

Interface Specification between DS-Bench and D-Case Editor for their Collaboration

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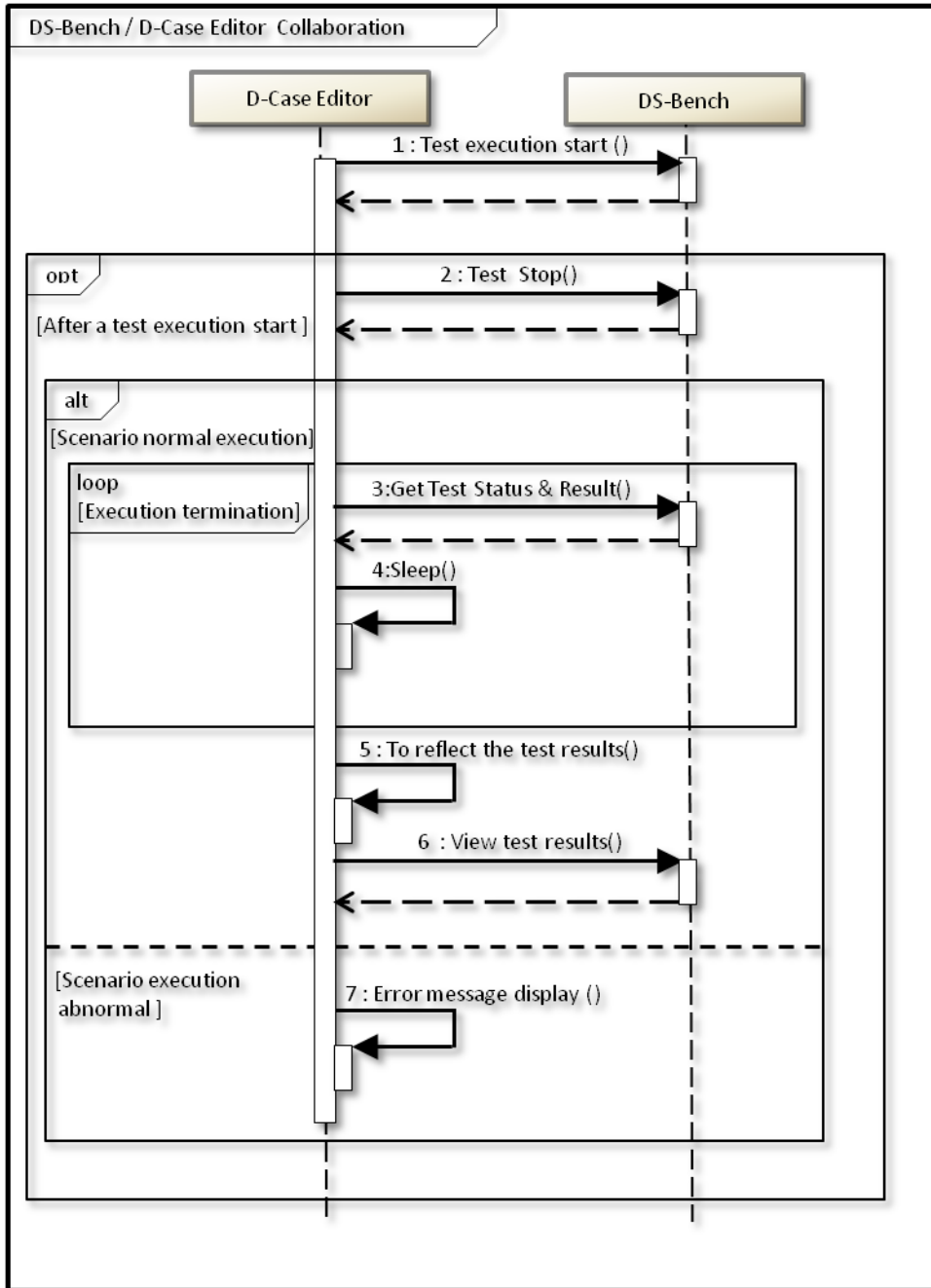


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TEST EXECUTION SEQUENCE



INTERFACE DEFINITION

The communications protocol between DS-Bench and D-Case Editor is HTTP.

The character code is UTF-8.

SCENARIO LIST ACQUISITION

get_scenario_list.cgi

Obtain the list of available scenarios which are stored in DS-Bench.

HTTP METHOD

GET

REQUEST

PARAMETERS

None

BODY

None

RESPONSE

BODY

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
targetNamespace="http://www.dependable-os.net/2011/06/ds-bench/configurations"
elementFormDefault="qualified"
xmlns="http://www.dependable-os.net/2011/06/ds-bench/configurations"
xmlns:mstns="http://www.dependable-os.net/2011/06/ds-bench/configurations"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
```

```

<xs:element name="Configurations">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="Scenario" minOccurs="0" maxOccurs="unbounded">
        <xs:complexType>
          <xs:sequence>
            </xs:sequence>
            <xs:attribute name="id" type="xs:string" use="required" />
            <xs:attribute name="name" type="xs:string" use="required" />
            <xs:attribute name="description" type="xs:string" use="required" />
          </xs:complexType>
        </xs:element>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>

```

| xpath | Description |
|---------------------------------------|-------------------------|
| /Configurations/Scenario/@id | Scenario ID |
| /Configurations/Scenario/@name | Scenario name |
| /Configurations/Scenario/@description | Description of scenario |

GET SCENARIO

get_scenario_detail.cgi

Get the details of a scenario.

HTTP METHOD

GET

REQUEST

PARAMETERS

| name | Required | description |
|------|-----------------------|---------------|
| name | <input type="radio"/> | Scenario name |

ex) `name=scenario1`

BODY

None

RESPONSE

BODY

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema targetNamespace="http://www.dependable-os.net/2011/06/ds-bench/scenario"
  elementFormDefault="qualified"
  xmlns="http://www.dependable-os.net/2011/06/ds-bench/scenario"
  xmlns:mstns="http://www.dependable-os.net/2011/06/ds-bench/scenario"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="Scenario">
    <xs:complexType>
      <xs:sequence>
```

```

<xs:element name="Parameter" maxOccurs="unbounded" minOccurs="0">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="Item" maxOccurs="unbounded" minOccurs="0">
        <xs:complexType>
          <xs:sequence />
          <xs:attribute name="value" type="xs:string" />
        </xs:complexType>
      </xs:element>
    </xs:sequence>
    <xs:attribute name="name" type="xs:string" use="required" />
    <xs:attribute name="value" type="xs:string" use="required" />
    <xs:attribute name="type" use="required">
      <xs:simpleType>
        <xs:restriction base="xs:string">
          <xs:enumeration value="string" />
          <xs:enumeration value="int" />
          <xs:enumeration value="double" />
          <xs:enumeration value="enum" />
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="min" type="xs:int" use="optional" />
    <xs:attribute name="max" type="xs:int" use="optional" />
  </xs:complexType>
</xs:element>
</xs:sequence>
<xs:attribute name="id" type="xs:string" use="required" />
<xs:attribute name="name" type="xs:string" use="required" />
<xs:attribute name="description_format" type="xs:string" use="required" />
</xs:complexType>
</xs:element>
</xs:schema>

```


| xpath | description |
|-------------------------------|--|
| Scenario/@id | Scenario ID |
| Scenario/@name | Scenario name |
| Scenario/ @description_format | <p>Format string descriptions of the scenario</p> <p>Command parameters used to link Desc Format Strings to the Goal are enclosed in { }; can be used as a format specifier.</p> <p>ex)</p> <p>Concurrent connections {users} ...</p> |
| Scenario/ Parameter | <p>Command parameters</p> <p>@name : parameter values</p> <p>@value : parameter values</p> <p>@type : parameter type</p> <p>Select from among the following types:</p> <ul style="list-style-type: none"> ·string ·int ·double ·enum <p>@min : minimum value</p> <p>@max : maximum value</p> |

Scenario/ Parameter/Item

Enumerated-type items whose parameter values can be specified

Only “enum” type is valid.

@value : item name

TEST RUN START

run_scenario.cgi

Request the test execution.

HTTP METHOD

POST

REQUEST

PARAMETERS

None

BODY

```

<?xml version="1.0" encoding="utf-8"?>
<xs:schema
targetNamespace="http://www.dependable-os.net/2011/06/ds-bench/exec/request"
elementFormDefault="qualified"
xmlns="http://www.dependable-os.net/2011/06/ds-bench/exec/request"
xmlns:mstns="http://www.dependable-os.net/2011/06/ds-bench/exec/request"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="Scenario">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="Parameter" maxOccurs="unbounded" minOccurs="0">
          <xs:complexType>
            <xs:sequence />
            <xs:attribute name="name" type="xs:string" use="required" />
            <xs:attribute name="value" type="xs:string" use="required" />
          </xs:complexType>
        </xs:element>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>

```

```

    <xs:attribute name="name" type="xs:string" use="required" />
  </xs:complexType>
</xs:element>
</xs:schema>

```

| xpath | description |
|----------------------|---|
| /Scenario/ Parameter | Command parameters @name : parameter name @value : parameter values |
| /Scenario/@name | Scenario name |

RESPONSE

BODY

```

<?xml version="1.0" encoding="utf-8"?>
<xs:schema
targetNamespace="http://www.dependable-os.net/2011/06/ds-bench/exec/response"
elementFormDefault="qualified"
xmlns="http://www.dependable-os.net/2011/06/ds-bench/exec/response"
xmlns:mstns="http://www.dependable-os.net/2011/06/ds-bench/exec/response"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="Result">
    <xs:complexType>
      <xs:sequence />
      <xs:attribute name="code" type="xs:int" use="required" />
      <xs:attribute name="scenario_name" type="xs:string" use="required" />
      <xs:attribute name="exec_id" type="xs:string" use="required" />
      <xs:attribute name="message" type="xs:string" use="optional" />
      <xs:attribute name="estimate_completion_time" type="xs:long" use="required" />
    </xs:complexType>
  </xs:element>
</xs:schema>

```

```

    <xs:attribute name="view_id" type="xs:string" use="required" />
  </xs:complexType>
</xs:element>
</xs:schema>

```

| xpath | description |
|-----------------------------------|--|
| /Result/@code | Result code <ul style="list-style-type: none"> · 0 successful completion · Non-zero error |
| /Result/@scenario_name | Scenario name |
| /Result/@exec_id | Run ID |
| /Result/@message | Error messages, etc. |
| /Result/@estimate_completion_time | Estimated scenario completion time (in milliseconds) |
| /Result/@view_id | The ID for display in DS-Bench (display_id) |

GET RUN STATUS AND GET RESULTS

get_state_result.cgi

Acquire test results and the status of a test being executed.

HTTP METHOD

GET

REQUEST

PARAMETERS

| name | Required | description |
|-------------------------------|----------|---|
| scenario_name | | Test scenario name |
| exec_id | | Execution ID When the execution ID is specified, only the test information with that ID is returned. (Other parameters are ignored.) |
| <i>Command parameter name</i> | △ | Specifies the parameters for execution of the command and their values. Optional parameters and mandatory parameters vary depending on the test commands to be executed. |
| <i>Expected value</i> | | Specifies the names of requested items and their expected values Optional parameters and mandatory parameters vary |

depending on test commands to be executed.

An expected value must begin with an inequality sign.

ex) response_time =%3c%3d300

ex) `scenario_name=testenv1 ¶m1=value1¶m2=value2`

BODY

None

RESPONSE

BODY

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema targetNamespace="http://www.dependable-os.net/2011/06/ds-bench/search"
elementFormDefault="qualified"
xmlns="http://www.dependable-os.net/2011/06/ds-bench/search"
xmlns:mstns="http://www.dependable-os.net/2011/06/ds-bench/search"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="Result">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="Scenario" minOccurs="0" maxOccurs="unbounded">
          <xs:complexType>
            <xs:sequence>
              </xs:sequence>
            </xs:sequence>
            <xs:attribute name="name" type="xs:string" use="required" />
            <xs:attribute name="description" type="xs:string" use="required" />
            <xs:attribute name="progress" type="xs:int" use="required" />
            <xs:attribute name="status" type="xs:int" use="required" />
          </xs:complexType>
        </xs:element>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

```

<xs:attribute name="code" type="xs:int" use="required" />
<xs:attribute name="message" type="xs:string" use="optional" />
</xs:complexType>
</xs:element>
</xs:schema>
    
```

| xpath | description |
|-------------------------------|---|
| /Result/@code | Result code · 0 successful completion · non-zero error (For details, see Table 2) |
| /Result/@message | Error messages, etc. (For details, see Table 2) |
| /Result/Scenario/@name | Scenario name |
| /Result/Scenario/@description | Description of scenario |
| /Result/Scenario/@progress | Progress (%) |
| /Result/Scenario/@status | Run status (For details, see Table 1) |

Table 1 Status List

| status | state | Wording | Monitoring implementation |
|--------|---|-----------------|---------------------------|
| 0 | Completion (expected value cleared) | finish(success) | Ended |
| 1 | Completed (expected value not cleared) | finish(failed) | Ended |

| | | | |
|-----------|--|----------|------------|
| 2 | In preparation | ready | Continuing |
| 3 | Ongoing | run | Continuing |
| 4 | Computational resources being reserved | reserve | Continuing |
| 5 | Being installed | install | Continuing |
| 6 | In process of stopping | stopping | Continuing |
| 7 | Complete stop | stopped | Ended |
| 8 | Running error | error | Ended |
| 9 | Error while stopped (Scenario execution continues) | st_error | Continuing |
| Other(<0) | Abnormality/termination while determining status | failed | End |

Table 2 Code and message table

| code | message | Detail | From the previous edition |
|------|---|-----------------------------------|---------------------------------|
| 0 | success | Successful completion | Continuation |
| 1* | | Error with regard to parser | |
| 11 | D-Case Editor Error: request XML parser error | Failed to parse the XML request | Continuation |
| 12 | DS-Bench Error: scenario XML parser error | Failed to parse the XML scenario | Newly added |
| 13 | DS-Bench Error: benchmark XML parser error | Failed to parse the XML benchmark | Newly added |
| 14 | DS-Bench Error: fault XML parser error | Failed to parse Fault XML | Newly added |
| 15 | DS-Bench Error: result XML parser error | Failed to parse the XML result | Newly added |
| 2* | | Error with regard to permission | |
| 21 | DS-Bench Error: run_list file permission denied. | Error in opening run_list file | Newly added |
| 22 | DS-Bench Error: run_status file | Error in opening run_status file | Newly added |

| | | | |
|----|--|--|--------------|
| | permission denied. | | |
| 23 | DS-Bench Error: XML file permission denied. | Error in opening XML | Continuation |
| 3* | | Error with regard to computational resources and exclusive control | |
| 31 | | Item with that number is missing | Continuation |
| 32 | DS-Bench Error: the target is in use. | Target is in use | Continuation |
| 4* | | Error regarding communication | |
| 41 | DS-Bench Error: install failed. | Benchmark Installation Failed | Continuation |
| 42 | DS-Bench Error: create invalid socket. | Socket creation failure | Continuation |
| 43 | DS-Bench Error: list of calculation resources is unacquirable. | A failure to obtain computational resource list | Newly added |
| 44 | DS-Bench Error: failure to reserve calculation resources. | Failure to obtain computational resources | Newly added |
| 45 | DS-Bench Error: failure to release calculation resource. | Computational resource could not be released | Newly added |
| 5* | | IO error | |
| 51 | D-Case Editor Error: scenario do not exist. | The scenario that has been specified does not exist | Continuation |
| 52 | D-Case Editor Error: parameter do not exist. | The specified parameter does not exist | Continuation |
| 53 | | Item with that number is missing | Delete |
| 54 | DS-Bench Error: scenario/benchmarks/ directory does not open. | Directory of scenarios / benchmarks does not exist | Newly added |
| 55 | DS-Bench Error: packages.list do not exists. | List of packages does not exist | Newly added |
| 9* | | Other | |
| 91 | DS-Bench Error: Not be able to create JSON data. | JSON data creation failure | Newly added |
| 92 | DS-Bench Error: failure to | Reduction failure | Newly added |

| | | | |
|-------|---|--|-------------|
| | reduction. | | |
| 93 | DS-Bench Error: failure to stop benchmark run. | Failure to stop a running benchmark | Newly added |
| 94 | the scenario is not running. | Scenario has stopped running | Newly added |
| 95 | D-Case Editor Error: Scenario has not executed from D-Case. | Given scenario has not been run from D-Case Editor | Newly added |
| Other | DS-Bench Error: an unexpected error occurred. | An unexpected error on the server side occurred (e.g. run_status file was rewritten) | Newly added |

SCENARIO DETAILS DISPLAY

view_scenario.cgi

The details of a scenario are displayed in the form which can be viewed in a browser.

HTTP METHOD

GET

REQUEST

PARAMETERS

| name | Required | description |
|------|-----------------------|---------------|
| name | <input type="radio"/> | Scenario name |

ex) `name=scenario1`

BODY

None

RESPONSE

BODY

Format, such as HTML, that can be displayed in a browser.

VIEW TEST RESULT

view_result_detail.cgi

The test results are displayed in the form which can be viewed in browser.

HTTP METHOD

GET

REQUEST

PARAMETERS

| name | Required | description |
|---------|----------|---|
| view_id | | The ID for display in the DS-Bench (display_id) |

ex) `view_id=100`

BODY

None

RESPONSE

BODY

Format, such as HTML, that can be displayed in a browser.

TEST STOP

stop_scenario.cgi

The stop of the test is requested.

HTTP METHOD

POST

REQUEST**PARAMETERS**

None

BODY

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
targetNamespace="http://www.dependable-os.net/2011/06/ds-bench/exec/stop/request"
elementFormDefault="qualified"
xmlns="http://www.dependable-os.net/2011/06/ds-bench/exec/stop/request "
xmlns:mstns="http://www.dependable-os.net/2011/06/ds-bench/exec/stop/request"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="Scenario">
    <xs:complexType>
      <xs:sequence>
        </xs:sequence>
      <xs:attribute name="name" type="xs:string" use="required" />
      <xs:attribute name="exec_id" type="xs:string" use="required" />
    </xs:complexType>
  </xs:element>
</xs:schema>
```

| xpath | description |
|--------------------|-----------------|
| /Scenario/@name | Scenario name |
| /Scenario/@exec_id | Scenario run ID |

RESPONSE

BODY

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
targetNamespace="http://www.dependable-os.net/2011/06/ds-bench/exec/stop/response"
elementFormDefault="qualified"
xmlns="http://www.dependable-os.net/2011/06/ds-bench/exec/stop/response "
xmlns:mstns="http://www.dependable-os.net/2011/06/ds-bench/exec/stop/response "
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="Result">
    <xs:complexType>
      <xs:sequence>
        </xs:sequence>
        <xs:attribute name="exec_id" type="xs:string" use="required" />
        <xs:attribute name="code" type="xs:int" use="required" />
        <xs:attribute name="message" type="xs:string" use="required" />
      </xs:complexType>
    </xs:element>
  </xs:schema>
```

| xpath | description |
|------------------|--|
| /Result/@exec_id | ID for execution of the scenario |
| /Result/@code | Result code <ul style="list-style-type: none"> · 0 : successful completion · Non-zero : error (TBD) |
| /Result/@message | Error messages, etc. |

Table 3 Codes and messages (when the test is stopped)

| code | message | Detail |
|-------|---|---|
| 0 | success | Successful completion |
| 1* | | Error with regard to the parser |
| 11 | request XML parser error | Failed to parse the XML request |
| 5* | | IO error |
| 52 | parameters do not exist. | The specified parameters do not exist |
| 9* | | Other |
| 94 | the scenario is not running. | The scenario is not running |
| 95 | D-Case Editor Error: Scenario has not executed from D-Case. | The specified scenario has not been run from D-Case |
| Other | DS-Bench Error: an unexpected error occurred. | An unexpected error on the server side occurred (e.g. run_status file was rewritten) |