Home Support Report Customisation for Sky

JSON format

StormTest Home Support

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# Introduction

This document specifies the format of the JSON reports generated by the StormTest™ Home Support Application as customised for Sky in the form of the iPad app generally referred to as *StormTest in-home Diagnostics* (SiD).

The format of the report is described as a JSON schema, which is listed in full in the appendix. The schema is based on the S3 Group Home Support XML schema described in [1]. Elements of the full schema that are unused in the customisation of the Home Support app for Sky (SiD) are omitted while preserving its general structure.

## Definitions and Acronyms

|  |  |
| --- | --- |
| Acronym | Description |
| JSON | JavaScript Object Notation |
| SCS | Service Centre Software |
| SiD | StormTest in-home Diagnostics |
| STB | Set-Top Box |

Table – Definitions and Acronyms

## Revision History

|  |  |  |
| --- | --- | --- |
| Date | Version | Description |
| 13 July 2015 | 0.1 | Initial version |

Table - Revision History

# report

Each Home Support report is a well-formed JSON string. The object report is the top-level entity in the JSON structure contained in the string. This object contains the following members, all of which must be present:

version

device

location

ste

manual

## report.version

This member records the version number of the StormTest Embedded schema used in generating this report and is typically in A.B format where A represents the major version number and B the minor version number. The value is of type string.

Example:

"version": "0.1"

In the current version of the app, this member always has the value “0.1”.

## report.device

This object describes the STB device that was under test while the report was generated. It has the following members.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Value type | Mandatory | Description |
| manufacturer | string | Y | The manufacturer of the device |
| model | string | Y | The model type of the device |
| guid | string | Y | The NDS serial number of the device (16 hex characters) |
| software | string | N | The build version of the software running on the device |

Example:

"device": {

"manufacturer": "Sky",

"guid": "4F310C0375099128",

"software": "R010.070.58.17P (4n1p6hl)",

"model": "DRX890"

}

## report.location

This object describes the location of the (iPad) device running the app which generated the report. It has two members, both of type int, which indicate the longitude and latitude of the location.

Example:

"location": {

"longitude": -6.19757461400738,

"latitude": 53.26736328082857

}

In the case where the location is unavailable or unknown, the value is the JavaScript primitive value null, thus:

"location": null

## report.STE

This object contains the details of the diagnostic tests that were run in the generation of this report. There are a number of subordinate objects contained within it, each of which is discussed in the following sections.

Example of the full STE object:

"STE": {

"boottime": {

"diagnostics": {

"test": [{

"summary": {

"id": "VER\_SCS",

"name": "VER\_SCS",

"description": ""

},

"time": {

"realTime": {

"startTime": 1434103513,

"duration": 0

}

},

"parameters": {

"param": []

},

"result": {

"returnData": {

"data": [{

"name": "ver",

"value": {

"String": "01.11.0114"

}

}

]

},

"result": "Pass"

}

}

]

},

"version": "1.1.0.697",

"time": 1434103513}

}

### report.STE.boottime

This object contains information captured from the StormTest Embedded boot-time agent. In the context of the Home Support customisation for Sky this agent is the SCS software on the STB. The object has the following members.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Value type | Mandatory | Description |
| version | string | Y | See below |
| time | int | Y | See below |
| diagnostics | object | Y | See below |

#### report.STE.boottime.version

This member records the version of the StormTest HSA app that generated the report. The value is of type string.

Example:

"version": "1.1.0.697"

#### report.STE.boottime.time

This member records the date and time at which the test run was started (epoch format). The value is of type int.

Example:

"time": 1434103513

#### report.STE.boottime.diagnostics

This object contains the details of the tests that were executed, including parameters passed in and results obtained from the agent. It contains one member named test.

##### report.STE.boottime.diagnostics.test

This is an array where each element describes a single (SCS) test that was executed and contains the following members.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Value type | Mandatory | Description |
| summary | object | Y | See below |
| time | object | Y | See below |
| parameters | object | Y | See below |
| result | object | Y | See below |

###### report.STE.boottime.diagnostics.test.summary

This object identifies the test that was executed on the agent. It contains the following members.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Value type | Mandatory | Description |
| id | string | Y | A label for the test |
| name | string | Y | The name of the test as specified in [2] |
| description | string | N | An optional description of the test |

Example:

"summary": {

"id": "VER\_SCS",

"name": "VER\_SCS",

"description": ""

}

###### report.STE.boottime.diagnostics.test.time

This object records the time at which the execution of the individual test was started, and the duration of the test. It contains an object realTime which in turn contains the following members.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Value type | Mandatory | Description |
| startTime | int | Y | The start time of the test (epoch time) |
| duration | Int | Y | The duration of the test in msec |

Example:

"time": {

"realTime": {

"startTime": 1434103513,

"duration": 0

}

}

###### report.STE.boottime.diagnostics.test.parameters

This object contains the parameters, if any, of the test executed on the agent. It contains exactly one member named param which is an array. The array has zero or more elements, each of which has the following members.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Value type | Mandatory | Description |
| name | string | Y | The name of the parameter |
| value | object | Y | See below |

The object value contains the value of the parameter in a format as described in the next section.

Example:

"parameters": {

"param": [{

"name": "Disk",

"value": {

"String": "0"

}

}

]

}

value

This object has exactly one member which can be either of the two alternatives in the following table.

|  |  |  |
| --- | --- | --- |
| Name | Value type | Description |
| String | string | The value is a string or a numerical value encoded as a string |
| Binary | string | The value is a binary quantity converted to hex format and encoded as a string |

Examples:

"value": {"String": "10.4"}

"value": {"String": "Pass"}

"value": {"Binary": "123A456F"}

In the current version of the HSA app, only the “String” value is used.

###### report.STE.boottime.diagnostics.test.result

This object contains the result of the test executed on the agent. It contains the following members.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Value type | Mandatory | Description |
| result | string | Y | Indicates whether the test passed or failed |
| returnData | object | Y | See below |

Example of the full object:

"result": {

"result": "Pass",

"returnData": {

"data": [{

"name": "ver",

"value": {

"String": "01.11.0114"

}

}

]

}

}

report.STE.boottime.diagnostics.test.result.returnData

This object contains the result data, if any, of the test executed on the agent. It contains exactly one member named data which is an array. The array has zero or more elements, each of which has the following members.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Value type | Mandatory | Description |
| name | string | Y | The name of the parameter |
| value | object | Y | See below |

The object value is identical to the object described above in section 2.4.1.3.1.3.1.

Example:

"returnData": {

"data": [{

"name": "ver",

"value": {

"String": "01.11.0114"

}

}

]

}

## report.manual

This object contains a collection of information gathered by the app in relation to the test run as a whole. The object has the following members.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Value type | Mandatory | Description |
| time | string | Y | See below |
| actor | int | Y | See below |
| weather | string | N | See below |
| survey | object | N | See below |
| comment | object | Y | See below |

Example of the full object:

"manual": {

"actor" {

"id": "s3\_cob",

"type": "Engineer"

},

"comment": [{

"title": "Connection Duration",

"value": 105

}, {

"title": "Diagnostic Duration",

"value": 86

}, {

"title": "Total Failed",

"value": 2

}, {

"title": "Total Passed",

"value": 60

}, {

"title": "Total Tests Run",

"value": 62

}, {

"title": "Error String",

"value": "Viewing Card Reader fail"

}, {

"title": "Connections",

"value": "Tuner 1,Tuner 2,SCART"

}

],

"time": 1434103394

}

### report.manual.time

This member records the date and time at which the app attempted to connect to the STB (epoch format). The value is of type int.

Example:

"time": 1434103394

### report.manual.actor

This object describes the user of the app while the report was generated. It has the following members.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Value type | Mandatory | Description |
| id | string | Y | The login name entered by the user when the app was started |
| type | string | Y | The type of user (currently always set to “Engineer”) |

Example:

"actor" {

"id": "s3\_cob",

"type": "Engineer"

}

### report.manual.weather

This member is not used in the current version of the HSA app.

It describes the weather conditions at the time the test was run, as entered in the app by the user. It has the following members. It is of type string and is allowed to have one of the following values.

“clear”

“partly cloudy”

“overcast”

“rain”

“stormy”

“snow”

### report.manual.survey

This member is not used in the current version of the HSA app.

This object records questions which the app presented to the user during the test cycle and the answers provided by the user. It contains exactly one member named item which is an array. The array has zero or more elements, each of which has the following members.

| Name | Value type | Mandatory | Description |
| --- | --- | --- | --- |
| type | string | Y | Indicates whether this item was part of a pre-diagnostic (“Pre”) or a post-diagnostic (“Post”) survey |
| question | string | Y | The text of the question presented to the user by the app |
| answer | string  or  array of string | Y | The text of the answer(s) provided by the user |

Example:

"survey": {

"item": [{

"type": "Post",

"question" : "What is this visit type?",

"answer": "First visit"

}, {

"type" : "Post",

"question" : "Did you follow the recommended next steps displayed by the App on this visit?",

"answer" : "Yes"

}, {

"type" : "Post",

"question" : "What is your level of confidence in the App Diagnosis on this visit? (1 low, 5 high)",

"answer" : "5"

}, {

"type" : "Post",

"question" : "Do you think the process of using the App decreased or increased your overall time on this visit?",

"answer" : "Decreased"

}

]

}

### report.manual.comment

This member captures various pieces of information generated by the app when running a test cycle, for example the number of tests that passed and failed, any error strings, etc. It is an array where each element has the following members.

| Name | Value type | Mandatory | Description |
| --- | --- | --- | --- |
| title | string | Y | The title of the comment |
| value | int  or  string | Y | The value (contents) of the comment |

Example:

"comment" : [{

"title" : "Connection Duration",

"value" : 63

}, {

"title" : "Diagnostic Duration",

"value" : 105

}, {

"title" : "Total Failed",

"value" : 6

}, {

"title" : "Total Passed",

"value" : 56

}, {

"title" : "Total Tests Run",

"value" : 62

}, {

"title" : "Error String",

"value" : "Viewing Card Reader fail"

}, {

"title" : "Error String",

"value" : "Signal\/Picture fail"

}, {

"title" : "Connections",

"value" : "Tuner 1,Tuner 2,HDMI"

}

]

The current app uses a fixed set of possible titles for the comments. However, the schema does not enforce any restriction on the titles in the JSON report.

# References

1. S3 Group, *BSkyB XML Report Customisation*, Version 1.0, 14 Dec 2011
2. Sky, *Darwin Service Centre Software Detailed Test Descriptions*, Issue 1.0.9, 17 Dec 2012.

# Appendix A – JSON Schema

JSON schema is described in detail at <http://json-schema.org/>. The version in use is v4.

The following is the full text of the JSON schema.

**{**

"$schema"**:** "http://json-schema.org/draft-04/schema#"**,**

"id"**:** "http://jsonschema.net"**,**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"report"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"version"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"device"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"manufacturer"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"model"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"guid"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"software"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **}**

**},**

"required"**:** **[**"manufacturer"**,** "model"**,** "guid"**]**

**},**

"location"**:** **{**

"oneOf"**:** **[**

**{** "type"**:** "null" **},**

**{** "type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"longitude"**:** **{** "type"**:** "number" **},**

"latitude"**:** **{** "type"**:** "number" **}**

**},**

"required"**:** **[**"longitude"**,** "latitude"**]**

**}**

**]**

**},**

"STE"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"boottime"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"version"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"time"**:** **{** "type"**:** "integer" **},**

"diagnostics"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"test"**:** **{**

"type"**:** "array"**,**

"items"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"summary"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"id"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"name"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"description"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **}**

**},**

"required"**:** **[**"id"**,** "name"**]**

**},**

"time"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"realTime"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"startTime"**:** **{** "type"**:** "integer" **},**

"duration"**:** **{** "type"**:** "integer"**,** "minimum"**:** 0 **}**

**}**

**}**

**},**

"required"**:** **[**"realTime"**]**

**},**

"parameters"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"param"**:** **{**

"type"**:** "array"**,**

"items"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"name"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"value"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"minProperties"**:** 1**,**

"maxProperties"**:** 1**,**

"properties"**:** **{**

"String"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"Binary"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **}**

**}**

**}**

**},**

"required"**:** **[**"name"**,** "value"**]**

**}**

**}**

**},**

"required"**:** **[**"param"**]**

**},**

"result"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"result"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"returnData"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"data"**:** **{**

"type"**:** "array"**,**

"items"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"name"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"value"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"minProperties"**:** 1**,**

"maxProperties"**:** 1**,**

"properties"**:** **{**

"String"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"Binary"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **}**

**}**

**}**

**},**

"required"**:** **[**"name"**,** "value"**]**

**}**

**}**

**},**

"required"**:** **[**"data"**]**

**}**

**},**

"required"**:** **[**"result"**,** "returnData"**]**

**}**

**},**

"required"**:** **[**"summary"**,** "time"**,** "parameters"**,** "result"**]**

**}**

**}**

**},**

"required"**:** **[**"test"**]**

**}**

**},**

"required"**:** **[**"version"**,** "time"**,** "diagnostics"**]**

**}**

**},**

"required"**:** **[**"boottime"**]**

**},**

"manual"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"time"**:** **{** "type"**:** "integer" **},**

"actor"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"id"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **},**

"type"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **}**

**},**

"required"**:** **[**"id"**,** "type"**]**

**},**

"weather"**:** **{**

"type"**:** "string"**,**

"enum"**:** **[**"clear"**,** "partly cloudy"**,** "overcast"**,** "rain"**,** "stormy"**,** "snow"**]**

**},**

"survey"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"item"**:** **{**

"type"**:** "array"**,**

"items"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"type"**:** **{** "type"**:** "string"**,** "enum"**:** **[**"Pre"**,** "Post"**]** **},**

"question"**:** **{** "type"**:** "string"**,** "minLength"**:** 1 **},**

"answer"**:** **{**

"oneOf"**:** **[**

**{** "type"**:** "string"**,** "minLength"**:** 0 **},**

**{** "type"**:** "array"**,**

"items"**:** **{** "type"**:** "string"**,** "minLength"**:** 0 **}**

**}**

**]**

**}**

**},**

"required"**:** **[**"type"**,** "question"**,** "answer"**]**

**}**

**}**

**},**

"required"**:** **[**"item"**]**

**},**

"comment"**:** **{**

"type"**:** "array"**,**

"items"**:** **{**

"type"**:** "object"**,**

"additionalProperties"**:** ***false*,**

"properties"**:** **{**

"title"**:** **{** "type"**:** "string"**,** "minLength"**:** 1 **},**

"value"**:** **{** "type"**:** **[**"string"**,** "integer"**]** **}**

**},**

"required"**:** **[**"title"**,** "value"**]**

**}**

**}**

**},**

"required"**:** **[**"time"**,** "actor"**,** "comment"**]**

**}**

**},**

"required"**:** **[**"version"**,** "device"**,** "location"**,** "STE"**,** "manual"**]**

**},**

"required"**:** **[**"report"**]**

**}**

**}**

# Appendix B – Validating against the Schema

The following is a sample Python script which can be used to perform verification of a JSON file against the schema.

**import** sys

**import** json

**import** jsonschema

**def** usage**():**

**print** "usage: validate.py <schema> <data>"

**def** main**(**args**):**

schema **=** open**(**args**[**0**]).**read**()**

**print** schema

data **=** open**(**args**[**1**]).**read**()**

**print** data

**print** "validating data..."

v **=** jsonschema**.**Draft4Validator**(**json**.**loads**(**schema**))**

**for** error **in** sorted**(**v**.**iter\_errors**(**json**.**loads**(**data**)),** key**=**str**):**

**print(**'\n' **+** error**.**message**)**

**if** \_\_name\_\_**==**'\_\_main\_\_'**:**

**if** len**(**sys**.**argv**)** **!=** 3**:**

usage**()**

sys**.**exit**(**2**)**

main**(**sys**.**argv**[**1**:])**

The invocation of the script would look something like the following.

$ python validate.py schema.json <file>.json