

# all-stars-sprint-56-57

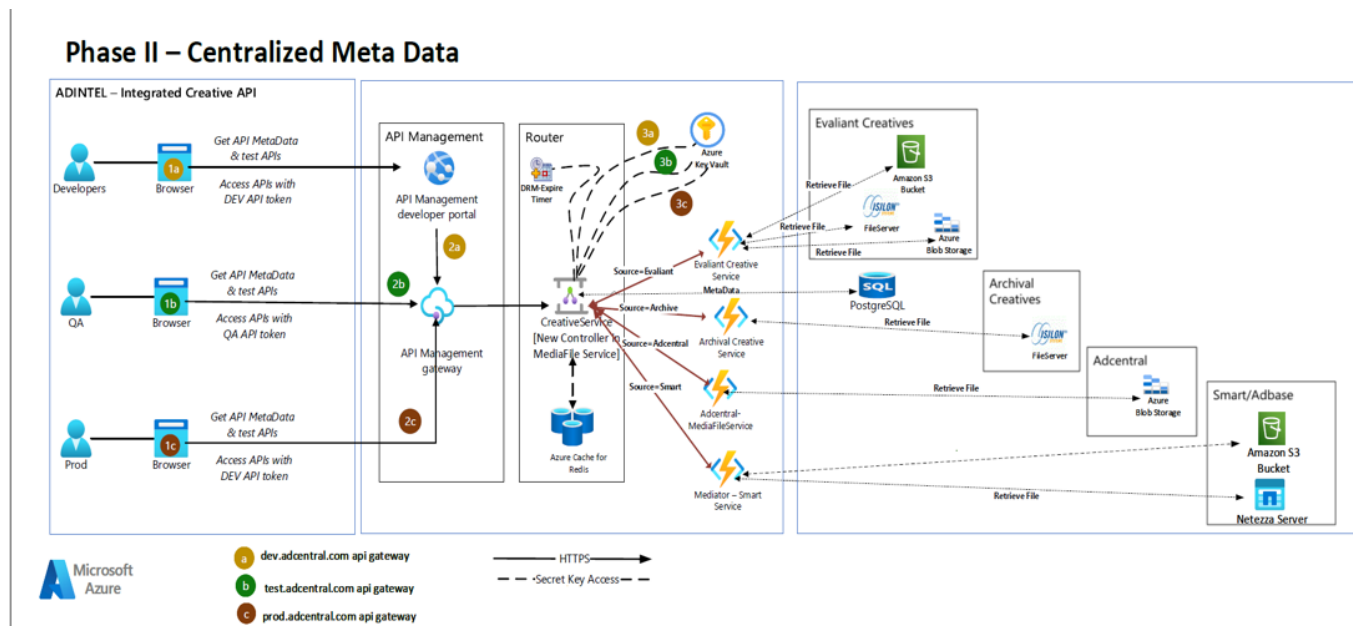
Description  
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## Introduction:

As a user or client app, I need to display creative asset by making a single call to a rest api and get a response that provides details of the creative, how to access, and display the creative.

The following sections outline the design and implementation of a REST API that streams various video and image formats to the screen from multiple storage locations, including AWS, Azure, local servers, and Netezza. The API includes a caching mechanism for frequently accessed creatives, a global unique identifier (GUID) for all creatives, and a PostgreSQL directory that maps the GUID to the URL or bytes needed to stream the creative. In addition, the API implements digital access rights for each creative, including the ability to set an expiration time for the creative. The API will utilize Azure API services to manage the end point, caching, and access rights.

## Specification:



The API shall be designed using the REST architectural style, with HTTP methods (e.g., GET, POST, PUT, DELETE) used to perform actions on the API's resources. The API shall support the following resource types:

- **Creative:** A video or image file that can be streamed to the screen.
- **Cache:** A store of frequently accessed creatives that can be quickly retrieved for streaming.
- **GUID:** A globally unique identifier for each creative, used to identify and locate the creative within the API's resources.
- **PostgreSQL Directory:** A database that maps the GUID of each creative to its URL or bytes, enabling the API to locate and stream the creative.
- **Management:** Azure API manager to maintain, secure, route, scale, and modify calls to the API

## The API will support the following actions:

**Stream:** Retrieve and display a creative on the screen.  
**Cache:** Store a creative in the cache for faster retrieval.

**Set access rights:** Define the digital access rights for a creative, including expiration time.

The API must support the following mime types and media:

Media	Return value:	File extension
Print	image/jpeg	.jpg
TV	video/mpeg	.mpg
TV(MP4)	video/mp4	.mp4
Radio	audio/x-wav	.wav
Cinema	video/x-flv	.flv
OOH	image/jpeg	.jpg
Digital	image/gif	.gif
	image/jpeg	.jpg
	video/mp4	.mp4
	image/png	.png
	application/x-shockwave-flash	.swf
	application/x-zip-compressed	.zip
	application/zip	.zip
	text/html	.zip
	flv-application/octet-stream	.flv

**Creative Global Unique Identifier:**

Production Databricks platform will be the source of truth for all creative IDs. The platform will implement a GUID across the current TV, Digital and Print media.  
GUID will be processed for other media as they are migrated to the platform.  
This GUID will be pushed downstream to client applications and therefore impacts ETL processing. Downstream processing is out of scope for this user story.

## PostgreSQL Directory:

Plan to extract, map, and load creative paths:

1. Identify the storage locations of all creatives, including AWS, Azure, local servers, and Netezza.
2. Extract the paths for each creative from the storage locations using a script or tool.
3. Map the extracted paths to unique GUIDs using a unique identifier generator.
4. Load the mapping of GUIDs to paths into the PostgreSQL directory.

Sample table shown below:

creative_id	creative_type	media_type	local_creative_Id	json_pay_load
GUID1	image	Print	123456	{}
GUID1	image	Print	123456	{}
GUID2	video	TV	78962	{}
GUID3	video	Digital	765622	{}
GUID3	video	Digital	765622	{}
GUID4	image	Print	7333	

## Cache Management:

- The API will cache frequently used creatives to improve performance and reduce response time.
- The cached creatives will expire after 30 days by default, but this expiration date can be customized through the API's configuration settings.
- To ensure that expired creatives are removed from the cache, the API will regularly check for expired creatives and remove them as necessary.

## Azure API Management:

Azure API Management is a cloud service that acts as an intermediary between the API and its users, providing features such as rate limiting, caching, and security. For the purposes of this API, Azure API Management will be used to manage the following:

- **End point:** The URL at which the API can be accessed by users. Azure API Management will provide a single endpoint for the API, enabling users to access the API from a single URL regardless of the underlying storage location of the creative.
- **Caching:** Azure API Management provides a built-in caching mechanism that stores frequently accessed creatives in memory or on disk, enabling faster retrieval and reduced load on the storage location. The API can be configured to store creatives in the cache based on user-defined criteria, such as frequency of access or expiration time.
- **Access control:** Azure API Management allows the API to define and enforce digital access rights for each creative, including expiration time. This can be done through the use of API keys or OAuth 2.0 authorization, enabling the API to restrict access to authorized users only. In addition, the service can be configured to enforce digital access rights for each creative, including expiration time, using policies.

## Azure Key Vault:

Azure Key Vault shall be used for Secrets Management and Key Management for the API Certificate Management. It shall be used to centralize storage of API secrets and to control their distribution.

## Endpoints:

- **GET /creatives:** Retrieves a list of creatives from the specified cloud storage accounts.
- **GET /creatives/: id:** Retrieves the specified creative from the specified cloud storage account.
- **GET /creatives/meta: id:** Retrieves the meta data for the specified creative from the specified cloud storage account.
- **POST /creatives:** Adds a new creative to the specified cloud storage account.

- **PUT /creatives/:id:** Updates the specified creative in the specified cloud storage account.
- **DELETE /creatives/:id:** Deletes the specified creative from the specified cloud storage account.

### Caching:

The API utilizes caching for frequently used creatives in order to improve performance and efficiency. The cache is automatically refreshed whenever a creative is added, updated, or deleted, and can be manually refreshed using the following endpoint:

**POST /cache/refresh:** Refreshes the creative cache.

### Expiration:

The API has an expiration feature for creatives that can be configured by the user. By default, creatives will expire after 30 days, but this can be changed using the following endpoint:

**PUT /expiration:** Updates the expiration time for creatives.

### Reverse lookup of the GUID:

The API should also provide the following OPTIONAL GET parameters for a reverse lookup of the GUID:

- **localCreativeId:** It is the creative id used in the legacy APIs' and databases. e.g., Kantar Creative ID
- **mediaType:** Known media type of the local creative ID.

### Output:

The API will return a JSON object with the following fields:

- **CreativeID:** The GUID of the creative.
- **Location:** The URL or bytes of the creative for various formats
- **AccessRights:** An object containing information about the digital access rights for the creative, including expiration time.

### JSON Schema:

```
{
  "$schema": "https://json-schema.org/draft/2019-09/schema",
  "$id": "http://example.com/example.json",
  "type": "object",
  "default": {},
  "title": "Root Schema",
  "required": [
    "succeeded",
    "message",
    "result"
  ],
  "properties": {
    "succeeded": {
      "type": "boolean",
      "default": false,
      "title": "The succeeded Schema",
      "examples": [
        true
      ]
    },
    "message": {
      "type": "string",
      "default": "",
      "title": "The message Schema",
      "examples": [
        "Success"
      ]
    },
    "result": {
      "type": "array",
      "default": [],
      "title": "The result Schema",
      "items": {
        "type": "object",
        "default": {},
        "title": "A Schema",
        "required": [
          "creativeID",
          "access_rights",
          "assets"
        ]
      }
    }
  }
}
```

```

],
"properties": {
  "creativeID": {
    "type": "string",
    "default": "",
    "title": "The creativeID Schema",
    "examples": [
      "123456"
    ]
  },
  "access_rights": {"expiration_time": "2022-01-01T00:00:00Z"},
  "assets": {
    "type": "array",
    "default": [],
    "title": "The assets Schema",
    "items": {
      "type": "object",
      "default": {},
      "title": "A Schema",
      "required": [
        "title",
        "thumbnailIndex",
        "fullIndex",
        "UNCIndex",
        "media"
      ],
      "properties": {
        "title": {
          "type": "string",
          "default": "",
          "title": "The title Schema",
          "examples": [
            "Creative"
          ]
        },
        "thumbnailIndex": {
          "type": "integer",
          "default": 0,
          "title": "The thumbnailIndex Schema",
          "examples": [
            1
          ]
        },
        "fullIndex": {
          "type": "integer",
          "default": 0,
          "title": "The fullIndex Schema",
          "examples": [
            0
          ]
        },
        "UNCIndex": {
          "type": "integer",
          "default": 0,
          "title": "The UNCIndex Schema",
          "examples": [
            2
          ]
        },
        "media": {
          "type": "array",
          "default": [],
          "title": "The media Schema",
          "items": {
            "type": "object",
            "title": "A Schema",
            "required": [
              "type",
              "form",
              "urls",
              "mimeType",
              "secure"
            ],
            "properties": {
              "type": {
                "type": "string",
                "title": "The type Schema",
                "examples": [
                  "original",
                  "thumbnail",
                  "UNC"
                ]
              },
              "form": {
                "type": "string",
                "title": "The form Schema",
                "examples": [
                  "streaming",

```

```

        "bytes"
    ],
    "urls": {
        "type": "array",
        "title": "The urls Schema",
        "items": {
            "type": "string",
            "title": "A Schema",
            "examples": [
                "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d",
                "//tigris/e/0/1.2/thumbnail/T/GODYCO-371.jpg"
            ]
        },
        "examples": [
            "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d",
            "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
        ],
        [
            "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"],
        [
            "//tigris/e/0/1.2/thumbnail/T/GODYCO-371.jpg" ]
    ],
    "mimeType": {
        "type": "string",
        "title": "The mimeType Schema",
        "examples": [
            "video/quicktime",
            "image/jpeg"
        ]
    },
    "secure": {
        "type": "boolean",
        "title": "The secure Schema",
        "examples": [
            true
        ]
    }
},
"examples": [{
    "type": "original",
    "form": "streaming",
    "urls": [
        "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d",
        "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
    ],
    "mimeType": "video/quicktime"
},
{
    "type": "thumbnail",
    "form": "streaming",
    "urls": [
        "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
    ],
    "secure": true,
    "mimeType": "image/jpeg"
},
{
    "type": "UNC",
    "form": "bytes",
    "urls": [
        "//tigris/e/0/1.2/thumbnail/T/GODYCO-371.jpg"
    ],
    "secure": true,
    "mimeType": "image/jpeg"
}
}],
"examples": [
    [{
        "type": "original",
        "form": "streaming",
        "urls": [
            "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d",
            "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
        ],
        "mimeType": "video/quicktime"
    },
    {
        "type": "thumbnail",
        "form": "streaming",
        "urls": [
            "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
        ],
        "secure": true,
        "mimeType": "image/jpeg"
    }
],
{

```

```

        "type": "UNC",
        "form": "bytes",
        "urls": [
            "//tigris/e/0/1.2/thumbnail/T/GODYCO-371.jpg"
        ],
        "secure": true,
        "mimeType": "image/jpeg"
    }
}
},
"examples": [{
    "title": "Creative",
    "thumbnailIndex": 1,
    "fullIndex": 0,
    "UNCIndex": 2,
    "media": [{
        "type": "original",
        "form": "streaming",
        "urls": [
            "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d",
            "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
        ],
        "mimeType": "video/quicktime"
    },
    {
        "type": "thumbnail",
        "form": "streaming",
        "urls": [
            "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
        ],
        "secure": true,
        "mimeType": "image/jpeg"
    },
    {
        "type": "UNC",
        "form": "bytes",
        "urls": [
            "//tigris/e/0/1.2/thumbnail/T/GODYCO-371.jpg"
        ],
        "secure": true,
        "mimeType": "image/jpeg"
    }
    ]
}],
"examples": [
    [{
        "title": "Creative",
        "thumbnailIndex": 1,
        "fullIndex": 0,
        "UNCIndex": 2,
        "media": [{
            "type": "original",
            "form": "streaming",
            "urls": [
                "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d",
                "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
            ],
            "mimeType": "video/quicktime"
        },
        {
            "type": "thumbnail",
            "form": "streaming",
            "urls": [
                "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
            ],
            "secure": true,
            "mimeType": "image/jpeg"
        },
        {
            "type": "UNC",
            "form": "bytes",
            "urls": [
                "//tigris/e/0/1.2/thumbnail/T/GODYCO-371.jpg"
            ],
            "secure": true,
            "mimeType": "image/jpeg"
        }
        ]
    }
]
},
"examples": [{
    "creativeID": "123456",
    "assets": [{
        "title": "Creative",
        "thumbnailIndex": 1,
        "fullIndex": 0,

```

```

        "UNCIndex": 2,
        "media": [{
            "type": "original",
            "form": "streaming",
            "urls": [
                "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d",
                "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
            ],
            "mimeType": "video/quicktime"
        },
        {
            "type": "thumbnail",
            "form": "streaming",
            "urls": [
                "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
            ],
            "secure": true,
            "mimeType": "image/jpeg"
        },
        {
            "type": "UNC",
            "form": "bytes",
            "urls": [
                "/tigris/e/0/1.2/thumbnail/T/GODYCO-371.jpg"
            ],
            "secure": true,
            "mimeType": "image/jpeg"
        }
    ]
}
}],
"examples": [
    [{
        "creativeID": "123456",
        "assets": [{
            "title": "Creative",
            "thumbnailIndex": 1,
            "fullIndex": 0,
            "UNCIndex": 2,
            "media": [{
                "type": "original",
                "form": "streaming",
                "urls": [
                    "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d",
                    "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
                ],
                "mimeType": "video/quicktime"
            },
            {
                "type": "thumbnail",
                "form": "streaming",
                "urls": [
                    "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
                ],
                "secure": true,
                "mimeType": "image/jpeg"
            },
            {
                "type": "UNC",
                "form": "bytes",
                "urls": [
                    "/tigris/e/0/1.2/thumbnail/T/GODYCO-371.jpg"
                ],
                "secure": true,
                "mimeType": "image/jpeg"
            }
        ]
    }
    ]
}],
"examples": [{
    "succeeded": true,
    "message": "Success",
    "result": [{
        "creativeID": "123456",
        "assets": [{
            "title": "Creative",
            "thumbnailIndex": 1,
            "fullIndex": 0,
            "UNCIndex": 2,
            "media": [{
                "type": "original",
                "form": "streaming",
                "urls": [
                    "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d",
                    "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
                ]
            }
        ]
    }
    ]
}],

```



```

        "mimeType": "video/quicktime"
    },
    {
        "type": "thumbnail",
        "form": "streaming",
        "urls": [
            "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
        ],
        "secure": true,
        "mimeType": "image/jpeg"
    },
    {
        "type": "UNC",
        "form": "bytes",
        "urls": [
            "//tigris/e/0/1.2/thumbnail/T/GODYCO-371.jpg"
        ],
        "secure": true,
        "mimeType": "image/jpeg"
    }
  ]
}

```

## Sample Output:

```

{
  "succeeded": true,
  "message": "Success",
  "result": [{
    "creativeID": "123456",
    "access_rights": {"expiration_time": "2022-01-01T00:00:00Z"},
    "assets": [{
      "title": "Creative",
      "thumbnailIndex": 1,
      "fullIndex": 0,
      "UNCIndex": 2,
      "media": [{
        "type": "original",
        "form": "streaming",
        "urls": [
          "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d",
          "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
        ],
        "mimeType": "video/quicktime"
      },
      {
        "type": "thumbnail",
        "form": "streaming",
        "urls": [
          "blob:https://dev.adcentral.kantar.com/1e1cb6a1-a17c-4c05-9c31-96efb814988d"
        ],
        "secure": true,
        "mimeType": "image/jpeg"
      },
      {
        "type": "UNC",
        "form": "bytes",
        "urls": [
          "bytes:0x0123456789ABCDEF"
        ],
        "secure": true,
        "mimeType": "image/jpeg"
      }
    ]
  }
]
}

```

## Flow:

### All Creative Paths:

Given a creative GUID to GET /creatives/meta, the API shall lookup all creative locations in the PostgreSQL directory and return a JSON output with all locations to the client. The client then selects the format or quality it wants to display from the JSON output. Client makes a second call to stream the creative to it.

## Default Creative Path:

A client can make a call GET /creatives/: id: to the API to serve the default creative format and quality.

## Conclusion:

The REST API described in this document will provide a flexible and scalable solution for streaming various video and image formats from multiple storage locations, with the added benefits of a caching mechanism, global unique identifier, and digital access rights management. By utilizing Azure API Management, the API will also benefit from enhanced security, rate limiting, and caching capabilities. Overall, the API will enable users to easily and securely access and display creatives on their screens.

### Acceptance Criteria

#### Acceptance Criteria

The rest API must meet the following conditions:

- Provide a microsecond response time to get the creative metadata
- Obfuscate the location of the creatives (server, cloud etc.) from consumers
- Return a JSON response that can be consumed by all current and new applications
- Provide access to all available formats, versions, pages, and resolution of the creatives
- Include all access paths, UNC, URL, and bytes/binaries of the creative
- Implement a caching mechanism and retrieve frequently accessed creatives from the cache
- Serve only users authenticated and authorized to access a creative.
- Provide a default expiration date for each creative served and an option to set specific expiration dates based on end user needs
- Use a global creative ID across all creative assets
- Implement a means to access creatives using legacy creativeIDs and parameters - a reverse lookup

Tasks

Tasks

Dev Task

False

Test Task

False

DevOps Task

False

Details

Details

Module

Requirement