

CDNi Control Interface extension HTTP REST API

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Overview

- A new CDNi internet draft about a set of REST APIs
- As part of the Control Interface
- For exploiting the CDNi interfaces
 - Request Routing Footprint and Capabilities interface – RFC 8008
 - Request Routing Extension - RFC 8804
 - Request Routing Redirection Interface – RFC 7937, future extension
 - Logging Interface – RFC 7937, draft-ietf-cdni-logging-extensions-00
 - Metadata Interface – RFC 8006, draft-.....-metadata-0x
 - Capacity Insight Interface - draft-ietf-cdni-capacity-insights-extensions-10
- Complementary to the Control/Triggers interface – RFC 8007

Rational - problem

- The Control/Triggers interface (RFC 8007) is based on a PULL model
 - Forces the uCDN to implement and exposes a HTTP end-point.
 - Interaction model between the uCDN and dCDN is rather complex.
 - It provides only one asynchronous mode of operation
- There is no API associated with Other interfaces
 - Footprint and Capabilities (FCI)
 - Bootstrapping
- There is no basic understanding how to operate the various interfaces through an harmonized API

Rational - Proposal

- The proposed REST API adds a PUSH model
 - Two modes of operation
 - synchronous and asynchronous
 - Complements and rely on the Control/Triggers Interface
 - Re-used the status resource principle
 - Covers common aspects like security and error management
- The proposed REST API covers the entire Control interface
 - Bootstrapping
 - Footprint and Capabilities
 - Configuration (metadata)
 - Cache Management
- Along with the proposed REST API
 - Describes the basic workflow(s) that governs the usage of the various APIs

Footprint and capabilities

OC_FCI



GET

/OC/FCI/advertisement Gets the FCI advertisements according to SVA and CDNI (RFC8008/RFC8804)



POST

/OC/FCI/subscription Subscribes to FCI updates notifications.



GET

/OC/FCI/subscription/{subscriptionId} Gets the FCI notification subscription.



DELETE

/OC/FCI/subscription/{subscriptionId} Deletes the notification subscription.



Configuration

- CI/Triggers (RFC 8007) and extensions
 - draft-ietf-cdni-ci-triggers-rfc8007bis-15
- New REST API

OC_COI_simple



PUT

`/OC/COI/configuration` Communicates the metadata/configuration (RFC8006 + RFC8804) to the ISP with a simple API.



GET

`/OC/COI/configuration` Gets the whole metadata configuration (RFC 8006)



DELETE

`/OC/COI/configuration` Deletes the whole configuration.



Configuration on a host basis

OC_COI_simple_host



PUT

`/OC/COI/configuration/{host}` Communicates part of the metadata/configuration (RFC8006 + RFC8804) to the ISP with a simple API.



GET

`/OC/COI/configuration/{host}` Gets part of the metadata configuration (RFC 8006)



DELETE

`/OC/COI/configuration/{host}` Deletes part of the configuration related to a host name.



Configuration on a host and path pattern basis

OC_COI_simple_pathPattern ^

PUT	<code>/OC/COI/configuration/{host}/{pathPattern}</code>	Communicates the metadata/configuration (RFC8006 + RFC88004) to the ISP with a simple API	∨	🔒
GET	<code>/OC/COI/configuration/{host}/{pathPattern}</code>	Gets part of the metadata configuration (RFC 8006) associated with a path pattern.	∨	🔒
DELETE	<code>/OC/COI/configuration/{host}/{pathPattern}</code>	Deletes part of the configuration associated with a host name AND a path pattern	∨	🔒

Configuration response

- Return a ci-trigger-status
 - trigger: type = preposition
 - ctime, mtime, etime
 - status
 - Complete:
 - the configuration is active
 - pending
 - triggerId
 - HTTP GET “/OC/CI/status/{triggerId}”
 - failed:
 - ecdn
 - ereject
 - metadata.url
 - Whenever justified, incomprehensible set to "True".

Responses		
Code	Description	Links
200	The configuration file has been modified. Media type application/cdni;ptype=ci-trigger-status Controls header. Example Value Schema file----c-3A-Users-BichotG-Documents-OC-API-202.0-SVA_OC_CDNI_openapi.yaml-ci-trigger-status > (...)	No links
201	The configuration file has been created. Media type application/cdni;ptype=ci-trigger-status Example Value Schema file----c-3A-Users-BichotG-Documents-OC-API-202.0-SVA_OC_CDNI_openapi.yaml-ci-trigger-status > (...)	No links
202	The 202 status code is an interim response used to inform the client that the server has accepted the complete request, but has not yet completed it. This status code SHOULD only be sent when the server has a reasonable expectation that the request will take significant time to complete. Media type application/cdni;ptype=ci-trigger-status Example Value Schema file----c-3A-Users-BichotG-Documents-OC-API-202.0-SVA_OC_CDNI_openapi.yaml-ci-trigger-status > (...)	No links
400	Command is invalid. The status report gathers the URL of the faulty metadata configuration file. The URL corresponds to the configuration file modified: Invalid metadata objects are marked with the properties safe-to-redistribute set to "false" and incomprehensible set to "true". Note that the status report is not kept by the dCDN. Media type application/cdni;ptype=ci-trigger-status Example Value Schema file----c-3A-Users-BichotG-Documents-OC-API-202.0-SVA_OC_CDNI_openapi.yaml-ci-trigger-status > (...)	No links

Configuration Notification

OC_COI_notif



POST

`/OC/COI/subscription` Subscribes to OCI status update notifications.



GET

`/OC/COI/subscription/{subscriptionId}` get the OCI notification subscription



DELETE

`/OC/COI/subscription/{subscriptionId}` delete the notification subscription



Bootstrap API

OC_BSB



GET

`/OC/bootstrap/bootstrap` The bootstrap API entry point. Expose the bootstrap API versions and their respective entry points.



OC_BSI



GET

`/OC/bootstrap/version` Discover the dCDN OpenCaching exposed API information.



Bootstrap API – data model

```
BSI.OpenCachingVersions:
  type: object
  description: 'Describe the version number attached with each implemented and exposed Open Caching interface. A version
number must be compliant with the following form: "<Major>.<minor>.<patch>".'
  required:
  - fci
  properties:
    fci:
      description: 'Footprint and Capabilities Interface version.'
      type: array
      items:
        $ref: '#/components/schemas/BSI_version'
    coi:
      description: 'Configuration interface version.'
      type: array
      items:
        $ref: '#/components/schemas/BSI_version'
    rri:
      description: 'Request Routing Interface version.'
      type: array
      items:
        $ref: '#/components/schemas/BSI_version'
    cmi:
      description: 'Content Management Interface version.'
      type: array
      items:
        $ref: '#/components/schemas/BSI_version'
    loi:
      description: 'Logging Interface version.'
      type: array
      items:
        $ref: '#/components/schemas/BSI_version'
```

Cache Management

- CI/Triggers (RFC 8007) and extensions
 - draft-ietf-cdni-ci-triggers-rfc8007bis-15
- New REST API
 - Cache Bucket API

Simple workflows

