAbABhAHkAUgBlAGEAZAB5AC8AcgBpAgcAaAB0AHMAbQBhAG4AYQBnAGUAcgAuAGEA
cwBtAHgAPAAvAEwAQQBfAFUAUgBMAD4APABMAFUASQBfAFUAUgBMAD4AaAB0AHQAcaa6AC8ALwAxADAALgA0AC
4AngAuAdgANAavAFAAbABhAHkAUgBlAGEAZAB5AC8AcgBpAgcAaAB0AHMAbQBhAG4AYQBnAGUAcgAuAGEAcwBt
AHgAPAAvAEwAVQBJAF8AVQBSAEwAPgA8AC8ARABBAFQAQQA + ADwALwBXAFIATQBIAEUUAQQBEAEUAUgA + AA
== "
        },
        "drmData": {
          "manifestHeader":
"yAIAAAEAAQC+AjwAVwBSAE0ASABFAEEARABFAFIAIAB2AGUAcgBzAGkAbwBuAD0AIgA0AC4AMQAUADAALgAwA
CIAIAB4AG0AbABuAHMAPQAIAGgAdAB0AHAAOgAvAC8AcwBjAGgAZQBtAGEAcwAuAG0AaQBjAHIAbwBzAG8AZgB
0AC4AYwBvAG0ALwBEAFIATQAvADIAMAawADcALwAwADMALwBQAGwAYQB5AFIAZQBhAGQAEQBIAGUAYQBkAGUAc
gAiAD4APABEAEEAVABBAD4APABQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEACAAdgBhAGwAdQBlAD0
AIgA3AFYAeABrAHkAawBlAGkAMwBlAHAAQgBlACsAngBQAHCaawB0AGYAdwBRAD0APQAIACAAQQBMAEcASQBEA
D0AIgBBAEUUwBfaEMAVABSACIAIABDAEgARQBDAEsAUwBVAE0APQAIAG4ANQA5AHUANwBPAFEARgBFAGMAOAA
9ACIALwA +
ADwALwBQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEwAQQBfAFUAUgBMAD4AaAB0AHQAcaa6AC8ALwAxADAALg
A0AC4AngAuAdgANAavAFAAbABhAHkAUgBlAGEAZAB5AC8AcgBpAgcAaAB0AHMAbQBhAG4AYQBnAGUAcgAuAGEA
cwBtAHgAPAAvAEwAQQBfAFUAUgBMAD4APABMAFUASQBfAFUAUgBMAD4AaAB0AHQAcaa6AC8ALwAxADAALgA0AC
4AngAuAdgANAavAFAAbABhAHkAUgBlAGEAZAB5AC8AcgBpAgcAaAB0AHMAbQBhAG4AYQBnAGUAcgAuAGEAcwBt
AHgAPAAvAEwAVQBJAF8AVQBSAEwAPgA8AC8ARABBAFQAQQA + ADwALwBXAFIATQBIAEUUAQQBEAEUAUgA + AA
== "
        }
      ]
    }, {
      "drmName": "PLAYREADY",
      "streamingProtocol": "DASH",
      "keyData": [{
        "contentKey": {
          "keyId": "ca645ceda247eadd417bee8fc24b5fc1",
          "key": "e8181d31b4cfe14ade56a26c31924556",
          "position": 1
        },
        "drmData": {
          "drmSystemId": "9a04f079-9840-4286-ab92-
e65be0885f95",

```

```

    "pssh": {
      "data":
        "yAIAAAEAAQC+AjwAVvBSAE0ASABFAEEARABFAFIAIAB2AGUAcgBzAGkAbwBuAD0AIgA0AC4AMQAuADAALgAWa
        CIAIAB4AG0AbABuAHMAPQaiAGgAdAB0AHAAOgAvAC8AcwBjAGgAZQBtAGEAcwAuAG0AaQBjAHIAbwBzAG8AZgB
        0AC4AYwBvAG0ALwBEAFIATQAvADIAMAaAwADcALwAwADMALwBQAGwAYQB5AFIAZQBhAGQAeQBIAGUAYQBkAGUAc
        gAiAD4APABEAEVABBAD4APABQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEsASQBEACAAdgBhAGwAdQBlAD0
        AIgA3AFYAeABrAHkAawBlAGkAMwBlAHAAQgBlACsANGBQAHCaawB0AGYAdwBRAD0APQAIACAAQQBMAECASQBEA
        D0AIgBBAEUUwBfAEMAVABSACIAIABDAEgARQBDAEsAUwBVAE0APQAIAG4ANQA5AHUANwBPAFEARGBFAGMAOAA
        9ACIALwA +
        ADwALwBQAFIATwBUAEUAQwBUAEkATgBGAE8APgA8AEwAQQBfAFUAUgBMAD4AaAB0AHQAcaAA6AC8ALwAxADAALg
        A0AC4ANGAuADgANAavAFAAbABhAHkAUgBlAGEAZAB5AC8AcgBpAGcAaAB0AHMAbQBhAG4AYQBnAGUAUcgAuAGEA
        cwBtAHgAPAAvAEwAQQBfAFUAUgBMAD4APABMAFUASQBFfAFUAUgBMAD4AaAB0AHQAcaAA6AC8ALwAxADAALgA0AC
        4ANGAuADgANAavAFAAbABhAHkAUgBlAGEAZAB5AC8AcgBpAGcAaAB0AHMAbQBhAG4AYQBnAGUAUcgAuAGEAcwBt
        AHgAPAAvAEwAVQBjAF8AVQBSAEwAPgA8AC8ARABBAFQAQQA + ADwALwBXAFIATQBIAEUUAQQBEAEUAUGA + AA
        == "

    }
  }
}

}, {
  "drmName": "WIDEVINE",
  "streamingProtocol": "DASH",
  "keyData": [
    {
      "contentKey": {
        "keyId": "66cdf06431320f4a51228eblae763bcf",
        "key": "e8181d31b4cfe14ade56a26c31924556",
        "position": 1
      },
      "drmData": {
        "drmSystemId": "edef8ba9-79d6-4ace-a3c8-27dcd51d21ed",
        "pssh": {
          "data":
            "CAESEGbn8GQxMg9KUSKOsa52088aC1ZFUk1NQVRSSVgiCzEyMSZUZNXNOMTIzKgVTRF9IRA=="
        }
      }
    }
  ]
}, {
  "drmName": "ADOBE_PRIMETIME",
  "streamingProtocol": "HLS",
  "keyData": [{
    "contentKey": {
      "keyId": "ca645ceda247eadd417bee8fc24b5fc1",
      "key": "e8181d31b4cfe14ade56a26c31924556",
      "position": 1
    }
  ]
}
}

```

```

    },
    "drmData": {
        "licenseServerUrl": "http://localhost:8056"
    }
}]]
}, {
    "drmName": "ADOBE_PRIMETIME",
    "streamingProtocol": "HDS",
    "keyData": [{
        "contentKey": {
            "keyId": "ca645ceda247eadd417bee8fc24b5fc1",
            "key": "e8181d31b4cfe14ade56a26c31924556",
            "position": 1
        },
        "drmData": {
            "licenseServerUrl": "http://localhost:8056"
        }
    ]}
}, {
    "drmName": "ADOBE_PRIMETIME",
    "streamingProtocol": "DASH",
    "keyData": [{
        "contentKey": {
            "keyId": "ca645ceda247eadd417bee8fc24b5fc1",
            "key": "e8181d31b4cfe14ade56a26c31924556",
            "position": 1
        },
        "drmData": {
            "drmSystemId": "f239e769-efa3-4850-9c16-
a903c6932efb",
            "licenseServerUrl": "http://localhost:8056"
        }
    ]}
}, {
    "drmName": "VERIMATRIX_ITV",
    "streamingProtocol": "DASH",
    "keyData": [{
        "contentKey": {
            "keyId": "ca645ceda247eadd417bee8fc24b5fc1",
            "key": "e8181d31b4cfe14ade56a26c31924556",
            "position": 1
        },

```



```

        "drmData": {
            "drmSystemId": "9a27dd82-fde2-4725-8cbc-
4234aa06ec09",
            "manifestHeader": "<mpd></mpd>",
            "pssh": {
                "data":
"PFZlcm1tYXRyaXg+PFBzc2ggdmVyc2l1vbj0iMSI+PEtleVVybdD48IVtDREFUQVtodHRwczovL3d3dy5leGFtc
Gx1lmNvbS9DQUIva2V5ZmlsZT9zPTEmcj10ZXN0X2dldF9rZX1fMDEmdD1WT0QmcD0xXV0 + PC9LZX1Vcmw +
PC9Qc3NoPjwvVmVyaW1hdHJpeD4 = "
            }
        }
    }, {
        "drmName": "VERIMATRIX_ITV",
        "streamingProtocol": "HLS",
        "keyData": [{
            "contentKey": {
                "keyId": "ca645ceda247eadd417bee8fc24b5fc1",
                "key": "e8181d31b4cfe14ade56a26c31924556",
                "position": 1
            },
            "drmData": {
                "keyUrl":
"https://www.example.com/CAB/keyfile?s=1&r=test_get_key_01&t=VOD&p=1&kc=1f03c4b67f7811
e69701fa163e988c98&kd=7a836b01c9f604f2ef374e60a3060a20"
            }
        }
    ],
    {
        "drmName": "FAIRPLAY_STREAMING",
        "streamingProtocol": "HLS",
        "keyData": [
            {
                "contentKey": {
                    "keyId": "a29f0caf56914d4389e03c49cef8c556",
                    "key": "3c3c3c3c3c3c3c3c3c3c3c3c3c3c3c3c",
                    "iv": "d5fbd6b82ed93e4ef98ae40931ee33b7",
                    "position": 0
                },
                "drmData": {
                    "licenseServerUrl": "http://127.0.0.1:8064/fpsa/v1.0",
                    "keyUri": "r=test_get_key_01&s=1"
                }
            }
        ]
    }
]

```

```

    }
  ]
}

```

Response Parameters

HTTP CODE	TYPE	OCCURS	DESCRIPTION
200	KeyResponse (on page 43)	1..1	Successful operation.

Heartbeat

Retrieves the CEI heartbeat.

Request Syntax

```
GET /cei/{version}/heartbeat
```

Request Parameters

NAME	TYPE	OCCURS	DESCRIPTION
version	String	1..1	Version of the endpoint to access. Example: v1.1

Response Parameters

HTTP CODE	TYPE	OCCURS	DESCRIPTION
200	HeartbeatResponse (on page 48)	1..1	Successful operation

Data Structures

This section describes all of the complex data structures within the CEI API.

ContentRequest

Data structure that contains information about the content item to create.

NAME	TYPE	OCCURS	DESCRIPTION
siteId	Integer	0..1	Unique identifier of the site for which the content is being created. Use to differentiate operators.
contentId	String	1..1	Unique identifier of the content item to encrypt.
contentType	String	1..1	Content type. Valid values: <ul style="list-style-type: none"> • VOD • DTV
streamingProtocol	String	1..1	HTTP streaming protocol. Valid values: <ul style="list-style-type: none"> • HDS • DASH • HLS • SS
encryptionAlgorithm	String	1..1	Encryption algorithm to use. Valid values: <ul style="list-style-type: none"> • AES_CBC • AES_CTR
keyRotation	KeyRotation (on page 40)	1..1	Key rotation details such as crypto period, policy, and other key rotation information.

CreateAssetResponse

Data structure returned by the Create Asset method.

NAME	TYPE	OCCURS	DESCRIPTION
statusCode	String	1..1	Status of operation. Valid values: <ul style="list-style-type: none">• OK• INVALID_ASSETID• INVALID_ASSET_TYPE
statusMessage	String	0..1	Descriptive status message.

KeyRotation

Data structure that contains the key rotation specifics.

NAME	TYPE	OCCURS	DESCRIPTION
chainedLicense	Boolean	1..1	<p>Reserved for future use. Flag that indicates whether the DTV content item is chained; if so, licenses are required.</p> <p>This flag is required if the key rotation is controlled by the Verimatrix VCAS system.</p> <p>The Verimatrix VCAS system provides a license in the key response which contains the basic policies and the encryption key for the content.</p> <p>A chained license is a series of associated licenses that collectively specify content keys and policies for one or more media files. Each license chain includes a root license and one or more leaf licenses that are associated with and dependent on the root license.</p> <p>Default: FALSE (case-sensitive)</p>
cryptoPeriod	Integer	1..1	<p>Time period for which the key is valid.</p> <p>If set to zero ("0"), the key is used for the life of the content.</p> <p>Unit: Seconds</p>

ContentResponse

Data structure returned by the Create Content method.

NAME	TYPE	OCCURS	DESCRIPTION
statusCode	String	1..1	Status of operation. Valid values: <ul style="list-style-type: none"> • OPERATION_SUCCESS • INVALID_SITEID • INVALID_CONTENTID • DUPLICATE_CONTENT • UNSUPPORTED_STREAMING_PROTOCOL • INVALID_CRYPTOPERIOD • INVALID_CONTENT_TYPE • INTERNAL_ERROR • INVALID_ENCRYPTION_ALGORITHM • OPERATION_FAILURE
statusMessage	String	0..1	Descriptive status message.

KeyRequest

Key information object returned for a specified content item.

NAME	TYPE	OCCURS	DESCRIPTION
contentInfo	ContentInfo (on page 42)	1..1	Key information for the specified content item.

ContentInfo

Data structure that contains content and key information.

NAME	TYPE	OCCURS	DESCRIPTION
contentId	String	1..1	Unique identifier of the content item for which keys are being requested.
siteId	String	0..1	Unique identifier of the site to which the content is associated. Use to differentiate between operators.
contentKeyList	ContentKey (on page 46)	1..1	key/keyId pair generated by the Verimatrix VCAS system.
keyCount	Integer	1..1	<p>Number of keys being requested.</p> <p>Valid values: 1</p> <p>Currently, the CEI only supports single key requests.</p> <p>If <code>keyCount</code> does not exist or is zero, a single key is returned.</p>

KeyResponse

Key response object containing information about the content keys for different DRM types.

NAME	TYPE	OCCURS	DESCRIPTION
statusCode	String	1..1	Status of operation. Valid values: <ul style="list-style-type: none"> • OPERATION_SUCCESS • INVALID_DRM_CONFIGURATION • INTERNAL_ERROR • INVALID_CONTENTID • INVALID_SITEID • INVALID_POSITION • OPERATION_FAILURE
statusMessage	String	0..1	Descriptive status message.
drmList	Array of DrmContent (on page 44)	1..1	Array of DRM data requested by the encoder; including keys, PSSH, and DRM information.

DrmContent

Data structure that contains the DRM information requested by the encoder.

NAME	TYPE	OCCURS	DESCRIPTION
keyData	Array of KeyData (on page 45)	1..1	Array of DRM data and content key information.
streamingProtocol	String	1..1	Type of HTTP streaming protocol. Valid values: <ul style="list-style-type: none"> • HLS • ADS • DASH • SS
drmName	String	1..1	Name of the DRM for which the information is being returned. Valid values: <ul style="list-style-type: none"> • PLAYREADY • WIDEVINE • ADOBE_PRIMETIME • VERIMATRIX_ITV • FAIRPLAY_STREAMING

KeyData

Data structure that contains the DRM data and content key information.

NAME	TYPE	OCCURS	DESCRIPTION
contentKey	ContentKey (on page 46)	1..1	key/keyId pair generated by the Verimatrix VCAS system.
drmData	DrmData (on page 47)	1..1	DRM data, such as DRM system ID, DRM name, PSSH, and manifest header.

AssetKey

CEI v2.0 and above only. Data structure that contains the key/keyId pair generated by the Verimatrix VCAS system.

NAME	TYPE	OCCURS	DESCRIPTION
keyId	String	0..1	Unique identifier of the content key, provided by the Verimatrix VCAS system as a normalized UUID.
key	String	0..1	16-byte content key used for encryption, provided by the Verimatrix VCAS system.
position	Long	1..1	Epoch time or index for which the encoder is requesting the key. Valid values: 0 or positive integer
iv	String	0..1	FairPlay Streaming only. 16-byte initialization vector associated with the content key.

ContentKey

CEI v1.1 and earlier only. Data structure that contains the `key/keyId` pair generated by the Verimatrix VCAS system.

NAME	TYPE	OCCURS	DESCRIPTION
<code>keyId</code>	String	0..1	Unique identifier of the content key, provided by the Verimatrix VCAS system as a normalized UUID.
<code>key</code>	String	0..1	16-byte content key used for encryption, provided by the Verimatrix VCAS system.
<code>position</code>	Long	1..1	Time for which the encoder is requesting the key. For Widevine content, this is the time since the epoch for the first key period divided by the period duration. Unit: Seconds
<code>iv</code>	String	0..1	FairPlay Streaming only. 16-byte initialization vector associated with the content key.

DrmData

Data structure that contains the DRM data.

NAME	TYPE	OCCURS	DESCRIPTION
drmSystemId	String	1..1	Unique identifier of the DRM system.
manifestHeader	String	0..1	Content protection section to be inserted into the MPD.
licenseServerUrl	String	0..1	Adobe Primetime/FPS only. License server URL.
pssh	String	0..1	PSSH signalization information blob for each DRM to be inserted in the content, as a base64 string.
keyUrl	String	0..1	Verimatrix ITV only. Key URL.
keyUri	String	0..1	<p>FairPlay Streaming only. Value that an encoder uses as the <code>assetId</code> if the <code>INTERPRET_ASSET_ID</code> parameter in the <code>FPSA.INI</code> file is set to <code>contentId</code>.</p> <p>Format: <code>r=<url encoded contentId>&s=<siteId></code></p> <ul style="list-style-type: none"> <code>contentId</code> = URL encoded content ID. <code>siteId</code> = If Content Distribution is deployed, this value must contain the unique ID of the site that is to receive the content.

HeartbeatResponse

Data structure that contains the heartbeat response.

NAME	TYPE	OCCURS	DESCRIPTION
statusCode	String	1..1	Heartbeat status code. Valid values: <ul style="list-style-type: none">• OPERATION_SUCCESS• OPERATION_FAILURE
statusMessage	String	0..1	Message describing the status.

Appendix B Error Codes

The following table describes the response codes that an encoder may receive while using the CEI v2.0.

HTTP STATUS	STATUS CODE	DESCRIPTION
400	INVALID_PARAM	<ul style="list-style-type: none"> • <code>assetType</code> is missing or invalid Ensure that <code>assetType</code> is VOD or DTV. • <code>assetId</code> is missing
400	INVALID_SITEID	<p><code>siteId</code> (if present in request) is invalid Ensure that value of <code>siteId</code> is not zero or negative.</p>
400	MALFORMED_KEYID	<p><code>keyId</code> is not valid Ensure that <code>keyId</code> is a 16 byte canonical UUID formatted string.</p>
400	INVALID_POSITION	<code>position</code> is missing or negative
403	CONTENT_NOT_CREATED	DTV content limit reached for Internet TV network
404	CONTENT_NOT_FOUND	Unable to retrieve content from database due to missing content
404	KEY_NOT_FOUND	Unable to retrieve key from the database due to missing key
500	CONTENT_NOT_CREATED	Failed to add content to the Multi-DRM database due to missing network
500	KEY_NOT_CREATED	Unable to create key
500	OPERATION_FAILURE	Error in preparing DRM data
500	INTERNAL_ERROR	Unexpected error in processing request