Intel Accelerated Storage Manager

SSD Plugin REST API

June 2018
Document Revision 2.0

Contents

Revision History

Revision	Contributor	Description	Date
0.1	Paweł Żelazko	Initial version of document.	April 2015
2.0	Marcin Dembiński	Global refactor of documentation	June 2018

1. Introduction

This document is a reference for Intel SSD plugin API. Scope of this API covers access to SSD plugin resources on host machine where agent is installed.

2. URI structure

Access to resources is provided via URI paths. Client applications should send requests over the HTTP protocol using standard GET and PUT methods.

Intel ASM SSD Plugin URI structure:

`{protocol}://{host}:{port}/v1/ssd/{resource name}`

Where:

{protocol}	Communication protocol – **http** or **https**
{host}	Host machine IP address or domain name where IASM is installed
{port}	Port number on which IASM service is listening. Optional if port is default for its protocol (**80** for http, **443** for https)
v1	Stands for first version of API definition
ssd	Namespace for all resources related to SSD Plugin
{resource}	Name of resource to be returned or modified

3. Response handling

REST API returns responses in wrapper format presented below. Note: Even response with error returns Status 200 OK.

Response format		
data	object or array	Contains the request response. It can be either an array or an object. Null if **success** is false.
status	object	Contains the response status object.
{}.success	bool	Response status. Determines if the request was successful or end with an error.
{}.errorId	string	*[Optional parameter]* Identifier of the return error. Present only if **success** is false.
{}.errorMessage	string	*[Optional parameter]* Additional, detailed message which describes occurred error and its reason. Present only if **success** is false.

Response examples:

```
# Successful request's response example
Status: 200 OK
{
    "data": {
        # returned information from REST API
    },
    "status": {
        "success": true
    }
}
```

```
# Failed request's response example
Status: 200 OK
{
    "data": null,
    "status": {
        "errorId": "SSD_INTERFACE_INVALID_RESPONSE",
        "errorMessage": "SSD interface response error status (category: 11, code: 10,
message: Invalid drive identifier)",
        "success": false
    }
}
```

4. OAuth parameters

To get access to SSD Plugin resources the OAuth scope parameter must contain value "ssd":

scope=ssd

5. Resources

Below is a list of all available resources for SSD plugin.

5.1 Plugin version

[GET] /v1/ssd/version		
Returns SSD plugin version.		
Request parameters		
none		
Response parameters (Object)		
pluginVersion	string	SSD plugin version.
ssdInterfaceVersion	string	Version of external library used to get SSD data.
Available Errors		
INTERNAL_ERROR		An unexpected error occurred during request process.

Request Example:

```
GET https://example.com/v1/ssd/version
```

```
{
    "data": {
        "pluginVersion": "1.0.0.0",
        "ssdInterfaceVersion": "2.0.0"
    },
    "status": {
        "success": true
    }
}
```

5.2 List of devices

[GET] /v1/ssd/devices[/:deviceIndex]		
Returns an array of available SSD drives with their properties.		
Request parameters		
:deviceIndex	string	[*Optional parameter*] Device index used for device selection.
Response parameters (Array or Object)		
accessibleMaxAddressSupported	bool	[*Optional parameter*] Accessible max address supported flag. Only for ATA devices.
devicePath	string	The OS path to the device (i.e. \\.\PhysicalDrive0).
digitalFenceSupported	bool	[*Optional parameter*] Determines if given device supports Intel® Digital Fence product.
downloadMicrocodePossible	bool	[*Optional parameter*] Determines if given device allows downloading microcode i.e. firmware.
driverMajorVersion	integer	[*Optional parameter*] Major version of the controller driver that the device is attached to. Only for Windows.
driverManufacturer	string	[*Optional parameter*] Manufacturer of the controller driver that the device is attached to.
driverMinorVersion	integer	[*Optional parameter*] Minor version of the controller driver that the device is attached to. Only for Windows.
firmware	string	Shows the firmware revision of the device.
hdd	bool	[*Optional parameter*] Determines if given device is a Hard Disk Drive.
index	integer	Shows device index, used for device selection.
intel	bool	[*Optional parameter*] If true, device was produced by Intel Corporation.
IOCompletionQueuesRequested	integer	[*Optional parameter*] Shows the number of IO Completion Queues requested. For NVMe devices only.

IOSubmissionQueuesRequested	integer	[*Optional parameter*] Shows the number of IO Submission Queues requested. For NVMe devices only.
latencyTrackingEnabled	bool	[*Optional parameter*] Shows if the latency tracking feature of the drive is enabled or disabled.
LBAFormat	integer	[*Optional parameter*] Shows the LBA Format that the drive is configured with. This has a possible value of 0 to NumLBAFormats. Details of the different LBA formats can be found in Identify Namespace. This value can be changed by NVMe format. For NVMe devices only.
lun	integer	Device logical unit number.
maximumLBA	integer	Shows the devices maximum logical block address.
modelNumber	string	Shows the model number assigned to the device.
numErrorLogPageEntries	integer	[*Optional parameter*] Shows the number of Error Information log entries that are stored by the controller. This value is zero-based. For NVMe devices only.
numLBAFormats	integer	[*Optional parameter*] Shows the number of different LBA Formats the device supports. This value is zero-based. For example, a value of 6 means there are 0 to 6 possible LBA Formats (7 total). For NVMe devices only.
NVMeMajorVersion	integer	[*Optional parameter*] Major version of supported NVMe protocol. For NVMe devices only.
NVMeMinorVersion	integer	[*Optional parameter*] Minor version of supported NVMe protocol. For NVMe devices only.
NVMeTertiaryVersion	integer	[*Optional parameter*] Tertiary version of supported NVMe protocol. For NVMe devices only.
OEM	string	[*Optional parameter*] Original Equipment Manufacturer name.
opalState	bool	[*Optional parameter*] Determines if device supports OPAL security features.
pathID	integer	Device path identifier.
PCILinkGenSpeed	integer	[*Optional parameter*] Current PCIe Link Speed. For NVMe devices only.
PCILinkWidth	integer	[*Optional parameter*] Negotiated PCIe Link Width. For NVMe devices only.
physicalSectorSize	integer	[*Optional parameter*] Shows the physical sector size in bytes. For ATA devices only. Possible values: 512, 4096
physicalSize	integer	[*Optional parameter*] The physical size of the device in bytes.

PLITestTimeInterval	integer	[*Optional parameter*] Shows the PLI Test Time interval in minutes of the device. Possible values: 0 min, 60 min, 1440 min, 4320 min, 10080 min, 20160 min
productFamily	string	[*Optional parameter*] Shows the Intel SSD Series name.
productProtocol	string	Device supported protocol name.
readErrorRecoveryTimer	integer	[*Optional parameter*] Shows the time limit for read error recovery. Time limit is in 100 milliseconds units. For ATA devices only.
remoteSecureEraseSupported	bool	[*Optional parameter*] Determines if device supports NVMe format or ATA secure erase feature.
sanitizeSupported	bool	[*Optional parameter*] Determines if SSD device supports sanitize command.
sataGen1	bool	[*Optional parameter*] Shows if the device supports SATA Gen1 speed. For ATA devices only.
sataGen2	bool	[*Optional parameter*] Shows if the device supports SATA Gen2 speed. For ATA devices only.
sataGen3	bool	[*Optional parameter*] Shows if the device supports SATA Gen3 speed. For ATA devices only.
sataNegotiatedSpeed	string	[*Optional parameter*] Coded value indicating current negotiated SATA signal speed. Possible values: SATA Gen1 rate of 1.5 Gbps, SATA Gen2 rate of 3 Gbps, SATA Gen3 rate of 6 Gbps
sectorSize	integer	Shows the sector size in bytes.
securityEnabled	bool	[*Optional parameter*] Shows if the device is in security enabled state. For ATA devices only.
securityFrozen	bool	[*Optional parameter*] Shows if the device is in security frozen state. For ATA devices only.
securityLocked	bool	[*Optional parameter*] Shows if the device is in security locked state. For ATA devices only.
securitySupported	bool	[*Optional parameter*] Shows if the device supports security enabled states. For ATA devices only.
serialNumber	string	Shows the serial number assigned to the device.
SMARTEnabled	bool	[*Optional parameter*] Shows if SMART capabilities are enabled on the device.
SMARTSelfTestSupported	bool	[*Optional parameter*] Determines if given device supports SMART self-test feature.
SSCENabled	bool	[*Optional parameter*] Shows if the device has spread spectrum clocking enabled or not. For ATA devices only.
targetID	integer	Device target identifier.
tempThreshold	integer	[*Optional parameter*] Shows the temperature threshold of the overall device. Units are in Celsius. For NVMe devices only.

timeLimitedErrorRecovery	integer	[*Optional parameter*] Shows the limited retry timeout value in 100 millisecond units. This applies to I/O commands that indicate a time limit is required. A value of 0 indicates that there is no timeout. For NVMe devices only.
trimSupported	bool	Determines if device supports ATA trim command.
writeCacheEnabled	bool	[*Optional parameter*] Shows if the device has write cache enabled. For ATA devices only.
writeCacheSupported	bool	[*Optional parameter*] Shows if the device supports write cache capabilities. For ATA devices only.
writeErrorRecoveryTimer	integer	[*Optional parameter*] Shows the time limit for write error recovery in 100 millisecond units. For ATA devices only.
Available Errors		
SSD_INTERFACE_UNINITIALIZED	External library is not initialized.	
SSD_INTERFACE_INVALID_RESPONSE	External library response was invalid.	
SSD_INTERFACE_REQUEST_FAILED	External library request failed.	
SSD_INVALID_DEVICE_INDEX	Provided device index was invalid.	
INTERNAL_ERROR	An unexpected error occurred during request process.	

Request Example:

```
GET https://example.com/v1/ssd/devices/0
```

```json
{
    "data": {
        "IOCompletionQueuesRequested": 30,
        "IOSubmissionQueuesRequested": 30,
        "LBAFormat": 0,
        "NVMeMajorVersion": 1,
        "NVMeMinorVersion": 0,
        "NVMeTertiaryVersion": 0,
        "OEM": "Generic",
        "PCILinkGenSpeed": 3,
        "PCILinkWidth": 4,
        "PLITestTimeInterval": "Not supported",
        "SMARTEnabled": true,
        "devicePath": "/dev/nvme0n1",
        "enduranceAnalyzer": "Data not available",
        "firmware": "8DV10171",
        "index": 0,
        "intel": true,
        "latencyTrackingEnabled": false,
        "maximumLBA": 781422767,
        "modelNumber": "INTEL SSDPEDMD400G4",
        "numErrorLogPageEntries": 63,
        "numLBAFormats": 6,
        "physicalSectorSize": "Not supported",
        "physicalSize": 400088457216,
        "productFamily": "Intel SSD DC P3700 Series",
        "productProtocol": "NVME",
        "readErrorRecoveryTimer": "Not supported",
        "sectorSize": 512,
        "serialNumber": "CVFT53340049400BGN",
        "tempThreshold": 85,
        "timeLimitedErrorRecovery": 0,
        "trimSupported": true,
        "writeErrorRecoveryTimer": "Not supported"
    },
    "status": {
        "success": true
    }
}
```

```
GET https://example.com/v1/ssd/devices
```

```
{
    "data": [
        {
            ...
            "index": 0,
            ...
        },
        {
            ...
            "index": 1,
            ...
        },
        {
            ...
            "index": 2,
            ...
        },
        {
            ...
            "index": 3,
            ...
        },
        {
            ...
            "index": 5,
            ...
        },
        {
            ...
            "index": 6,
            ...
        },
        {
            ...
            "index": 9,
            ...
        }
    ],
    "status": {
        "success": true
    }
}
```

5.3 List of identify data

[GET] /v1/ssd/devices[/:deviceIndex]/identify		
Returns an array of identify data.		
Request parameters		
:deviceIndex	string	[*Optional parameter*] Device index used for device selection.
Response parameters (Array or Object)		
identifyData	array	List of drive's identify data.

`[].description`	string	Description of identify data content.
`[].`*`fields`*	array	[*Optional parameter*] Fields of identify data content.
`[][].description`	string	Field description.
`[][].firstBit`	integer	Field first bit position.
`[][].lastBit`	integer	Field last bit position.
`[][].value`	string	Value of field as hex number with description.
`[].firstByte`	integer	Identify data content first byte position.
`[].lastByte`	integer	Identify data content last byte position.
`[].value`	string	Value of identify data content.
`serialNumber`	string	Drive's serial number.
Available Errors		
`SSD_INTERFACE_UNINITIALIZED`	External library is not initialized.	
`SSD_INTERFACE_INVALID_RESPONSE`	External library response was invalid.	
`SSD_INTERFACE_REQUEST_FAILED`	External library request failed.	
`SSD_INVALID_DEVICE_INDEX`	Provided device index was invalid.	
`INTERNAL_ERROR`	An unexpected error occurred during request process.	

Request Example:

```
GET https://example.com/v1/ssd/devices/0/identify
```

```
{
    "data": {
        "identifyData": [
            {
                "description": "Namespace Size",
                "firstByte": 0,
                "lastByte": 7,
                "value": "781422768"
            },
            {
                "description": "LBA Format 2 Support",
                "fields": [
                    {
                        "description": "Reserved",
                        "firstBit": 31,
                        "lastBit": 26,
                        "value": ""
                    },
                    {
                        "description": "Relative Performance",
                        "firstBit": 25,
                        "lastBit": 24,
                        "value": "0x2 (Good performance)"
                    },
                    {
                        "description": "LBA Data Size",
                        "firstBit": 23,
                        "lastBit": 16,
                        "value": "09"
                    },
                    {
                        "description": "Metadata Size",
                        "firstBit": 15,
                        "lastBit": 0,
                        "value": "0010"
                    }
                ],
                "firstByte": 139,
                "lastByte": 139,
                "value": "2090010"
            }
        ],
        "serialNumber": "CVFT53340049400BGN"
    },
    "status": {
        "success": true
    }
}
```

```
GET https://example.com/v1/ssd/devices/identify
```

```
{
    "data": [
        {
            "identifyData": [...],
            "serialNumber": "CVFT53340049400BGN"
        },
        {
            "identifyData": [...],
            "serialNumber": "CVFT6204003J400GGN"
        },
        {
            "identifyData": [...],
            "serialNumber": "CVFT552600AX400GGN"
        },
        {
            "identifyData": [...],
            "serialNumber": "CVFT62040034400GGN"
        },
        {
            "identifyData": [...],
            "serialNumber": "X67S10QKT7WT"
        },
        {
            "identifyData": [...],
            "serialNumber": "CVFT5193003M400BGN"
        },
        {
            "identifyData": [...],
            "serialNumber": "BTTV335509AS200GGN"
        },
    ],
    "status": {
        "success": true
    }
}
```

5.4 List of SMART data

[GET] /v1/ssd/devices[/:deviceIndex]/smart[?id={value}]		
Returns an array of smart attributes.		
Request parameters		
:deviceIndex	string	[*Optional parameter*] Device index used for device selection.
id	string	[*Optional parameter*] Smart attribute id used for SMART filtering (two hex digit number).
Response parameters (Array or Object)		
serialNumber	string	Drive's serial number.
smartAttributes	array	List of drive's SMART attributes with their properties.
[].ID	string	The SMART Attribute ID token.

[].action	string	Shows the Pass/Fail status based on the Pre-failure/advisory status bit.
[].description	string	Shows a string representation of the ID token.
**[].*details*	array	[*Optional parameter*] Additional properties of integers which are an interpretation of raw value. Possible fields names: averageEraseCycles, currentTemperature, highestTemperature, lastTestResult, lowestTemperature, maximumEraseCycles, minimumEraseCycles, overTemperatureCounter, timeSinseLastTest, totalTests, throttleStatus, throttlingEventCount
[].normalized	integer	Shows the normalized value of the SMART attribute.
[].raw	integer	Shows the raw value of the SMART Attribute.
**[].*status*	integer	[*Optional parameter*] Shows the status flags for the SMART attribute: Bit 0: Pre-failure/advisory Bit 1: Online data collection Bit 2: Performance attribute Bit 3: Error rate attribute Bit 4: Event count attribute Bit 5: Self-preserving attribute Bit 6-15: Reserved
**[].*threshold*	integer	[*Optional parameter*] Shows the SMART Attributes threshold value.
**[].*worst*	integer	[*Optional parameter*] Shows the SMART attributes worst normalized value. Maintained for the life of the device.
Available Errors		
SSD_INTERFACE_UNINITIALIZED	External library is not initialized.	
SSD_INTERFACE_INVALID_RESPONSE	External library response was invalid.	
SSD_INTERFACE_REQUEST_FAILED	External library request failed.	
SSD_INVALID_DEVICE_INDEX	Provided device index was invalid.	
INTERNAL_ERROR	An unexpected error occurred during request process.	

Request Example:

```
GET https://example.com/v1/ssd/devices/0/smart?id=AC
```

```json
{
    "data": {
        "serialNumber": "CVFT53340049400BGN",
        "smartAttributes": [
            {
                "ID": "AC",
                "action": "Pass",
                "description": "Erase Fail Count",
                "normalized": 100,
                "raw": 0
            }
        ]
    },
    "status": {
        "success": true
    }
}
```

```
GET https://example.com/v1/ssd/devices/0/smart
```

```json
{
    "data": {
        "serialNumber": "CVFT53340049400BGN",
        "smartAttributes": [
            {
                "ID": "AB",
                ...
            },
            {
                "ID": "AC",
                ...
            },
            {
                "ID": "AD",
                ...
            },
            {
                "ID": "B8",
                ...
            },
            {...},
            {...},
            {...},
            {...},
            {...}
        ]
    },
    "status": {
        "success": true
    }
}
```

```
GET https://example.com/v1/ssd/devices/smart?id=AC
```

```
{
    "data": [
        {
            "serialNumber": "CVFT53340049400BGN",
            "smartAttributes": [
                {
                    "ID": "AC",
                    ...
                }
            ]
        },
        {
            "serialNumber": "CVFT6204003J400GGN",
            "smartAttributes": [...]
        },
        {
            "serialNumber": "BTTV335509AS200GGN",
            "smartAttributes": [...]
        },
        {
            "serialNumber": "9XE0PL6Q",
            "smartAttributes": []
        },
        {
            "serialNumber": "S1SMNWAF719315H",
            "smartAttributes": []
        }
    ],
    "status": {
        "success": true
    }
}
```

```
GET https://example.com/v1/ssd/devices/smart
```

```
{
    "data": [
        {
            "serialNumber": "CVFT53340049400BGN",
            "smartAttributes": [
                {
                    "ID": "AC",
                    ...
                },
                {...},
                {...},
                {...},
                {...}
            ]
        },
        {
            "serialNumber": "CVFT6204003J400GGN",
            "smartAttributes": [...]
        },
        {
            "serialNumber": "BTTV335509AS200GGN",
            "smartAttributes": [...]
        },
        {
            "serialNumber": "9XE0PL6Q",
            "smartAttributes": [...]
        },
        {
            "serialNumber": "S1SMNWAF719315H",
            "smartAttributes": [...]
        }
    ],
    "status": {
        "success": true
    }
}
```

5.5 List of health data

[GET] /v1/ssd/devices[/:deviceIndex]/health		
Returns an array of health data.		
Request parameters		
:deviceIndex	string	[*Optional parameter*] Device index used for device selection.
Response parameters (Array or Object)		
health	object	Set of drive's health data.
{}.*availableSpare*	integer	[*Optional parameter*] Percentage of the remaining spare capacity available. For NVMe devices only.
{}.*averageNandEraseCycles*	integer	[*Optional parameter*] Average number of NAND erase cycles for all blocks.
{}.*crcErrorCount*	integer	Total number of interface CRC errors.

{}.deviceStatus	string	Current status of the device in readable form.
{}.endToEndErrorDetectionCount	integer	Total number of end to end detected errors.
{}.enduranceAnalyzer	string	[Optional parameter] Reports the expected drive life in years.
{}.eraseFailCount	integer	[Optional parameter] Total number of raw erase fails.
{}.errorInfoLogEntries	string	[Optional parameter] Hexadecimal number of entries in the Error Info Log page over the life of the controller. For NVMe devices only.
{}.highestLifetimeTemperature	integer	[Optional parameter] The highest lifetime temperature in Celsius of the device. For NVMe devices only.
{}.lowestLifetimeTemperature	integer	[Optional parameter] The lowest lifetime temperature in Celsius of the device. For NVMe devices only.
{}.maxNandEraseCycles	integer	[Optional parameter] Max number of NAND erase cycles for all blocks.
{}.mediaErrors	string	[Optional parameter] Hexadecimal number of times where the controller detected an unrecovered data integrity error. For NVMe devices only.
{}.minNandEraseCycles	integer	[Optional parameter] Min number of NAND erase cycles for all blocks.
{}.percentageUsed	integer	[Optional parameter] Estimate of the percentage of life used of the NVMe device.
{}.powerCycles	string	[Optional parameter] Hexadecimal number of power cycles. For NVMe devices only.
{}.powerOnHours	string	Contains the hexadecimal number of power on hours of the device.
{}.programFailCount	integer	Total number of raw program fails.
{}.specifiedPCBMaxOperatingTemp	integer	[Optional parameter] Specified PCB maximum operating temperature in Celsius. For NVMe devices only.
{}.specifiedPCBMinOperatingTemp	integer	[Optional parameter] Specified PCB minimum operating temperature in Celsius. For NVMe devices only.
{}.temperature	integer	Total temperature of the device in Celsius.
{}.thermalThrottleCount	integer	The total number of times thermal throttle has been activated.
{}.thermalThrottleStatus	integer	The amount that Thermal Throttle is applied in percentage.
{}.unsafeShutdowns	string	Reports the hexadecimal number of unsafe shutdowns over the life of the device.
serialNumber	string	Drive's serial number.
Available Errors		
SSD_INTERFACE_UNINITIALIZED		External library is not initialized.
SSD_INTERFACE_INVALID_RESPONSE		External library response was invalid.

SSD_INTERFACE_REQUEST_FAILED	External library request failed.
SSD_INVALID_DEVICE_INDEX	Provided device index was invalid.
INTERNAL_ERROR	An unexpected error occurred during request process.

Request Example:

```
GET https://example.com/v1/ssd/devices/0/health
```

```json
{
    "data": {
        "health": {
            "availableSpare": 100,
            "averageNandEraseCycles": 117,
            "crcErrorCount": 0,
            "deviceStatus": "Healthy",
            "endToEndErrorDetectionCount": 0,
            "eraseFailCount": 0,
            "errorInfoLogEntries": "0x00",
            "highestLifetimeTemperature": 32,
            "lowestLifetimeTemperature": 15,
            "maxNandEraseCycles": 119,
            "mediaErrors": "0x00",
            "minNandEraseCycles": 116,
            "percentageUsed": 0,
            "powerCycles": "0x03550",
            "powerOnHours": "0x02ECB",
            "programFailCount": 0,
            "specifiedPCBMaxOperatingTemp": 85,
            "specifiedPCBMinOperatingTemp": 0,
            "temperature": 27,
            "thermalThrottleCount": 0,
            "thermalThrottleStatus": 0,
            "unsafeShutdowns": "0x0283E"
        },
        "serialNumber": "CVFT53340049400BGN"
    },
    "status": {
        "success": true
    }
}
```

```
GET https://example.com/v1/ssd/devices/0/health
```

```
{
    "data": [
        {
            "health": {...},
            "serialNumber": "CVFT53340049400BGN"
        },
        {
            "health": {...},
            "serialNumber": "CVFT6204003J400GGN"
        },
        {
            "health": {...},
            "serialNumber": "X67S10QKT7WT"
        },
        {
            "health": {...},
            "serialNumber": "CVFT5193003M400BGN"
        },
        {
            "health": {...},
            "serialNumber": "BTTV335509AS200GGN"
        }
    ],
    "status": {
        "success": true
    }
}
```

5.6 List of latency statistics

[GET] /v1/ssd/devices[/:deviceIndex]/latency?commands={value}		
Returns an array of latency statistics.		
Request parameters		
:deviceIndex	string	[*Optional parameter*] Device index used for device selection.
commands	string	Commands for which latency statistics has to be retrieved. Available values: reads – read commands writes – write commands
Response parameters (Array or Object)		
groups	array	Arra of latency statistics groups. A group represents latency range split into buckets.
[].buckets	array	Array of buckets.
[][].number	integer	Bucket number.
[][].value	integer	The number of observed requests for bucket latency range.
[].details	string	Details of the group. Contains information about latency range and buckets step, size and number.
[].number	integer	Group number.

majorVersion	string	Major version of latency statistics structure.
minorVersion	string	Minor version of latency statistics structure.
serialNumber	string	Drive's serial number.
Available Errors		
SSD_INTERFACE_UNINITIALIZED	External library is not initialized.	
SSD_INTERFACE_INVALID_RESPONSE	External library response was invalid.	
SSD_INTERFACE_REQUEST_FAILED	External library request failed.	
SSD_INVALID_DEVICE_INDEX	Provided device index was invalid.	
INTERNAL_ERROR	An unexpected error occurred during request process.	

Request Example:

```
GET https://example.com/v1/ssd/devices/0/latency?commands=reads
```

```
{
    "data": {
        "groups": [
            {
                "buckets": [
                    {
                        "number": 1,
                        "value": 0
                    },
                    {...},
                    {...},
                    {...},
                    ...
                ],
                "details": "Range is 0-1ms. Step is 32us. Bucket size is 4 bytes. Total 32
buckets.",
                "number": 1
            },
            {...},
            {...},
            {...}
        ],
        "majorVersion": "3",
        "minorVersion": "0",
        "serialNumber": "CVFT53340049400BGN"
    },
    "status": {
        "success": true
    }
}
```

```
GET https://example.com/v1/ssd/devices/latency?commands=writes
```

```json
{
    "data": [
        {
            "groups": [
                {
                    "buckets": [
                        {
                            "number": 1,
                            "value": 0
                        },
                        {...},
                        {...},
                        {...},
                        ...
                    ],
                    "details": "Range is 0-1ms. Step is 32us. Bucket size is 4 bytes. Total
32 buckets.",
                    "number": 1
                },
                {...},
                {...}
            ],
            "majorVersion": "3",
            "minorVersion": "0",
            "serialNumber": "CVFT53340049400BGN"
        },
        {...},
        {...},
        {...},
        {...}
    ],
    "status": {
        "success": true
    }
}
```

6. Actions

6.1 Enable/Disable latency statistics tracking

[PUT] /v1/ssd/devices/:deviceIndex/latency		
Enables or disables latency tracking feature. This must be enabled in order to successfully read the latency statistics.		
Request parameters		
:deviceIndex	string	Device index used for device selection.
trackingEnabled	bool	Enable or disable latency tracking.
Response parameters (Object)		
latencyTrackingEnabled	string	Shows current state of latency tracking. Possible values: True, False
serialNumber	string	Drive's serial number.
Available Errors		
SSD_INTERFACE_UNINITIALIZED	External library is not initialized.	
SSD_INTERFACE_INVALID_RESPONSE	External library response was invalid.	
SSD_INTERFACE_REQUEST_FAILED	External library request failed.	
SSD_INVALID_DEVICE_INDEX	Provided device index was invalid.	
INTERNAL_ERROR	An unexpected error occurred during request process.	

Request Example:

```
PUT https://example.com/v1/ssd/devices/0/latency
{
    "trackingEnabled": true
}
```

```
{
    "data": {
        "latencyTrackingEnabled": "True",
        "serialNumber": "CVFT53340049400BGN"
    },
    "status": {
        "success": true
    }
}
```

6.2 Reset Endurance analyzer

[PUT] /v1/ssd/devices/:deviceIndex/enduranceanalyzer
Resets the SMART attributes E2, E3 and E4. As a result, the reported raw value of these attributes will be 0xFFFF. Once the values have been reset, the device must go through a 60+ minute workload for the attributes to trip.

Request parameters		
:deviceIndex	string	Device index used for device selection.
Response parameters (Object)		
enduranceAnalyzer	string	The drives life expectance in years. This utilizes the 0xE2, 0xE3 and 0xE4 SMART attributes. If these SMART attributes have a value of 0xFFFF then they are still in the reset state and a 60+ minute workload has yet to run. If the media wear indicator is zero then the workload has not induced enough wear to calculate an accurate life expectancy.
serialNumber	string	Drive's serial number.
Available Errors		
SSD_INTERFACE_UNINITIALIZED	External library is not initialized.	
SSD_INTERFACE_INVALID_RESPONSE	External library response was invalid.	
SSD_INTERFACE_REQUEST_FAILED	External library request failed.	
SSD_INVALID_DEVICE_INDEX	Provided device index was invalid.	
INTERNAL_ERROR	An unexpected error occurred during request process.	

Request Example:

```
PUT https://example.com/v1/ssd/devices/0/enduranceanalyzer
null
```

```
{
    "data": {
        "enduranceAnalyzer": "Media Workload Indicators have reset values. Run 60+ minute
workload prior to running the endurance analyzer.",
        "serialNumber": "CVFT53340049400BGN"
    },
    "status": {
        "success": true
    }
}
```