

Health Results Resources - 1.27

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Glossary

Term	Definition
Result	An assessment result of an application or a module.
Result Detail	Additional values, indicators, related to a result: <ul style="list-style-type: none">• intermediate calculation results• breakdown of a measure• related quantitative values
Quality Standard Reference	A reference to a Quality Standard such as CWE-352

Assessment Result

URI Templates & Parameters

HTTP Action	Media Type	URI Templates	Description
GET	application/json	{Domain}/results{?parameters}	Array of results of a domain split by snapshots, by applications
	text/csv		

	application/vnd.openxmlformats-officedocument.spreadsheetml.sheet		
PUT	text/csv		Create or update background facts values in a AED or AAD domain for several applications in the last snapshot
GET	application/json text/csv application/vnd.openxmlformats-officedocument.spreadsheetml.sheet	{Domain}/applications/{ApplicationID}/results{?parameters}	Array of results for a given application
GET	application/json text/csv application/vnd.openxmlformats-officedocument.spreadsheetml.sheet	{Domain}/applications/{ApplicationID}/snapshots/{SnapshotID}/results{?parameters}	Array of results for a given application and snapshot
PUT	text/csv		Create or update background facts values in a AED or AAD domain for a given application and snapshot
GET	application/json text/csv application/vnd.openxmlformats-officedocument.spreadsheetml.sheet	{Domain}/modules/{ModuleID}/results{?parameters}	Array of results for a given module
GET	application/json text/csv application/vnd.openxmlformats-officedocument.spreadsheetml.sheet	{Domain}/modules/{ModuleID}/snapshots/{SnapshotID}/results{?parameters}	Array of results for a given module and snapshot
GET	application/json	{Domain}/transactions/{TransactionID}/results{?parameters}	Array of results for a given transaction

URI Parameter	Description	Values	Value Modifiers	Default value
quality-indicators	Specify a list of quality indicators	Quality Indicators identifiers or keywords, separated by a comma Ex: ../results/?quality-indicators=(business-criteria) Ex: ../results/?quality-indicators=(technical-criteria) Ex: ../results/?quality-indicators=(quality-rules) Ex: ../results/?quality-indicators=(quality-distributions) Ex: ../results/?quality-indicators=(quality-measures)	use 'c:' modifier to specify direct grade contributors of a Quality Indicator or a Quality Stantard reference (aka tag) Ex: c:61027 Ex: c:CISQ <u>Note:</u> this list is based on the union set of targeted snapshots use 'cc:' modifier to specify critical grade contributors of a Quality Indicator Ex: cc:61027 <u>Note:</u> the critical contributors of a Business Criterion (eg. cc:61027) are the BC's critical children, union the TCs' critical children. A Quality Rule is said to be critical if it is critical for at least one of its parents. In the Assessment Model, some metrics have multiple parents therefore a Quality Rule can be critical for parent A, and non-critical for parent B. In other words, using the "cc" modifier can return non-critical Quality Rules.	60017 (Total Quality Index) is used if quality-indicators, sizing-measures and background-facts parameters are not set

			<p>use 'nc:' modifier to specify non-critical grade contributors of a Quality Indicator</p> <p>Ex: nc:61027</p> <p>Note: the non-critical contributors (nc) of a Business Criterion (eg. nc:61027) are the BC's non-critical children, union the TCs' non-critical children. A Quality Rule is said to be critical if it is critical for at least one of its parents. In the Assessment Model, some metrics have multiple parents therefore a Quality Rule can be critical for parent A, and non-critical for parent B.</p>	
quality-standards	Specify a list of quality standards references	<p>Quality Standards references, separated by a comma</p> <p>Ex: ../results/?quality-standards=(CISQ, CISQ-Maintainability)</p>	Must be requested with the option in URL: select=(evolutionSummary) to retrieve the counts of violations	None
sizing-measures	Specify a list of sizing measures	<p>Sizing measures identifiers or keywords, separated by a comma</p> <p>Ex: ../results/?sizing-measures=(technical-size-measures)</p> <p>Ex: ../results/?sizing-measures=(functional-weight-measures)</p> <p>Ex: ../results/?sizing-measures=(critical-violation-statistics)</p> <p>Ex: ../results/?sizing-measures=(violation-statistics)</p> <p>Ex: ../results/?sizing-measures=(technical-debt-statistics)</p> <p>Ex: ../results/?sizing-measures=(run-time-statistics)</p>	None	None
background-facts	Specify a list of background facts	<p>Background Facts identifiers, separated by a comma</p> <p>Ex: ../results/?background-facts=(66061)</p>	None	None
metrics	Specify a list of metrics	Any metric identifier (quality-indicator, sizing-measure or background-fact) or keyword, separated by a comma	c: cc: nc:	60017
applications	Specify a list of applications	<p>Keyword \$all or application names separated by a comma</p> <p>Ex: ../results/?applications=(\$all)</p> <p>Ex: ../results/?applications=(name1, name with space 2)</p>	None	\$all (all applications)
modules	Specify a list of modules	<p>Keyword \$all or module names separated by a comma</p> <p>Ex: ../results/?modules=(\$all)</p> <p>Ex: ../results/?modules=(name1, name with space 2)</p>	None	None
technologies	Specify a list of technologies	<p>Keyword \$all or technology names separated by a comma</p> <p>Ex: ../results/?technologies=(\$all)</p> <p>Ex: ../results/?technologies=(name1, name with space 2)</p>	None	None
snapshots	Specify a list of snapshots	<p>The input value can be one of the following:</p> <ul style="list-style-type: none"> a positive or negative integer Ex: ../results/?snapshots=(-1) Ex: ../results/?snapshots=(1) <p>A negative number matches snapshots from the end (eg. -1 matches the last snapshot, -2 matches the last and previous snapshots).</p> <p>A positive number matches snapshots from the beginning (eg. 1 matches the first snapshot, 2 matches the first and second snapshots).</p> <ul style="list-style-type: none"> the keyword \$all Ex: ../results/?snapshots=(\$all) <p>... This means all snapshots.</p> <ul style="list-style-type: none"> a snapshot date Ex: ../results/?snapshots=(2012-10-01) snapshot month Ex: ../results/?snapshots=\$months(12) Return all snapshot results with in the given months from last analysis date. <p>The date format is the standard W3C Date format: YYYY-MM-DD</p> <p>If there is a snapshot at this date, select this snapshot, otherwise select the oldest snapshot after this date, otherwise select the most recent snapshot before this date.</p>	None	-1 (last snapshot)

snapshot-ids	specify a list of snapshot ids	The input value is a list of snapshot ids separated by commas. Ex: ../results/ ?snapshot-ids=(5,12,3) NB. The 'snapshot-ids' and 'snapshots' parameters are exclusive. You cannot use both in the same request.	none	none
select	specify result options to be displayed	The input value can be one of the following: <ul style="list-style-type: none"> violationRatio Ex: ../results?quality-indicators=(quality-rules)&select=(violationRatio) It must be used along with a Quality Indicator parameter specifying Quality Rules. ViolationRatio can apply to applications, modules and technologies. evolutionSummary Ex: ../results?quality-indicators=(business-criteria,technical-criteria,quality-rules)&select=(evolutionSummary) It must be used along with a Quality Indicator parameter specifying one or more Business Criteria, Technical Criteria or Quality Rule. EvolutionSummary can apply to applications, modules and technologies. categories Ex: ../results?quality-indicators=(quality-distributions)&select=(categories) It must be used along with a Quality Indicator parameter specifying one or more Quality Distributions. Categories can apply to applications, modules and technologies. aggregators Ex: ../results?sizing-measures=(c:10202)&select=aggregators Add gradeAggregators on each result. An aggregator is an indicator impacted by the result. improvementGap Ex: ../results?quality-indicators=(quality-rules)&select=(improvementGap) It must be used along with a Quality Indicator parameter specifying Quality Rules. omgTechnicalDebt Ex: ../results?metrics=c:1062100&select=omgTechnicalDebt It must be used along with a CISQ Quality Indicator (Business Criterion, Technical Criterion, or a rule). See also: The com.castsoftware.cisq-index documentation 	None	none
unselect	specify result options to be hidden	<ul style="list-style-type: none"> grade Ex: ../results?quality-indicators=(business-criteria)&unselect=(grade) It prevents the grade parameter to be displayed for a Quality Indicator. It applies to applications, modules and technologies. 	none	none
format	specify output format options	<ul style="list-style-type: none"> snapshotsAsRows Ex: ../results?snapshots=(-2)&format=(snapshotsAsRows) For CSV and Excel output, this displays the values for different snapshots on new rows instead of new columns (default behaviour). 	none	none
order	specify result sorting options	Possible sorting parameters are: <ul style="list-style-type: none"> improvementGap rule-pattern-name rule-id 	order=(asc(param1),desc(param2))	order=(asc(rule-id))

Excel/CSV Representation (Output)

Columns	Description	Type
---------	-------------	------

Application Name	Application name	String
Module Name	Module name. If specified then assessment results are in the scope of this module	String
Technology	Technology name. If specified then assessment results are in the scope of this technology	String
Metric Name	Associated name of the metric key	Array
Snapshot Date #N	Date of the assessment result. Assessment results are ordered from the most recent (N=1), to the less recent (N > 1). Effective selected snapshots depends on the snapshot query parameter.	Date
Result #N	Assessment result as a grade for a quality indicator, or an integer for other results	Number
Violations (Result #N)	Number of failed checks when query parameter "select" is set with "violationRatio"	Number
Total Checks (Result #N)	Number of total checks when query parameter "select" is set with "violationRatio"	Number
Added Critical Violations (Result #N)	Number of added critical violations when query parameter "select" is set with "evolutionSummary"	Number
Critical Violations in New and Modified Code (Result #N)	Number of critical violations in new and modified code when query parameter "select" is set with "evolutionSummary"	Number
Removed Critical Violations (Result #N)	Number of removed critical violations when query parameter "select" is set with "evolutionSummary"	Number
Total Critical Violations (Result #N)	Number of total critical violations when query parameter "select" is set with "evolutionSummary"	Number
CategoryName (Result #N)	Result for a category of a distribution when query parameter "select" is set with "categories"	Number

CSV Representation (Input)

Columns Titles	Type	Put Payload
ADG Database	String	If AAD domain, the adgDatabase property of the application. If AED domain, this value is optional. If set, it must match the adgDatabase property of the application.
Application Name	String	Name of the application to set Background Facts to
Module Name	String	Name of the application modules to set Background Facts to. For a given background fact id and application name, this column must contain each application module, plus the empty value (referring to the application itself)
Metric Id	Integer	A Background Fact id
Result	Double	Value of the Background Fact for an application or one of its modules

CSV Examples

CSV payload for a AAD domain - Set Background Fact values for a single application
<pre>ADG Database;Application Name;Module Name;Metric Id;Result ADG_GACD;DIDD Diccionarios;;2666003;21 ADG_GACD;DIDD Diccionarios;DIDD_CAPP_ESQUEMAS;2666003;9 ADG_GACD;DIDD Diccionarios;DIDD_J2EE;2666003;12 ADG_GACD;DIDD Diccionarios;;66061;2.0 ADG_GACD;DIDD Diccionarios;DIDD_CAPP_ESQUEMAS;66061;3.0 ADG_GACD;DIDD Diccionarios;DIDD_J2EE;66061;4.0</pre>

CSV payload for a AED domain - Set Background Fact values for multiple applications

```
ADG Database;Application Name;Module Name;Metric Id;Result
;DIDD Diccionarios;;2666003;21
;DIDD Diccionarios;DIDD_CAPP_ESQUEMAS;2666003;9
;DIDD Diccionarios;DIDD_J2EE;2666003;12
;BO;;2666003;17
;BO;BO full content;2666003;17
;CastOld;;66061;4.83
;CastOld;Adg;66061;3.2
;CastOld;Central;66061;4.7
;CastOld;DssAdmin;66061;0.8
;CastOld;Pchit;66061;10.5
;DIDD Diccionarios;;66061;2.0
;DIDD Diccionarios;DIDD_CAPP_ESQUEMAS;66061;3.0
;DIDD Diccionarios;DIDD_J2EE;66061;4.0
```

JSON Representations & JSON Examples

Result Item

Properties	Description	Type	Occurs
number	Order number of the application snapshot	Integer	1
date	Date of the application snapshot	Date	1
application	Reference	URI	1
applicationSnapshot	Reference to get an application snapshot	URI	1
applicationResults	All results	Array	1
applicationResults[]	See <i>application result</i>	Structure	0..*

Application Result

Case of a Business Criterion

Properties	Description	Type	Occurs
type	Value is "business-criterion"	String	1
technologiesResults	Results Breakdown by technology	Array	0..1
technologiesResults[]	See Technology Result stucture	Structure	0..*
result	Application snapshot own result	Double	0..1
result.grade	Grade value between 1.0 and 4.0	Double	0..1
result.boundaries	<i>Reserved</i>	Structure	0..1
result.evolutionSummary	See Evolution Summary structure	Structure	0..1
modulesResults	Results Breakdown by module	Array	0..1
modulesResults[]	See Module Result stucture	Structure	0..*
reference	Reference to a Business Criterion	Structure	1
reference.href		URI	1
reference.name		String	1
reference.shortName		String	1
reference.key		Integer	1
transactionResults	Results Breakdown by transaction	Array	0..1
transactionResults[]	See Transaction Result stucture	Structure	0..*

GET DEMO/applications/6/snapshots/5/results

```
[
  {
    "number": 1,
    "date": {
      "time": 1338328800000
    },
    "application": {
      "href": "DEMO/applications/6",
      "name": "Application 006"
    },
    "applicationSnapshot": {
      "href": "DEMO/applications/6/snapshots/5",
      "name": "Application 006"
    },
    "applicationResults": [
      {
        "type": "business-criteria",
        "technologiesResults": [],
        "result": {
          "grade": 3.04528,
          "boundaries": null,
          "evolutionSummary": null
        },
        "modulesResults": [],
        "reference": {
          "href": "DEMO/quality-indicators/60017/snapshots/5",
          "name": "Total Quality Index",
          "shortName": "TQI",
          "key": "60017",
          "gradeAggregators": null
        }
      },
      {
        "transactionResults": []
      }
    ]
  }
]
```

Case of a Technical Criterion

Properties	Description	Type	Occurs
type	Value is "technical-criterion"	String	1
technologiesResults	Results Breakdown by technology	Array	0..1
technologiesResults[]	See Technology Result structure	Structure	0..*
result	Application snapshot own result	Double	0..1
result.grade	Grade value between 1.0 and 4.0	Double	0..1
result.boundaries	<i>Reserved</i>	Structure	0..1
result.violationRatio	<i>Reserved</i>	Structure	0..1
modulesResults	Results Breakdown by module	Array	0..1
modulesResults[]	See Module Result structure	Structure	0..*
reference	Reference to a Quality Indicator	Structure	1
reference.href		URI	1
reference.name		String	1
reference.shortName		String	1

reference.key		Integer	1
reference.gradeAggregators	Indicators computed with this result	Array	1
reference.gradeAggregators[].key	A parent Quality Indicator key	String	0..*
reference.gradeAggregators[].weight	Contribution weight	Integer	1
reference.gradeAggregators[].criticity	"N/A"	String	1
transactionResults	Results Breakdown by transaction	Array	0..1
transactionResults[]	See Transaction Result stucture	Structure	0..*

GET DEMO/applications/6/snapshots/5/results?quality-indicators=(61007)

```
[
  {
    "number": 1,
    "date": {
      "time": 1338328800000
    },
    "application": {
      "href": "DEMO/applications/6",
      "name": "Application 006"
    },
    "applicationSnapshot": {
      "href": "DEMO/applications/6/snapshots/5",
      "name": "Application 006"
    },
    "applicationResults": [
      {
        "type": "technical-criteria",
        "technologiesResults": [],
        "result": {
          "grade": 4,
          "boundaries": null,
          "violationRatio": null
        },
        "modulesResults": [],
        "reference": {
          "href": "DEMO/quality-indicators/61007/snapshots/5",
          "name": "Documentation - Bad Comments",
          "shortName": null,
          "key": "61007",
          "gradeAggregators": null
        }
      },
      {
        "type": "documentation",
        "technologiesResults": [],
        "result": {
          "grade": 4,
          "boundaries": null,
          "violationRatio": null
        },
        "modulesResults": [],
        "reference": {
          "href": "DEMO/quality-indicators/61007/snapshots/5",
          "name": "Documentation - Bad Comments",
          "shortName": null,
          "key": "61007",
          "gradeAggregators": null
        }
      }
    ],
    "transactionResults": []
  }
]
```

Case of a Quality Rule

Properties	Description	Type	Occurs
type	Value is "quality-rules"	String	1
technologiesResults	Results Breakdown by technology	Array	0..1
technologiesResults[]	See Technology Result structure	Structure	0..*
result	Application snapshot own result	Double	0..1
result.grade	Grade value between 1.0 and 4.0	Double	0..1
result.boundaries	<i>Reserved</i>	Structure	0..1
result.violationRatio	See Violation Ratio Structure	Structure	0..1
modulesResults	Results Breakdown by module	Array	0..1
modulesResults[]	See Module Result structure	Structure	0..*

reference	Reference to a Quality Indicator	Structure	1
reference.href		URI	1
reference.name		String	1
reference.shortName			
reference.key		Integer	1
reference.gradeAggregators	Indicators computed with this result	Array	1
reference.gradeAggregators[].key	A parent Quality Indicator key	String	0..*
reference.gradeAggregators[].weight	Contribution weight	Integer	1
reference.gradeAggregators[].criticity	Contribution criticity	Boolean	1
transactionResults	Results Breakdown by transaction	Array	0..1
transactionResults[]	See Transaction Result stucture	Structure	0..*

GET DEMO/applications/6/snapshots/5/results?quality-indicators=(5080)

```
[
  {
    "number": 1,
    "date": {
      "time": 1338328800000
    },
    "application": {
      "href": "DEMO/applications/6",
      "name": "Application 006"
    },
    "applicationSnapshot": {
      "href": "DEMO/applications/6/snapshots/5",
      "name": "Application 006"
    },
    "applicationResults": [
      {
        "type": "quality-rules",
        "technologiesResults": [],
        "result": {
          "grade": 3.59457,
          "boundaries": null,
          "violationRatio": null
        },
        "modulesResults": [],
        "reference": {
          "href": "DEMO/quality-indicators/5080/snapshots/5",
          "name": "Avoid Procedure Paragraphs that contains no statements",
          "shortName": null,
          "key": "5080",
          "gradeAggregators": null
        }
      },
      {
        "type": "quality-rules",
        "technologiesResults": [],
        "result": {
          "grade": 3.59457,
          "boundaries": null,
          "violationRatio": null
        },
        "modulesResults": [],
        "reference": {
          "href": "DEMO/quality-indicators/5080/snapshots/5",
          "name": "Avoid Procedure Paragraphs that contains no statements",
          "shortName": null,
          "key": "5080",
          "gradeAggregators": null
        }
      }
    ],
    "transactionResults": []
  }
]
```

Case of a Quality Distribution

Properties	Description	Type	Occurs
type	Value is "quality-distributions"	String	1
technologiesResults	Results Breakdown by technology	Array	0..1

technologiesResults[]	See Technology Result stucture	Structure	0..*
result	Application snapshot own result	Double	0..1
result.grade	Grade value between 1.0 and 4.0	Double	0..1
result.boundaries	<i>Reserved</i>	Structure	0..1
result.categories	See Category Structure	Array	1
modulesResults	Results Breakdown by module	Array	0..1
modulesResults[]	See Module Result stucture	Structure	0..*
reference	Reference to a Quality Indicator	Structure	1
reference.href		URI	1
reference.name		String	1
reference.shortName			
reference.key		Integer	1
reference.gradeAggregators	Indicators computed with this result	Array	1
reference.gradeAggregators[].key	A parent Quality Indicator key	String	0..*
reference.gradeAggregators[].weight	Contribution weight	Integer	1
reference.gradeAggregators[].criticity	Contribution criticity	Boolean	1



Note that when retrieving Cost Complexity data the information you receive will vary:

- If you are querying the Measurement Service, then only the categories High and Very High will be available
- If you are querying the Dashboard Service, then all categories (Low, Moderate, High and Very High) will be available.

GET DEMO/applications/6/snapshots/5/results?quality-indicators=(65105)

```
[
  {
    "number": 1,
    "date": {
      "time": 1338328800000
    },
    "application": {
      "href": "DEMO/applications/6",
      "name": "Application 006"
    },
    "applicationSnapshot": {
      "href": "DEMO/applications/6/snapshots/5",
      "name": "Application 006"
    },
    "applicationResults": [
      {
        "type": "quality-distributions",
        "technologiesResults": [],
        "result": {
          "grade": 2.91687,
          "boundaries": null,
          "categories": null
        },
        "modulesResults": [],
        "reference": {
          "href": "DEMO/quality-indicators/65105/snapshots/5",
          "name": "Size Distribution",
          "shortName": null,
          "key": "65105",
          "gradeAggregators": null
        }
      }
    ]
  }
]
```

Case of a Quality Measure

Properties	Description	Type	Occurs
type	Value is "quality-measures"	String	1
technologiesResults	Results Breakdown by technology	Array	0..1
technologiesResults[]	See Technology Result stucture	Structure	0..*
result	Application snapshot own result	Double	0..1
result.grade	Grade value between 1.0 and 4.0	Double	0..1
result.boundaries	See Boundaries Structure	Structure	0..1
modulesResults	Results Breakdown by module	Array	0..1
modulesResults[]	See Module Result stucture	Structure	0..*
reference	Reference to a Quality Indicator	Structure	1
reference.href		URI	1
reference.name		String	1
reference.shortName			
reference.key		Integer	1
reference.gradeAggregators	Indicators computed with this result	Array	1

reference.gradeAggregators[].key	A parent Quality Indicator key	String	0..*
reference.gradeAggregators[].weight	Contribution weight	Integer	1
reference.gradeAggregators[].criticity	Contribution criticity	Boolean	1

GET DEMO/applications/6/snapshots/5/results?quality-indicators=(66067)

```
[
  {
    "number": 1,
    "date": {
      "time": 1338328800000
    },
    "application": {
      "href": "DEMO/applications/6",
      "name": "Application 006"
    },
    "applicationSnapshot": {
      "href": "DEMO/applications/6/snapshots/5",
      "name": "Application 006"
    },
    "applicationResults": [
      {
        "type": "quality-measures",
        "technologiesResults": [],
        "result": {
          "grade": 3.03494,
          "boundaries": null
        },
        "modulesResults": [],
        "reference": {
          "href": "DEMO/quality-indicators/66067/snapshots/5",
          "name": "Avoid High Volume of Copy Pasted Code",
          "shortName": null,
          "key": "66067",
          "gradeAggregators": null
        }
      }
    ]
  }
]
```

Case of a Sizing Measure

Properties	Description	Type	Occurs
type	Value is among <ul style="list-style-type: none"> technical-size-measures functional-weight-measures critical-violation-statistics technical-debt-statistics run-time-statistics 	String	1
technologiesResults	Results Breakdown by technology	Array	0..1
technologiesResults[]	See Technology Result stucture	Structure	0..*
result	Application snapshot own result	Double	0..1
result.value	Size	Double	0..1
modulesResults	Results Breakdown by module	Array	0..1
modulesResults[]	See Module Result stucture	Structure	0..*
reference	Reference to a Sizing Measure	Structure	1
reference.href		URI	1
reference.name		String	1
reference.shortName			

reference.key	Integer	1
---------------	---------	---

GET DEMO/applications/6/snapshots/5/results?sizing-measures=(10151)

```
[
  {
    "number": 1,
    "date": {
      "time": 1338328800000
    },
    "application": {
      "href": "DEMO/applications/6",
      "name": "Application 006"
    },
    "applicationSnapshot": {
      "href": "DEMO/applications/6/snapshots/5",
      "name": "Application 006"
    },
    "applicationResults": [
      {
        "type": "technical-size-measures",
        "technologiesResults": [],
        "result": {
          "value": 225727
        },
        "modulesResults": [],
        "reference": {
          "href": "DEMO/sizing-measures/10151/snapshots/5",
          "name": "Number of Code Lines",
          "shortName": "kLOCs",
          "key": "10151",
          "gradeAggregators": null
        }
      }
    ]
  }
]
```

Case of a Background Fact

Properties	Description	Type	Occurs
type	background-fact	String	1
technologiesResults	Results Breakdown by technology	Array	0..1
technologiesResults[]	See Technology Result structure	Structure	0..*
result	Application snapshot own result	Double	0..1
result.value	Fact	Double	0..1
modulesResults	Results Breakdown by module	Array	0..1
modulesResults[]	See Module Result structure	Structure	0..*
reference	Reference to a Sizing Measure	Structure	1
reference.href		URI	1
reference.name		String	1
reference.shortName			
reference.key		Integer	1

GET DEMO/applications/6/snapshots/5/results?background-facts=(66061)

```
[
  {
    "number": 1,
    "date": {
      "time": 1338328800000
    },
    "application": {
      "href": "DEMO/applications/6",
      "name": "Application 006"
    },
    "applicationSnapshot": {
      "href": "DEMO/applications/6/snapshots/5",
      "name": "Application 006"
    },
    "applicationResults": [
      {
        "type": "background-facts",
        "technologiesResults": [],
        "result": {
          "value": 1
        },
        "modulesResults": [],
        "reference": {
          "href": "DEMO/background-facts/66061/snapshots/5",
          "name": "Business Value",
          "shortName": "Biz Value",
          "key": "66061",
          "gradeAggregators": null
        }
      }
    ]
  }
]
```

Optional Quality Indicator Result Detail

Violation Ratio (option coming with Quality Rules)

Properties	Description	Type	Occurs
violationRatio	For a quality rule, this ratio in an input value required to compute the grade according to 4 thresholds.	Structure	0..1
violationRatio.totalChecks	Total number of checked items in the current scope	Integer	1
violationRatio.failedChecks	Total number of failed items in the current scope	Integer	1
violationRatio.successfulChecks	Result of totalChecks - failedChecks	Integer	1
violationRatio.ratio	Compliance Ratio, i.e. successfulChecks / totalChecks	Double	1
violationRatio.violationOccurrences	Total number of violation occurrences (ex: number of bookmarks) Since AIP 8.3.33	Integer	1

GET DEMO/applications/6/snapshots/5/results?quality-indicators=(5080)&select=(violationRatio)

```
[
  {
    "number": 1,
    "date": {
      "time": 1338328800000
    },
    "application": {
      "href": "DEMO/applications/6",
      "name": "Application 006"
    },
    "applicationSnapshot": {
      "href": "DEMO/applications/6/snapshots/5",
      "name": "Application 006"
    },
    "applicationResults": [
      {
        "type": "quality-rules",
        "technologiesResults": [],
        "result": {
          "grade": 3.59457,
          "boundaries": null,
          "violationRatio": {
            "totalChecks": 267,
            "failedChecks": 7,
            "successfulChecks": 260,
            "ratio": 0.9737827715355806
          }
        },
        "modulesResults": [],
        "reference": {
          "href": "DEMO/quality-indicators/5080/snapshots/5",
          "name": "Avoid Procedure Paragraphs that contains no statements",
          "shortName": null,
          "key": "5080",
          "gradeAggregators": null
        }
      }
    ]
  }
]
```

Evolution Summary (option coming with Business Criteria)

Properties	Description	type	Occurs
evolutionSummary	Evolution summary between this snapshot and the previous one	Structure	0..1
evolutionSummary.removedCriticalViolations	Number of critical violations removed since the previous snapshot	Integer	1
evolutionSummary.addedCriticalViolations	Number of critical violations added since the previous snapshot	Integer	1
evolutionSummary.criticalViolationsInNewAndModifiedCode	Number of critical violations in new and modified code since the previous snapshot	Integer	1
evolutionSummary.totalCriticalViolations	Total Number of critical violations	Integer	1
evolutionSummary.addedViolations	Number of violations added since the previous snapshot	Integer	1
evolutionSummary.removedViolations	Number of violations removed since the previous snapshot	Integer	1

GET DEMO/applications/6/snapshots/5/results?quality-indicators=(60014)&select=(evolutionSummary)

```
[
  {
    "number": 1,
    "date": {
      "time": 1338328800000
    },
    "application": {
      "href": "DEMO/applications/6",
      "name": "Application 006"
    },
    "applicationSnapshot": {
      "href": "DEMO/applications/6/snapshots/5",
      "name": "Application 006"
    },
    "applicationResults": [
      {
        "type": "business-criteria",
        "reference": {
          "href": "DEMO/quality-indicators/60014/snapshots/5",
          "name": "Efficiency",
          "shortName": "Effy",
          "key": "60014",
          "gradeAggregators": null
        },
        "result": {
          "grade": 2.67281,
          "evolutionSummary": {
            "criticalViolationsInNewAndModifiedCode": 5,
            "totalCriticalViolations": 5,
            "addedCriticalViolations": 5,
            "removedCriticalViolations": 0,
            "addedViolations": 13,
            "removedViolations": 280
          }
        },
        "technologyResults": [],
        "moduleResults": []
      }
    ]
  }
]
```

OMG Technical Debt (option coming with Business Criteria, Technical Criteria, Quality Rules)

Properties	Description	Type	Occurs
total	Total Technical Debt	Integer	1
numberOccurrences	Number of violation occurrences (number of bookmarks for example)	Integer	1
added	Technical Debt of added violations	Integer	1
removed	Technical Debt of removed violations	Integer	1

GET DEMO/applications/6/snapshots/5/results?quality-indicators=(8216)&select=(omgTechnicalDebt)

```
...
    "result": {
      "grade": 4,
      "omgTechnicalDebt": {
        "total": 11040,
        "numberOccurrences": 176,
        "added": 0,
        "removed": 0
      },
      "violationRatio": {
        "totalChecks": 7411,
        "failedChecks": 33,
        "successfulChecks": 7378,
        "ratio": 0.9955471596275807
      }
    },
  },
}
```

Category (option coming with Quality Distributions)

Properties	Description	Type	Occurs
categories	Categories results	Array	1
categories[]	A category result	Structure	1..4
categories[].key	A category id	String	1
categories[].name	A category name	String	1
categories[].value	A category measure	Integer	1

GET wow7010/applications/12/results?quality-indicators=(66010)&select=(categories)

```
[
  {
    "number": 4,
    "date": {
      "time": 1279144800000
    },
    "application": {
      "href": "wow7010/applications/12",
      "name": "IFPUG"
    },
    "applicationSnapshot": {
      "href": "wow7010/applications/12/snapshots/15",
      "name": "IFPUG"
    },
    "applicationResults": [
      {
        "type": "quality-distributions",
        "reference": {
          "href": "wow7010/quality-indicators/66010/snapshots/15",
          "name": "Reuse by Call Distribution",
          "shortName": null,
          "key": "66010",
          "gradeAggregators": null
        },
        "result": {
          "grade": 1,
          "categories": [
            {
              "key": "66014",
              "name": "Low Reuse by Call",
              "value": 478
            },
            {
              "key": "66013",
              "name": "Average Reuse by Call",
              "value": 17
            },
            {
              "key": "66012",
              "name": "High Reuse by Call",
              "value": 3
            },
            {
              "key": "66011",
              "name": "Very High Reuse by Call",
              "value": 1
            }
          ]
        },
        "boundaries": null
      },
      {
        "technologyResults": [],
        "moduleResults": []
      }
    ]
  }
]
```

Technology Result Detail

Properties	Description	Type	Occurs
technology	Technology name	String	1
result	See result structure	Structure	1

Module Result Detail

Properties	Description	Type	Occurs
module	Reference to a module snapshot	Structure	1
module.href	Module snapshot URI	URI	1
module.name	Module snapshot name	String	1
module.number	Module snapshot number	Integer	1
result	<i>See Result Item Structure</i>	Double	0..1
technologiesResults	<i>Results Breakdown by technology</i>	Array	0..1
technologiesResults[]	<i>See Technology Result Detail</i>	Structure	0..*

Transaction Result Detail

Properties	Description	Type	Occurs
transaction	Reference to a transaction snapshot	Structure	1
transaction.href	Transaction snapshot URI	URI	1
transaction.name	Transaction snapshot name	String	1
result	<i>See Result Item Structure</i>	Double	0..1

Quality Standards

URI Templates & Parameters

HTTP Action	Media Type	URI Templates	Description
GET	application/json	{Domain}/quality-standards-categories/{QualityStandardCategory}	Array of all quality standard references (aka tags) for a given category (OWASP-2017, STIG-V4R8-CAT1, etc.)
		{Domain}/applications/{ID}/quality-standards	Array of quality standard references for an application. Only quality standard references with violations are reported.
		{Domain}/applications/{ID}/snapshots/{SnapshotID}/quality-standards	

JSON Representation

Properties	Description	Type	Occurs
standard	Quality Standard name	String	1
id	Reference name (aka tag)	String	1
name	Reference label	String	1
description	reserved	String	1
applicable	Specify whether this Quality Standard is applicable to static code analysis. Some Security Standards recommendations may be out of the scope of static code analysis.	Boolean	1

JSON Example

```
[
  {
    "standard": "CISQ",
    "id": "ASCMM-MNT-6",
    "name": "Commented Code Element Excessive Volume"
  },
  {
    "standard": "CISQ",
    "id": "ASCSM-CWE-681",
    "name": "Numeric Types Incorrect Conversion"
  }
]
```

Custom Quality Tags

URI Templates & Parameters

HTTP Action	Media Type	URI Templates	Description
GET	text/csv	{Domain}/custom-quality-tags	Download CUSTOM TAGS mapping Example of curl command line: <code>C:\>curl --header "Accept: text/csv" http://localhost:8080/CAST-RESTAPI/rest/{Domain}/custom-quality-tags</code>
PUT	text/csv	{Domain}/custom-quality-tags	Add rule/CUSTOM TAGS mapping. If the mapping already exists, it is left unchanged. The tag must begin with the 'CUSTOM' prefix, otherwise the web service raises an error. All new TAGS are automatically assigned to the 'CUSTOM' standard. Example of curl command line: <code>C:\>curl -X PUT --header "Content-type: text/csv" --upload-file data.csv http://localhost:8080/CAST-RESTAPI/rest/{Domain}/custom-quality-tags</code>
DELETE	text/csv	{Domain}/custom-quality-tags	Remove rule/CUSTOM TAGS mapping The tag must begin with the 'CUSTOM' prefix, otherwise the web service raises an error All deleted TAGS are automatically removed from 'CUSTOM' standard. Example of curl command line: <code>C:\>curl -X DELETE --header "Content-type: text/csv" --upload-file data.csv http://localhost:8080/CAST-RESTAPI/rest/{Domain}/custom-quality-tags</code>

CSV Representation

Columns	Description	Type	Occurs
Rule ID	A rule ID	Integer	1
Tag	A label starting with "CUSTOM"	String	1

CSV Example

```
Rule ID;Tag
3626;CUSTOM-TOP-PRIORITY-RULES
```