

# ETSI GS CIM 013 V2.1.1 (2024-04)



## Context Information Management (CIM); NGSI-LD Test Purposes Descriptions

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# Foreword

This Group Specification (GS) has been produced by ETSI Industry Specification Group (ISG) cross-cutting Context Information Management (CIM).

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# Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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# 1 Scope

The present document contains the description of each abstract test case using the Test Template [i.2] and using the Test Purposes Description Language identified in ETSI GS CIM 012 [2] and ETSI GR CIM 011 [i.1]. The test cases are described in tabular form. All clauses mentioned in tables of clause 4 of the present document are references to the NGSI-LD specification, hence to be found in [1].

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## 2 References

### 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

- [1] [ETSI GS CIM 009 \(V1.5.1\) \(2021-11\)](#): "Context Information Management (CIM); NGSI-LD API".
- [2] [ETSI GS CIM 012 \(V1.1.1\) \(2021-03\)](#): "Context Information Management (CIM); NGSI-LD Test Suite Structure".
- [3] Void.

### 2.2 Informative references

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NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long-term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI GR CIM 011 (V1.1.1) (2021-04): "Context Information Management (CIM); NGSI-LD Testing Framework: Test Purposes Description Language (TPDL)".
- [i.2] ETSI GS CIM 016 (V1.1.1) (2021-04): "Context Information Management (CIM); NGSI-LD Testing Framework: Test Template".

## 3 Definition of terms, symbols and abbreviations

### 3.1 Terms

For the purposes of the present document, the following terms apply:

**NOTE:** The letters "NGSI-LD" were added to most terms to confirm that they are distinct from other terms of similar/same name in use in other organizations, however, in the present document the letters "NGSI-LD" are generally omitted for brevity.

**NGSI-LD Central Broker:** NGSI-LD Context Broker that only uses a local storage when serving NGSI-LD requests, without involving any external Context Sources

**NGSI-LD Context Broker:** architectural component that implements all the NGSI-LD interfaces

**NGSI-LD Context Consumer:** agent that uses the query and subscription functionality of NGSI-LD to retrieve context information

**NGSI-LD Context Producer:** agent that uses the NGSI-LD context provision and/or registration functionality to provide or announce the availability of its context information to an NGSI-LD Context Broker

**NGSI-LD Context Registry:** software functional element where Context Sources register the information that they can provide

**NOTE:** It is used by Distribution Brokers and Federation Brokers to find the appropriate Context Sources which can provide the information required for serving an NGSI-LD request.

**NGSI-LD Context Source:** source of context information which implements the NGSI-LD consumption and subscription (and possibly provision) interfaces defined by the present document

**NOTE:** It is usually registered with an NGSI-LD Registry so that it can announce what kind of information it can provide, when requested, to Context Consumers and Brokers.

**NGSI-LD Distribution Broker:** NGSI-LD Context Broker that uses both local context information and registration information from an NGSI-LD Context Registry, to access matching context information from a set of distributed Context Sources

**NGSI-LD Federation Broker:** Distribution Broker that federates information from multiple underlying NGSI-LD Context Brokers and across domains

### 3.2 Symbols

Void.

### 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

CF	Config Identifier
DEL	DELETE
HTTP	HyperText Transfer Protocol
JSON	Java Script Object Notation
PICS	Profile Implementation Conformance Statement
SUT	System Under Test
TP	Test Purpose
URI	Unified Resource Identification
URL	Unified Resource Location

## 4.1 jsonldContext

#### 4.1.1 Consumption

#### 4.1.1.1 ServeContext

<b>TP Id</b>	TP/NGSI-LD/CTX/Cons/053_06	
<b>Test objective</b>	Check that the numberOfHits is increased after using a Cached context	
<b>Reference</b>	ETSI GS CIM 009 V1.5.1 [1], clause 5.13.4	
<b>Config Id</b>	CF_01	
<b>PICS Selection</b>	PICS_SerOneSpeUse@co	
<b>Initial conditions</b>	with { the SUT containing a Cached @context created from a entity creation through downloading from external server. }	
<b>Permutations</b>		
<b>TP Permutation id</b>	TP/NGSI-LD/CTX/Cons/053_06_01	
<b>Name</b>	053_06_01 Check that the numberOfHits is increased after using a Cached context	
<b>Parent Release</b>	v1.5.1	
<b>Description</b>	Check that the numberOfHits is increased after using a Cached context	
<b>Expected behaviour</b>	<b>Test events</b>	<b>Direction</b>
	<pre> when {   the SUT receives a Request from the client containing:     URL set to '/'     ngsi-lid/v1/jsonldContexts/{contextId}'     method set to 'GET'     Serve a @context with contextID '\$     {uri}' and details 'true' } then {   the SUT sends a valid Response for the operations:     Serve a @context with Response Status Code set to     200 and     Serve a @context with Check that the numberOfHits in the response     body is set to '2' } </pre>	<p>SUT &lt;- Client</p> <p>SUT -&gt; Client</p>

<b>TP Id</b>	TP/NGSI-LD/CTX/Cons/053_04	
<b>Test objective</b>	Check that one can get an increase numberOfHits after creation of a Hosted @context and using it	
<b>Reference</b>	ETSI GS CIM 009 V1.5.1 [1], clause 5.13.4	
<b>Config Id</b>	CF_01	
<b>PICS Selection</b>	PICS_SerOneSpeUse@co	
<b>Initial conditions</b>	with { the SUT containing a Cached @context created from a entity creation through downloading from external server. }	
<b>Permutations</b>		
<b>TP Permutation id</b>	TP/NGSI-LD/CTX/Cons/053_04_01	
<b>Name</b>	053_04_01 Check that the numberOfHits is increased after using a Hosted context	
<b>Parent Release</b>	v1.5.1	
<b>Description</b>	Check that the numberOfHits is increased after using a Hosted context	
<b>Expected behaviour</b>	<b>Test events</b>	<b>Direction</b>
	when { the SUT receives a Request from the client containing: URL set to '/' ngsi-ls/v1/jsonldContexts/{contextId}' method set to 'GET' Serve a @context with contextID '\$ {uri}' and details 'true' } }	SUT <- Client

	<pre> then {   the SUT sends a valid Response for the operations:     Serve a @context with Response Status Code set to     200 and     Serve a @context with Check that the numberOfHits in the response     body is set to '2' } </pre>	SUT -> Client
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TP Id	TP/NGSI-LD/CTX/Cons/053_02	
Test objective	Check that one can serve a previous created @context with details equal to True	
Reference	ETSI GS CIM 009 V1.5.1 [1], clause 5.13.4	
Config Id	CF_01	
PICS Selection	PICS_SerOneSpeUse@co	
Initial conditions	with { the SUT containing a Hosted @context and the default Cached Core Context. }	
Permutations		
TP Permutation id	TP/NGSI-LD/CTX/Cons/053_02_01	
Name	053_02_01 Serve a @context with details set to True	
Parent Release	v1.5.1	
Description	Check that one can serve a @context with details	
Expected behaviour	Test events	Direction
	when { the SUT receives a Request from the client containing: URL set to '/' ngsi-ld/v1/jsonldContexts/{contextId}' method set to 'GET' Serve a @context with contextID '\$ {uri}' and details 'true' }	SUT <- Client
	then { the SUT sends a valid Response for the operations: Serve a @context with Response Status Code set to 200 and Serve a @context with Response reason set to 'OK' and Serve a @context with Response Header: Content-Type set to application/json and Serve a @context with Check the Body of the response should contain a @context with 'URL' key not Empty and 'string' type, with 'localId' key not Empty and 'string' type, with 'kind' key not Empty, 'string' type, and value set to 'Hosted', and 'timestamp' and 'DateTime' format and Serve a @context with The Response Body ` \${response.json()}` might contain the key 'lastUsage' and Serve a @context with The Response Body ` \${response.json()}` might contain the key 'numberOfHits' and Serve a @context with The Response Body ` \${response.json()}` might contain the key 'extraInfo' and Serve a @context with Check that the only allowed keys in the response body of a @context are 'URL', 'localId', 'kind', 'timestamp', 'lastUsage', 'numberOfHits', 'extraInfo' }	SUT -> Client

TP Id	TP/NGSI-LD/CTX/Cons/053_05
Test objective	Check that the context served by a context server is still in the broker after a ERROR_TYPE_LD_CONTEXT_NOT_AVAILABLE with details=true
Reference	ETSI GS CIM 009 V1.5.1 [1], clause 5.13.4
Config Id	CF_01
PICS Selection	PICS_SerOneSpeUse@co
Initial conditions	with { the SUT containing a Cached @context created from a entity creation through downloading from external server. }
Permutations	
TP Permutation id	TP/NGSI-LD/CTX/Cons/053_05_01
Name	053_05_01 Check that the context served by a context server is still in the broker after a ERROR_TYPE_LD_CONTEXT_NOT_AVAILABLE with details=true
Parent Release	v1.5.1

<b>Description</b>	Check that the context served by a context server is still in the broker after a ERROR_TYPE_LD_CONTEXT_NOT_AVAILABLE with details=true	
<b>Expected behaviour</b>	<b>Test events</b>	<b>Direction</b>
	when { the SUT receives a Request from the client containing: URL set to '/' ngsi-ld/v1/jsonldContexts/{contextId}' method set to 'GET' Serve a @context with contextID '\$ {uri}' and details 'true' }	SUT <- Client
	then { the SUT sends a valid Response for the operations: Serve a @context with Response Status Code set to 200 and Serve a @context with Response reason set to 'OK' and Serve a @context with Response Header: Content-Type set to application/json and Serve a @context with Check the Body of the response should contain a @context with 'URL' key not Empty and 'string' type, with 'localId' key not Empty and 'string' type, with 'kind' key not Empty, 'string' type, and value set to 'Cached', and 'timestamp' and 'DateTime' format and Serve a @context with The Response Body '\$ {response.json()}' might contain the key 'lastUsage' and Serve a @context with The Response Body '\$ {response.json()}' might contain the key 'numberOfHits' and Serve a @context with The Response Body '\$ {response.json()}' might contain the key 'extraInfo' and Serve a @context with Check that the only allowed keys in the response body of a @context are 'URL', 'localId', 'kind', 'timestamp', 'lastUsage', 'numberOfHits', 'extraInfo' }	SUT -> Client

TP Id	TP/NGSI-LD/CTX/Cons/053_07	
Test objective	Check that one can serve a ImplicitlyCreated @context with details set to true	
Reference	ETSI GS CIM 009 V1.5.1 [1], clause 5.13.4	
Config Id	CF_01	
PICS Selection	PICS_SerOneSpeUse@co	
Initial conditions	with { the SUT containing a ImplicitlyCreated @context created from a subscription query. }	
Permutations		
TP Permutation id	TP/NGSI-LD/CTX/Cons/053_07_01	
Name	053_07_01 Check that one can serve a ImplicitlyCreated @context with details set to true	
Parent Release	v1.5.1	
Description	Check that one can serve a ImplicitlyCreated @context with details set to true	
Expected behaviour	Test events	Direction
	when { the SUT receives a Request from the client containing: URL set to '/' ngsi-ld/v1/jsonldContexts/{contextId}' method set to 'GET' Serve a @context with contextID '\$ {implicit_id}' and details 'true' }	SUT <- Client
	then { the SUT sends a valid Response for the operations: Serve a @context with Response Status Code set to 200 and Serve a @context with Response reason set to 'OK' and Serve a @context with Response Header: Content-Type set to application/json and Serve a @context with Check the Body of the response should contain a @context with 'URL' key not Empty and 'string' type, with 'localId' key not Empty and 'string' type, with 'kind' key not Empty, 'string' type, and value set to 'ImplicitlyCreated', and 'timestamp' and 'DateTime' format and Serve a @context with The Response Body '\$	SUT -> Client

	<pre> {response.json()}' might contain the key 'lastUsage' and     Serve a @context with The Response Body ` \$ {response.json()}' might contain the key 'numberOfHits' and     Serve a @context with The Response Body ` \$ {response.json()}' might contain the key 'extraInfo' and     Serve a @context with Check that the only allowed keys in the response body of a @context are 'URL', 'localId', 'kind', 'timestamp', 'lastUsage', 'numberOfHits', 'extraInfo' } </pre>	
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TP Id	TP/NGSI-LD/CTX/Cons/053_03	
Test objective	Check that one gets an error when try to serve a @context	
Reference	ETSI GS CIM 009 V1.5.1 [1], clause 5.13.4	
Config Id	CF_01	
PICS Selection	PICS_SerOneSpeUse@co	
Initial conditions	with { the SUT containing a Hosted @context and the default Cached Core Context. }	
Permutations		
TP Permutation id	TP/NGSI-LD/CTX/Cons/053_03_01	
Name	053_03_01 Serve a @contexts with a wrong id and correct details	
Parent Release	v1.5.1	
Description	Check that an error is returned when one requests for a @context that does not exist	
Expected behaviour	Test events	Direction
	when { the SUT receives a Request from the client containing: URL set to '/' ngsi-ld/v1/jsonldContexts/{contextId}' method set to 'GET' Serve a @context with contextId 'wrong_id_context' and details 'true' }  then { the SUT sends a valid Response for the operations: Serve a @context with Response Status Code set to 404 and Serve a @context with Response reason set to 'Not Found' and Serve a @context with Response Body containing the type '\$ {ERROR_TYPE_RESOURCE_NOT_FOUND}' and Response Body Title is a string and is not \${EMPTY} and Response Body Detail is a string and is not \${EMPTY} and Response Boty Title is not equal to Response Body Detail }	SUT <- Client  

	and Response Boty Title is not equal to Response Body Detail }	
<b>TP Permutation id</b>	TP/NGSI-LD/CTX/Cons/053_03_03	
<b>Name</b>	053_03_03 Serve a Cached @contexts with details set to false	
<b>Parent Release</b>	v1.5.1	
<b>Description</b>	Check that an error is returned when one requests for a @context that does not exist	
<b>Expected behaviour</b>	<b>Test events</b>	<b>Direction</b>
	when { the SUT receives a Request from the client containing: URL set to '/' ngsi-ld/v1/jsonldContexts/{contextId}' method set to 'GET' Serve a @context with contextID 'https:// uri.etsi.org/ngsi-ld/v1/ngsi-ld-core-context- v1.6.jsonld' and details 'false' }	SUT <- Client
	then { the SUT sends a valid Response for the operations: Serve a @context with Response Status Code set to 422 and Serve a @context with Response reason set to 'Unprocessable Content' and Serve a @context with Response Body containing the type 'https:// uri.etsi.org/ngsi-ld/errors/ OperationNotSupported' and Response Body Title is a string and is not \${EMPTY} and Response Body Detail is a string and is not \${EMPTY} and Response Boty Title is not equal to Response Body Detail }	SUT -> Client

<b>TP Id</b>	TP/NGSI-LD/CTX/Cons/053_01	
<b>Test objective</b>	Check that one can serve a previous created @context	
<b>Reference</b>	ETSI GS CIM 009 V1.5.1 [1], clause 5.13.4	
<b>Config Id</b>	CF_01	
<b>PICS Selection</b>	PICS_SerOneSpeUse@co	
<b>Initial conditions</b>	with { the SUT containing a Hosted @context and the default Cached Core Context. }	
	<b>Permutations</b>	
<b>TP Permutation id</b>	TP/NGSI-LD/CTX/Cons/053_01_01	
<b>Name</b>	053_01_01 Serve a @context without details	
<b>Parent Release</b>	v1.5.1	
<b>Description</b>	Check that one can serve a @context with details equal to empty or false	
<b>Expected behaviour</b>	<b>Test events</b>	<b>Direction</b>
	when { the SUT receives a Request from the client containing: URL set to '/' ngsi-ld/v1/jsonldContexts/{contextId}' method set to 'GET' Serve a @context with contextID '\$ {uri}' and details '\${EMPTY}' }	SUT <- Client
	then { the SUT sends a valid Response for the operations: Serve a @context with Response Status Code set to 200 and Serve a @context with Response reason set to 'OK' and Serve a @context with Response Header: Content- Type set to application/ json and Serve a @context with Check the Body of the response should contain the @context `@context- minimal-valid.json' }	SUT -> Client
<b>TP Permutation id</b>	TP/NGSI-LD/CTX/Cons/053_01_02	
<b>Name</b>	053_01_02 Serve a @context with details equal to false	
<b>Parent Release</b>	v1.5.1	

<b>Description</b>	Check that one can serve a @context with details equal to empty or false	
<b>Expected behaviour</b>	<b>Test events</b>	<b>Direction</b>
	when { the SUT receives a Request from the client containing: URL set to '/' ngsi-ld/v1/jsonldContexts/{contextId}' method set to 'GET' Serve a @context with contextId '\$ {uri}' and details 'false' } 	SUT <- Client
	then { the SUT sends a valid Response for the operations: Serve a @context with Response Status Code set to 200 and Serve a @context with Response reason set to 'OK' and Serve a @context with Response Header: Content- Type set to application/ json and Serve a @context with Check the Body of the response should contain the @context '@context- minimal-valid.json' } 	SUT -> Client

TP Id	TP/NGSI-LD/CTX/Cons/053_08	
Test objective	Check that the numberOfHits is increased after using a ImplicitlyCreated context	
Reference	ETSI GS CIM 009 V1.5.1 [1], clause 5.13.4	
Config Id	CF_01	
PICS Selection	PICS_SerOneSpeUse@co	
Initial conditions	with { the SUT containing a ImplicitlyCreated @context created from a subscription query. }	
Permutations		
TP Permutation id	TP/NGSI-LD/CTX/Cons/053_08_01	
Name	053_08_01 Check that the numberOfHits is increased after using a ImplicitlyCreated context	
Parent Release	v1.5.1	
Description	Check that the numberOfHits is increased after using a ImplicitlyCreated context	
Expected behaviour	<b>Test events</b>	<b>Direction</b>
	when { the SUT receives a Request from the client containing: URL set to '/' ngsi-ld/v1/jsonldContexts/{contextId}' method set to 'GET' Serve a @context with contextId '\$ {implicit_id}' and details 'true' }  then { the SUT sends a valid Response for the operations: Serve a @context with Response Status Code set to 200 and Serve a @context with Check that the numberOfHits in the response body is set to '2' }	SUT <- Client   <

#### 4.1.1.2 ListContexts

TP Id	TP/NGSI-LD/CTX/Cons/052_06
Test objective	Check that one can list all the @context available in the broker with no previous add @context
Reference	ETSI GS CIM 009 V1.5.1 [1], clause 5.13.3
Config Id	CF_01
PICS Selection	PICS_LisAllCac@co
Initial conditions	with { the SUT containing a ImplicitlyCreated @context created from a subscription query. }
Permutations	
TP Permutation id	TP/NGSI-LD/CTX/Cons/052_06_01
Name	052_06_01 List @contexts with neither details or kind and a created ImplicitlyCreated @context

<b>Parent Release</b>	v1.5.1	
<b>Description</b>	Check that one can list @contexts	
<b>Expected behaviour</b>	<b>Test events</b>	<b>Direction</b>
	when { the SUT receives a Request from the client containing: URL set to '/ngsi-lid/v1/jsonldContexts?\${params_as_string}' method set to 'GET' List @contexts: and Query Parameter: details set to '\${EMPTY}' and Query Parameter: kind set to '\${EMPTY}' }	SUT <- Client
	then { the SUT sends a valid Response for the operations: List @contexts with Response Status Code set to 200 and List @contexts with Response reason set to 'OK' and List @contexts with Check Context Response Body Containing a list of identifiers and Query Parameter: response_body set to 'response.json()' and Query Parameter: expected_length set to '4' and Query Parameter: list_contexts set to 'list_contexts' }	SUT -> Client
<b>TP Permutation id</b>	TP/NGSI-LD/CTX/Cons/052_06_02	
<b>Name</b>	052_06_02 List @contexts with no details and kind set to hosted and a created ImplicitlyCreated @context	
<b>Parent Release</b>	v1.5.1	
<b>Description</b>	Check that one can list @contexts	
<b>Expected behaviour</b>	<b>Test events</b>	<b>Direction</b>
	when { the SUT receives a Request from the client containing: URL set to '/ngsi-lid/v1/jsonldContexts?\${params_as_string}' method set to 'GET' List @contexts: and Query Parameter: details set to '\${EMPTY}' and Query Parameter: kind set to 'Hosted' }	SUT <- Client
	then { the SUT sends a valid Response for the operations: List @contexts with Response Status Code set to 200 and List @contexts with Response reason set to 'OK' and List @contexts with Check Context Response Body Containing a list of identifiers and Query Parameter: response_body set to 'response.json()' and Query Parameter: expected_length set to '0' and Query Parameter: list_contexts set to 'list_contexts' }	SUT -> Client
<b>TP Permutation id</b>	TP/NGSI-LD/CTX/Cons/052_06_03	
<b>Name</b>	052_06_03 List @contexts with no details and kind set to cached and a created ImplicitlyCreated @context	
<b>Parent Release</b>	v1.5.1	
<b>Description</b>	Check that one can list @contexts	
<b>Expected behaviour</b>	<b>Test events</b>	<b>Direction</b>
	when { the SUT receives a Request from the client containing: URL set to '/ngsi-lid/v1/jsonldContexts?\${params_as_string}' method set to 'GET' List @contexts: and Query Parameter: details set to '\${EMPTY}' and Query Parameter: kind set to 'Cached' }	SUT <- Client
	then { the SUT sends a valid Response for the operations: List @contexts with Response Status Code set to 200 and List @contexts with Response reason set to 'OK' and List @contexts with Check Context Response Body Containing a list of identifiers and           }	SUT -> Client