**3GPP TSG- Meeting # *S4-251023r01***

**Fukuoka, , -**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  |  |
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| ***Source to WG:*** |  |
| ***Source to TSG:*** | SA4 |
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| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | Corrections and clarifications of existing text |
|  |  |
| ***Summary of change:*** | Corrections and clarifications to use consistent terminology, provide correct references, update out-date reference point usage, etc. |
|  |  |
| ***Consequences if not approved:*** | TS 26.510 Rel-18 errors not corrected. |
|  |  |
| ***Clauses affected:*** | 5.2.8.2, 5.2.8.6, 5.2.9.2, 8.3.3.1, 8.8.3.1, 8.9.3.1 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | S4-251023 |

## ===== CHANGE =====

#### 5.2.8.2 Create Content Hosting Configuration resource operation

This operation is used by the Media Application Provider at reference point M1 to activate the Content Hosting feature for a particular Provisioning Session. The Media Application Provider shall use the HTTP POST method for this purpose. The request URL shall be a well-known sub-resource of the Provisioning Session resource, as specified in clause 8.8.2. The HTTP request message body shall be a Content Hosting Configuration resource representation, as specified in clause 8.8.3.1. There is at most one Content Hosting Configuration at a time for a given Provisioning Session.

Regarding the configuration of content ingest by the Media AS from the Media Application Provider at reference point M2:

- If the Content Hosting Configuration uses the pull-based content ingest method, i.e., the IngestConfiguration.mode attribute is set to PULL, then the IngestConfiguration.baseURL property shall be nominated by the Media Application Provider in the request message body. The Media AF shall return the IngestConfiguration.baseURL property value unchanged in its response message body.

- If the Content Hosting Configuration uses the push-based content ingest method, i.e., the IngestConfiguration.mode attribute is set to PUSH, then the IngestConfiguration.baseURL property shall be nominated by the Media AF and returned in the response message body. It shall not be set by the Media Application Provider in the request message body.

Regarding the configuration(s) of content distribution by the Media AS to the Media Client at reference point M4:

- The Media Application Provider defines one or more distribution configurations in the distributionConfigurations array within a Content Hosting Configuration to distribute content via the Media AS. When more than one content distribution configuration is provided in the HTTP request message body, the operation to create the Content Hosting Configuration resource shall be successful if and only if all such distribution configurations are acceptable to the Media AF.

- In all cases, the DistributionConfiguration.‌canonicalDomainName and DistributionConfiguration.‌baseURL properties are read-only: they shall always be omitted from the creation request and shall be assigned by the Media AF, allowing their values to be inspected by the Media Application Provider in the returned Content Hosting Configuration resource representation, or by using the operation specified in clause 5.2.8.3 below.

- If the DistributionConfiguration.‌certificateId property is present and valid, the Media AF shall assign a canonical domain name for the Media AS to expose at reference point M4 that matches the Common Name and the first Subject Alternative Name in the referenced Server Certificate resource (taking into account wildcard matching) regardless of whether the corresponding X.509 certificate was created using the operation specified in clause 5.2.4.2 or those specified in clauses 5.2.4.3 and 5.2.4.4.

- The Media Application Provider may nominate an alternative domain name to be advertised to the Media Client in the Service Access Information by setting the DistributionConfiguration.‌domainNameAlias property when (and only when) creating the Content Hosting Configuration resource. If valid, the value of this property shall then appear in the Distribution‌Configuration.‌baseURL assigned by the Media AF instead of DistributionConfiguration.‌canonicalDomainName. The Media Application Provider shall ensure that this domain name alias resolves to the canonical domain name of the Media AS notified by the Media AF in its response by means of suitable DNS configuration.

If the operation is successful, the Media AF shall return a 201 (Created) HTTP response message, and the request URL shall be returned as the value of the Location HTTP header field. The response message body shall be a representation of the current state of the Content Hosting Configuration resource (see clause 8.8.3.1), including any properties assigned by the Media AF.

If any resources referenced by the supplied Content Hosting Configuration resource representation are invalid, the create operation shall fail with an HTTP response status code of 400 (Bad Request) and an error message body per clause 7.1.7. In this case, the Content Hosting Configuration resource shall remain in an uncreated state in the Media AF.

If DistributionConfiguration.‌domainNameAlias is set in the supplied Content Hosting Configuration resource representation but its value is not a syntactically valid Fully-Qualified Domain Name or if the DistributionConfiguration.‌certificateId property is absent or if the supplied domain name alias does match any of one of the Subject Alternative Names listed in the Server Certificate referenced by the DistributionConfiguration.‌certificateId property, the create operation shall fail with an HTTP response status code of 400 (Bad Request) and an error message body per clause 7.1.7. In this case, the Content Hosting Configuration resource shall remain in an uncreated state in the Media AF.

NOTE: Even if multiple distribution configurations in the same Content Hosting Configuration reference the same Server Certificate resource, they may each nominate a different domain name alias from among its Subject Alternative Names.

Attempting to create a Content Hosting Configuration in the scope of a Provisioning Session of any type other than MS\_DOWNLINK shall fail with an HTTP response status code of 403 (Forbidden) and an error message body per clause 7.1.7. In this case, the Content Hosting Configuration resource shall remain in an uncreated state in the Media AF.

If the request is acceptable but the Media AF is unable to provision the resources required by the supplied Content Hosting Configuration, the create operation shall fail with an HTTP response status code of 500 (Internal Server Error) and an error message body per clause 7.1.7. In this case, the Content Hosting Configuration resource shall remain in an uncreated state in the Media AF.

## ===== CHANGE =====

#### 5.2.8.6 Purge Content Hosting cache operation

This operation is used by the Media Application Provider to purge content from the Media AS Content Hosting cache. The HTTP POST method shall be used for this purpose with a regular expression describing the media resource URLs to be purged provided in the body of the request. The message request body shall be encoded using the application/x-www-form-urlencoded MIME content type as a key–value pair, with the key being the string pattern and the value being the regular expression.

On receiving a purge request, the Media AF shall immediately invalidate all media resources in the Media AS cache matching the regular expression by declaring them as stale. A subsequent Media Client request at reference point M4 for a purged media resource will trigger the fetching (and possible caching) of the current version of the resource from the Media Application Provider's content origin via reference point M2 in case of a Pull-based ingest. For Push-based ingest, M4 requests for purged content shall be responded to with a 404 (Not Found) HTTP response until such time as a new version of the object is published by the Media Application Provider to the Media AS via at reference point M2.

If the procedure is successful, the Media AF shall return one of the following response messages:

- 204 (No Content) if no cache entries were purged, for example because no current cache entries matched the regular expression supplied in the original request. The response message body shall be empty in this case.

- 200 (OK) if some cache entries were purged. The body of the response message shall indicate the total number of cache entries purged in all Media AS instances distributing the content.

The HTTP response 400 (Bad Request) shall be returned in the case where the request message body – or the regular expression contained in it – are found by the Media AF to be syntactically malformed.

## ===== CHANGE =====

#### 5.2.9.2 Create Content Publishing Configuration resource operation

This operation is used by the Media Application Provider at reference point M1 to activate the Content Publishing feature for a particular Provisioning Session. The Media Application Provider shall use the HTTP POST method for this purpose. The request URL shall be a well-known sub-resource of the Provisioning Session resource, as specified in clause 8.9.2. The HTTP request message body shall be a Content Publishing Configuration resource representation, as specified in clause 8.9.3.1. There is at most one Content Publishing Configuration at a time for a given Provisioning Session.

Regarding the configuration of content egest from the Media AS to the Media Application Provider at reference point M2:

- If the Content Publishing Configuration uses the push-based content egest method, i.e., the EgestConfiguration.‌mode attribute is set to PUSH, then the EgestConfiguration.baseURL property shall be nominated by the Media Application Provider in the request message body. The Media AF shall return the EgestConfiguration.baseURL property value unchanged in its response message body.

- If the Content Publishing Configuration uses the pull-based content egest method, i.e., the EgestConfiguration.‌mode attribute is set to PULL, then the EgestConfiguration.baseURL property shall be nominated by the Media AF and returned in the response message body. It shall not be set by the Media Application Provider in the request message body.

Regarding the configuration(s) of content contribution by the Media Client to the Media AS at reference point M4:

- The Media Application Provider may define one or more contribution configurations in the contributionConfigurations array within a Content Publishing Configuration. When more than one content contribution configuration is provided in the HTTP request message body, the operation to create the Content Publishing Configuration resource shall be successful if and only if all such contribution configurations are acceptable to the Media AF.

- In all cases, the ContributionConfiguration.‌canonicalDomainName and ContributionConfiguration.‌baseURL properties are read-only: they shall always be omitted from the creation request and shall be assigned by the Media AF, allowing their values to be inspected by the Media Application Provider in the returned Content Publishing Configuration resource representation, or by using the operation specified in clause 5.2.9.3 below.

- If the ContributionConfiguration.‌certificateId property is present and valid, the Media AF shall assign a canonical domain name for the Media AS to expose at reference point M4 that matches the Common Name and the first Subject Alternative Name in the referenced Server Certificate resource (taking into account wildcard matching) regardless of whether the corresponding X.509 certificate was created using the operation specified in clause 5.2.4.2 or those specified in clauses 5.2.4.3 and 5.2.4.4.

- The Media Application Provider may nominate an alternative domain name to be advertised to the Media Client in the Service Access Information by setting the ContributionConfiguration.‌domainNameAlias property when (and only when) creating the Content Publishing Configuration resource. If valid, the value of this property shall then appear in the Contribution‌Configuration.‌baseURL assigned by the Media AF instead of ContributionConfiguration.‌canonicalDomainName. The Media Application Provider shall ensure that this domain name alias resolves to the canonical domain name of the Media AS notified by the Media AF in its response by means of suitable DNS configuration.

If the operation is successful, the Media AF shall return a 201 (Created) HTTP response message and the request URL shall be returned as the value of the Location HTTP header field. The response message body shall be a representation of the current state of the Content Publishing Configuration resource (see clause 8.9.3.1), including any properties assigned by the Media AF.

If any resources referenced by the supplied Content Publishing Configuration resource representation are invalid, the create operation shall fail with an HTTP response status code of 400 (Bad Request) and an error message body per clause 7.1.7. In this case, the Content Publishing Configuration resource shall remain in an uncreated state in the Media AF.

If ContributionConfiguration.‌domainNameAlias is set in the supplied Content Publishing Configuration resource representation but its value is not a syntactically valid Fully-Qualified Domain Name or if the ContributionConfiguration.‌certificateId property is absent or if the supplied domain name alias does match any of one of the Subject Alternative Names listed in the Server Certificate referenced by the ContributionConfiguration.‌certificateId property, the create operation shall fail with an HTTP response status code of 400 (Bad Request) and an error message body per clause 7.1.7. In this case, the Content Publishing Configuration resource shall remain in an uncreated state in the Media AF.

NOTE: Even if multiple contribution configurations in the same Content Publishing Configuration reference the same Server Certificate resource, they may each nominate a different domain name alias from among its Subject Alternative Names.

Attempting to create a Content Publishing Configuration in the scope of a Provisioning Session of any type other than MS\_UPLINK shall fail with an HTTP response status code of 403 (Forbidden) and an error message body per clause 7.1.7. In this case, the Content Publishing Configuration resource shall remain in an uncreated state in the Media AF.

If the request is acceptable but the Media AF is unable to provision the resources required by the supplied Content Publishing Configuration, the create operation shall fail with an HTTP response status code of 500 (Internal Server Error) and an error message body per clause 7.1.7. In this case, the Content Publishing Configuration resource shall remain in an uncreated state in the Media AF.

## ===== CHANGE =====

### 8.3.3 Data model

#### 8.3.3.1 ContentProtocols resource

Table 8.3.3.1-1: Definition of ContentProtocols resource

| Property name | Data Type | Cardinality | Description |
| --- | --- | --- | --- |
| *downlinkIngestProtocols* | array(Content‌Protocol‌Descriptor) | 0..1 | A set of ContentProtocolDescriptor objects, as specified in clause 8.3.3.2, each one uniquely identifying a content ingest protocol supported at reference point M2 by the Media AS associated with the parent Provisioning Session.If present, the array shall contain at least one member. |
| *uplinkEgestProtocols* | array(Content‌Protocol‌Descriptor) | 0..1 | A set of ContentProtocolDescriptor objects, as specified in clause 8.3.3.2, each one uniquely identifying a content egest protocol supported at reference point M2 by the Media AS associated with the parent Provisioning Session.If present, the array shall contain at least one member. |
| *downlink‌Distribution‌Protocols* | array(Content‌Protocol‌Descriptor | 0..1 | A set of ContentProtocolDescriptor objects, as specified in clause 8.3.3.2, each one uniquely identifying a distribution protocol supported at reference point M4 by the Media AS associated with the parent Provisioning Session.If present, the array shall contain at least one member. |
| *uplink‌Contribution‌Protocols* | array(Content‌Protocol‌Descriptor | 0..1 | A set of ContentProtocolDescriptor objects, as specified in clause 8.3.3.2, each one uniquely identifying a contribution protocol supported at reference point M4 by the Media AS associated with the parent Provisioning Session.If present, the array shall contain at least one member. |
| *geoFencingLocatorTypes* | array(Uri) | 0..1 | A set of fully-qualified term identifiers, each one indicating a content geo-fencing locator type supported at reference point M2 by the Media AS associated with the parent Provisioning Session. (See clause B.1.)If present, the array shall contain at least one member. |

## ===== CHANGE =====

### 8.8.3 Data model

#### 8.8.3.1 ContentHostingConfiguration resource

Table 8.8.3.1-1: Definition of ContentHostingConfiguration resource

| Property name | Data Type | Cardinality | Description |
| --- | --- | --- | --- |
| name | string | 1..1 | A name for this Content Hosting Configuration. |
| ingestConfiguration | Ingest‌Configuration | 1..1 | Parameters for ingesting media content into the Media AS at reference point M2. |
|  | mode | Content‌Transfer‌Mode | 1..1 | Indicates whether media content is pulled by the Media AS from the Media Application Provider's origin server at reference point M2, or else pushed into the Media AS by the Media Application Provider at reference point M2 (see clause 7.3.4.5). |
|  | protocol | Uri | 1..1 | A fully-qualified term identifier URL that identifies the content ingest protocol.The controlled vocabulary of content ingest protocols is specified in clause 8 of TS 26.512 [6]. |
|  | baseURL | AbsoluteUrl | 0..1 | A base URL (i.e., one that includes a scheme, authority and, optionally, path segments) from which content is ingested by the Media AS at reference point M2 for this ingest configuration.In the case of pull-based content ingest (mode is set to PULL), the base URL shall be provided to the Media AF by the Media Application Provider to indicate the location from which content is to be pulled. A request received at reference point M4 is mapped by the Media AS to a URL at reference point M2 whose base is the value of this property.In the case of push-based content ingest (mode is set to PUSH), this property shall be populated by the Media AF and returned to the Media Application Provider to indicate the base URL to which content for this Content Hosting Configuration is to be published. |
| distributionConfigurations | array(Distribution‌Configuration) | 1..1 | Specifies the distribution method and configuration for the ingested content.The array shall contain at least one member. Hence, more than one distribution may be configured for the same ingested content, e.g. to offer different distribution configurations such as DASH and HLS. |
|  | supplementary‌Distribution‌Networks | array(<Distribution‌NetworkType, DistributionMode> | 0..1 | Indicates that the content for this distribution configuration is also to be distributed via one or more supplementary networks. Each member of the array is a duple mapping a type of distribution network to a mode of distribution.The same DistributionNetworkType value shall appear at most once in this array. |
|  | edgeResources‌ConfigurationId | ResourceId | 0..1 | A reference to an Edge Resources Configuration resource (see clause 8.6.2).When present, indicates that the Media AS supporting this content distribution shall be realised as a set of one or more EAS instances configured per the referenced resource. |
|  | content‌Preparation‌TemplateId | ResourceId | 0..1 | A reference to a Content Preparation Template resource (see clause 8.5.2).Indicates that the referenced content preparation is required prior to distribution. |
|  | certificateId | ResourceId | 0..1 | A reference to a Server Certificate resource (see clause 8.4.3.2).When content is distributed using TLS [29], the referenced X.509 [10] certificate for the origin domain is presented by the Media AS in the TLS handshake at reference point M4. This attribute indicates the identifier of the certificate to use. |
|  | canonical‌Domain‌Name | string | 1..1 | All resources exposed at reference point M4 shall be accessible through this default Fully-Qualified Domain Name assigned by the Media AF. |
|  | domainNameAlias | string | 0..1 | The Media Application Provider may assign another Fully-Qualified Domain Name (FQDN) through which media resources within the scope of this distribution configuration are additionally accessible from the Media AS at reference point M4.This domain name is used by the Media AS to set appropriate CORS HTTP response headers at reference point M4.If this property is present, the Media Application Provider is responsible for providing in the DNS a CNAME record that resolves domainNameAlias to canonical‌Domain‌Name.If the certificateId property is also present in this distribution configuration, the provided domain name alias shall match one of the subjectAltName extension fields in the referenced Server Certificate resource, allowing for wildcard matching. |
|  | baseURL | AbsoluteUrl | 1..1 | A base URL (i.e., one that includes a scheme, authority and, optionally, path segments) from which content is made available to Media Clients at reference point M4 for this distribution configuration.The value is chosen by the Media AF when the Content Hosting Configuration is provisioned. It is an error for the Media Application Provider to set this. |
|  | entryPoint | Relative‌Media‌Entry‌Point | 0..1 | The Media Entry Point nominated by the Media Application Provider for this distribution configuration when it is used to describe a single content item (see clause 7.3.3.12).Omitted when this distribution configuration describes multiple content items. |
|  |  | relativePath | RelativeUrl | 1..1 | A relative path (i.e., without a scheme or any leading forward slash characters) to the Media Entry Point document resource. The semantics are dependent on the value of ingestConfiguration.protocol.The path shall be valid at reference point M2 when appended to the ingest base URL and at reference point M4 when appended to the distribution base URL. |
|  |  | contentType | string | 1..1 | The MIME content type of the Media Entry Point.Used by the Media Client to select a Media Entry Point. |
|  |  | protocol | Uri | 0..0 | This property shall not be present in a distribution configuration. |
|  |  | profiles | array(Uri) | 0..1 | An optional list of conformance profile identifiers associated with the Media Entry Point, each one expressed as a URI. A profile URI may indicate an interoperability point, for example.Used by the Media Client to select a Media Entry Point.If present, the array shall contain at least one item. |
|  | pathRewriteRules | array(Path‌Rewrite‌Rule) | 0..1 | An ordered list of rules for rewriting the request URL paths of media resource requests handled by the Media AS at reference point M4 and translating them to URL paths at reference point M2.If multiple rules match a particular resource’s path, only the first matching rule, in order of appearance in this array, shall be applied. |
|  |  | requestPathPattern | string | 1..1 | A regular expression [36] against which the path part of each Media AS request URL, including the leading “/”, and up to and including the final “/”, shall be compared. (Any leaf path element following the final “/” shall be excluded from this comparison.)In the case of pull-based content ingest, the M4 download request path is used in the comparison.In the case of push-based content ingest, the M2 upload request path is used in the comparison.In either case, if the request path matches this pattern, the path mapping specified in the corresponding mappedPath shall be applied. |
|  |  | mappedPath | string | 1..1 | A replacement for the portion of the Media AS request path that matches requestPathPattern.In the case of pull-based content ingest, ingestConfiguration.entryPoint is concatenated with the mapped path and any leaf path element from the original M4 download request to form the M2 origin request URL.In the case of push-based content ingest, canonical‌Domain‌Name (and, optionally, domain‌Name‌Alias) are concatenated with the mapped path and any leaf path element from the original M2 upload request to form the distribution URL(s) exposed over reference point M4. |
|  | cachingConfigurations | array(Caching‌Configuration) | 0..1 | A set of configurations of the Media AS content cache nominated by the Media Application Provider, each one affecting a matching subset of media resources ingested in relation to this Content Hosting Configuration. (See clause 7.3.3.13.)If present, the array shall have at least one member. |
|  |  | urlPatternFilter | string | 1..1 | A pattern used to match media resource URLs at reference point M2 to determine whether a given media resource ingested by the Media AS is eligible to be cached by it. The format of the pattern shall be a regular expression as specified in [36]. |
|  |  | cachingDirectives | object | 1..1 | If a urlPatternFilter applies to a resource, then the provided cachingDirectives shall be applied by the Media AS at reference point M4, potentially overwriting any origin caching directives provided by the Media Application Provider when that resource is ingested at reference point M2. |
|  |  |  | statusCodeFilters | array(integer) | 0..1 | The set of HTTP origin response status codes at reference point M2 to which these cachingDirectives apply.If the property is present, the array shall contain at least one item.If absent, the enclosing cachingDirectives shall apply to all HTTP origin response status codes. |
|  |  |  | noCache | boolean | 0..1 | If set to true, indicates that the media resources matching the filters shall be marked by the Media AS as not to be cached when it serves such media resources at reference point M4.Default value if omitted: false. |
|  |  |  | maxAge | Uint32 | 0..1 | The caching time-to-live period, expressed in seconds, of ingested media resources matching the filters. This determines the minimum period for which the Media AS shall cache matching media resources. If noCache is false, it also determines the time-to-live period signalled by the Media AS at reference point M4 when it serves such media resources.The time-to-live for a given media resource shall be calculated relative to the time it was ingested by the Media AS.If noCache is false and if omitted, ingested media resources shall be cached indefinitely until the Content Hosting Configuration is destroyed by the Media Application Provider or until the available caching resources in the Media AS are exhausted, whichever is sooner. |
|  | geoFencing | object | 0..1 | Directives limiting access to the content to the indicated geographic areas (see NOTE 1). |
|  |  | locatorType | Uri | 1..1 | The type of the members of the locators array shall be indicated using a fully-qualified term identifier URI from the controlled vocabulary specified in clause B.1, or else from a vendor-specific vocabulary. |
|  |  | locators | array(string) | 1..1 | Array of locators from which access to the resources is to be allowed. The format of the locator strings shall be determined by the semantics of the term identifier indicated in locatorType. |
|  | urlSignature | object | 0..1 | Defines the URL signing scheme to be enforced by the Media AS at reference point M4 (see NOTE 2). When present, only correctly signed and valid URLs are permitted to access the content resources within the scope of the enclosing distribution configuration. |
|  |  | urlPattern | string | 1..1 | A pattern that shall be used by the Media AS to match M4 media resource request URLs. The Media AS shall not serve a matching media resource at reference point M4 unless it includes a valid authentication token calculated over the portion of the M4 request URL that matches this pattern. The format of the pattern shall be a regular expression as specified in [36]. |
|  |  | tokenName | string | 1..1 | The name of the query parameter that the Media Access Function shall use to present the authentication token in the M4 request URL when required to do so. |
|  |  | passphraseName | string | 1..1 | The name of the token parameter to be used to refer to the passphrase when constructing the M4 authentication token. |
|  |  | passphrase | string | 1..1 | A string of between 6 and 50 characters to be used as the shared secret between the Media Application Provider and the Media AS for this DistributionConfiguration.(This secret is used in the computation and verification of the M4 authentication token but is never sent in the cleartext part of the M4 request URL.) |
|  |  | tokenExpiryName | string | 1..1 | The name of the token parameter to be used to refer to the token expiry time point when constructing the M4 authentication token.The name of the query parameter that the Media Access Function shall use to present the token expiry time point in the cleartext part of the M4 request URL. |
|  |  | useIPAddress | boolean | 1..1 | If set to true, the IP address of the Media Access Function is included in the computation of the authentication token for resources that match urlPattern and access to matching media resources shall be allowed by the Media AF only when the M4 request is made from this IP address. |
|  |  | ipAddressName | string | 0..1 | The name of the token parameter that is encoded as part of the M4 authentication token if the useIPAddress flag is set to true.(The IP address is not passed in the cleartext part of the M4 request URL.) |
| NOTE 1: The geofencing feature used to restrict content requests to the Media AS at reference point M4 is specified in clause 7.6.4.6 of TS 26.512 [6].NOTE 2: The format of the authentication token used to sign content requests to the Media AS at reference point M4 is specified in clause 7.6.4.5 of TS 26.512 [6]. |

## ===== CHANGE =====

### 8.9.3 Data model

#### 8.9.3.1 ContentPublishingConfiguration resource

Table 8.9.3.1-1: Definition of ContentPublishingConfiguration resource

| Property name | Data type | Cardinality | Description |
| --- | --- | --- | --- |
| name | string | 1..1 | A name for this Content Publishing Configuration. |
| contribution‌Configurations | array(Contribution‌Configuration) | 1..1 | Specifies the Media Entry Point and content preparation required for the egested content.The array shall contain at least one member. Hence, more than one contribution may be configured for different content types. |
|  | edgeResources‌ConfigurationId | ResourceId | 0..1 | A reference to an Edge Resources Configuration resource (see clause 8.6.2).When present, indicates that the Media AS supporting this content contribution shall be realised as a set of one or more EAS instances configured per the referenced resource. |
|  | content‌Preparation‌TemplateId | ResourceId | 0..1 | A reference to a Content Preparation Template resource (see clause 8.5.2).Indicates that the referenced content preparation is required prior to egest. |
|  | certificateId | ResourceId | 0..1 | A reference to a Server Certificate resource (see clause 8.4.3.2).When content is contributed using TLS [29], the referenced X.509 [10] certificate for the origin domain is presented by the Media AS in the TLS handshake at reference point M4. This attribute indicates the identifier of the certificate to use. |
|  | canonical‌Domain‌Name | string | 1..1 | All resources exposed at reference point M4 shall be accessible through this default Fully-Qualified Domain Name assigned by the Media AF. |
|  | domainNameAlias | string | 0..1 | The Media Application Provider may assign another Fully-Qualified Domain Name (FQDN) through which media resources within the scope of this contribution configuration are additionally accessible from the Media AS at reference point M4.This domain name is used by the Media AS to set appropriate CORS HTTP response headers at reference point M4.If this property is present, the Media Application Provider is responsible for providing in the DNS a *CNAME* record that resolves domainNameAlias to canonicalDomainName.If the certificateId property is also present in this contribution configuration, the provided domain name alias shall match one of the subjectAltName extension fields in the referenced Server Certificate resource, allowing for wildcard matching. |
|  | baseURL | AbsoluteUrl | 1..1 | A base URL (i.e. one that includes a scheme, authority, and, optionally, path segments) to which content is contributed by Media Clients at reference point M4 for this contribution configuration.Nominated by the Media AF when the Content Publishing Configuration is provisioned. It is an error for the Media Application Provider to set this. |
|  | entryPoint | Relative‌Media‌Entry‌Point | 1..1 | The Media Entry Point nominated by the Media Application Provider for this contribution configuration (see clause 7.3.3.12). |
|  |  | relativePath | Relative‌Url | 1..1 | A relative path (i.e., without a scheme or any leading forward slash characters) for this Media Entry Point which may point to a document resource.Nominated by the Media AF. |
|  |  | contentType | string | 1..1 | The MIME content type of this Media Entry Point.This property shall be mutually exclusive with protocol.Used by the Media Client to select a contribution configuration.Nominated by the Media Application Provider. |
|  |  | protocol | Uri | 1..1 | A fully-qualified term identifier URI that identifies the media contribution protocol at reference point M4 for this Media Entry Point.This property shall be mutually exclusive with contentType.Nominated by the Media Application Provider.The controlled vocabulary of media contribution protocols is specified in clause 10 of TS 26.512 [6]. |
|  |  | profiles | array(Uri) | 0..1 | An optional list of conformance profile identifiers associated with this Media Entry Point, each one expressed as a URI. A profile URI may indicate an interoperability point, for example.Used by the Media Client to select a contribution configuration.Nominated by the Media Application Provider and, if present, the array shall contain at least one item. |
| egestConfiguration | Egest‌Configuration | 1..1 | Parameters for egesting media content from the Media AS at reference point M2. |
|  | mode | Content‌Transfer‌Mode | 1..1 | Indicates whether content is pulled from the Media AS by the Media Application Provider at reference point M2 or pushed to the Media Application Provider by the Media AS at reference point M2 (see clause 7.3.4.5).Nominated by the Media Application Provider. |
|  | protocol | Uri | 1..1 | A fully-qualified term identifier URI that identifies the content egest protocol.Nominated by the Media Application Provider.The controlled vocabulary of content egest protocols is specified in clause 8 of TS 26.512 [6]. |
|  | baseURL | Absolute‌URL | 0..1 | A base URL (i.e., one that includes a scheme, authority, and, optionally, path segments) to which content is published at reference point M2 for this publishing configuration.In the case of pull-based content egest (modeis set to PULL), this property shall be populated by the Media AF to indicate the location on the Media AS from which content is to be pulled. An uplink media streaming request received at reference point M4 is mapped by the Media AS to a URL at reference point M2 whose base is the value of this property.In the case of push-based content egest (modeis set to PUSH), this property shall be provided to the Media AF by the Media Application Provider and indicates the base URL to which content for this Content Publishing Configuration is to be published. |
|  | entryPoint | Relative‌Media‌Entry‌Point | 0..1 | The Media Entry Point for content egest used by the Media Application Provider at reference point M2.In the case of pull-based content egest (modeis set to PULL), this object shall be provided by the Media AF.In the case of push-based content egest (modeis set to PUSH), this object may be provided by the Media Application Provider.The semantics of the entry point are dependent on the value of the contentType property. |
|  |  | relativePath | Relative‌URL | 1..1 | A relative path (i.e., without a scheme or any leading forward slash characters) to the Media Entry Point document resource.Nominated by the Media AF for pull-based content egest.Nominated by the Media Application Provider for Push-based content egest. |
|  |  | contentType | string | 1..1 | The MIME content type of this Media Entry Point.Nominated by the Media Application Provider. |
|  |  | protocol | Uri | 1..1 | A fully-qualified term identifier URI that identifies the media egest protocol at reference point M2 for this Media Entry Point.This property shall be mutually exclusive with contentType.Nominated by the Media Application Provider.The controlled vocabulary of media contribution protocols is specified in clause 10 of TS 26.512 [6]. |
|  |  | profiles | array(Uri) | 0..1 | An optional list of conformance profile identifiers associated with this Media Entry Point, each one expressed as a URI. A profile URI may indicate an interoperability point, for example.Nominated by the Media Application Provider and, if present, the array shall contain at least one item. |
|  | cachingConfigurations | array(Caching‌Configuration) | 0..1 | A set of configurations of the Media AS cache nominated by the Media Application Provider, each one affecting a matching subset of media resources intended for pull-based egest at reference point M2 in relation to this Content Publishing Configuration. (See clause 7.3.3.13.)Applicable only for pull-based content egest (modeis set to PULL). For Push-based egest (methodis set to PUSH), this property shall not be present.If present, the array shall have at least one member. |
|  |  | urlPatternFilter | string | 1..1 | A pattern used to match media resource URLs to determine whether a given media resource is eligible for caching by the Media AS. The format of the pattern shall be a regular expression as specified in [36]. |
|  |  | cachingDirectives | object | 1..1 | If a urlPatternFilter applies to a resource, then the provided cachingDirectives shall be applied by the Media AS at reference point M2. Any caching directives set by the Media Streamer on content contributed at reference point M4 which define a shorter lifetime for the content shall take precedence over these parameters. |
|  |  |  | statusCodeFilters | array(integer) | 0..1 | The set of Media AS response status codes at reference point M2 to which these cachingDirectives apply.If the property is present, the array shall contain at least one item.If absent, the enclosing cachingDirectives shall apply to all Media AS responses. |
|  |  |  | noCache | boolean | 0..1 | If set to *true*, this indicates that the media resources matching the filters shall be marked by the Media AS as not to be cached when it serves such media resources at reference point M2.Default value if omitted: false. |
|  |  |  | maxAge | Uint32 | 0..1 | The caching time-to-live period, expressed in seconds, of media resources matching the filters. This determines the minimum period for which the Media AS shall cache matching media resources. If noCache is false, it also determines the time-to-live period signalled by the Media AS at reference point M2 when it serves such media resources.The time-to-live for a given media resource shall be calculated relative to the time it was contributed to the Media AS.If noCache is false and if omitted, ingested media resources shall be cached indefinitely until the Content Publishing Configuration is destroyed by the Media Application Provider or until the available caching resources in the Media AS are exhausted, whichever is sooner. |